Appendix F

Wastewater Engineering Report
for the Fairways

INSITE
ENGINEERING, SURVEYING &
LANDSCAPE ARCHITECTURE, P.C.

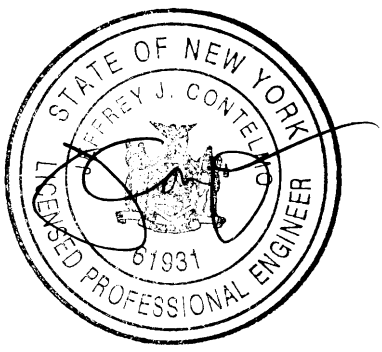
WASTEWATER ENGINEERING REPORT

For

THE FAIRWAYS
Town of Carmel, New York

July 20, 2006

Prepared By
Insite Engineering, Surveying & Landscape Architecture, P.C.
3 Garrett Place
Carmel, New York 10512



1.0 INTRODUCTION

The subject project is located on three parcels totaling 100.6± acres located in the Town of Carmel. The site is located between parcels to the south to be developed as Gateway Summit and the Centennial Golf Course to the west, north, and east. The properties are designated as tax map parcel numbers 44.-2-1, 44.15-2-2, and 44.15-2-4.

The project site is located on the undeveloped hillside adjacent to the existing golf course. The proposed development will consist of 150 senior housing units and a clubhouse for the use of residents and their guests only. The access road through the site is an extension of the proposed road servicing the Gateway Summit site. The road enters the subject property near the southwest property corner and crosses from south to north before terminating at a cul-de-sac at the northern end of the site.

Water supply and wastewater generated by the proposed project will be serviced by the Town of Carmel Water District #2 (CWD#2) and Sewer District #2 (CSD#2) respectively.

2.0 PROJECT DESIGN FLOWS

The average daily wastewater design flows for the proposed project are based on the hydraulic loading rates listed in the Putnam County Department of Health Bulletin CS-31. For residential wastewater uses, bulletin CS-31 references the loading rates given in the New York State Department of Environmental Conservation's (NYSDEC) publication *Design Standards for Wastewater Treatment Works – 1988* (DSWTF). The following table lists the proposed uses, associated hydraulic loading rates, and the design flow rates (gallons per day or gpd) for the Gateway Summit project. Note that while no additional flow is expected for the clubhouse because it is proposed to serve residents and their guests, 400 gpd has been included for potential visitors. The NYSDEC publication allows for a 20% decrease in hydraulic loading rates for premises equipped with water saving plumbing fixtures. Since current standards dictate that water saving devices be used in all new construction, this 20% reduction is reflected in the table below. Also listed are anticipated actual flows which are estimated at 50% of the design flow:

Proposed Use	Hydraulic Loading Rate*	Average Daily Design Flow (gpd)	Anticipated Actual Flows (gpd)
150 2-BR Senior Housing Units	240 gpd/unit	36,000	18,000
Clubhouse (visitors)	400 gpd	400	200
Total		**36,400**	**18,2000**

* Hydraulic loading rate from NYSDEC publication *Design Standards for Wastewater Treatment Works – 1988*

The average daily water flow is calculated in the *Water Engineering Report for The Fairways* as 45,400 gpd, or 9,000 gpd more than the average daily wastewater flow. For residential water demand, bulletin CS-31 does not allow a 20% reduction for water saving fixtures. This accounts for water uses such as car washing, plant watering, and others that create additional water demand, but do not add to wastewater flows.

The peak hourly flow for wastewater is calculated using a peaking factor that is based on the population of the subject project. The publication *Recommended Standards for Wastewater Facilities - 2004*[1] (RSWF) was used to determine a peaking factor of four.

[1] Published by the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers

Peak Hourly Flow

36,400 gpd ÷ (24 hr/day) ÷ (60 min/hr) = 25.3 gallons per minute (gpm)

Peak Hourly Flow = 25.3 gpm x 4 ≈ **101.2 gpm**

3.0 EVALUATION OF EXISTING WASTEWATER TREATMENT PLANT CAPACITY

As requested by the Town of Carmel Engineer, the impacts of the Fairways project on CSD#2 have been assessed in conjunction with several other major proposed developments in the district. Based on the latest Water Supply and Wastewater Disposal Engineer's Reports for these projects the following average daily wastewater design flows and anticipated actual flows (50% of design flows) have been established:

	Design Flow	Anticipated Actual Flow
Gateway Summit	80,520 gpd	40,260 gpd
Fairways	36,400 gpd	18,200 gpd
Carmel Corporate Park[2]	91,200 gpd	45,600 gpd
Hillcrest Commons	36,400 gpd	18,200 gpd
Total Project Design Flows	**244,520 gpd**	**122,260 gpd**
	0.24 mgd	**0.12 mgd**

Note these daily estimates of usage are design flows for engineering design and permitting purposes. Historically actual wastewater usage is typically 50% to 80% of the design flow. In order to present conservative estimates the following estimate of available systems capacities utilizes the projects' design flows.

Sewer District #2

Plant capacity	=	1.10 mgd (per 1.1 MGD addendum to Facility Report Supplement, September 1992 by J. Robert Folchetti & Associates, LLC)
2005 average daily flow	=	*0.76 mgd (per information supplied by Town of Carmel Engineer)
2006 average daily flow through June	=	*0.70 mgd (per information supplied by Town of Carmel Engineer)
Project design flows	=	0.24 mgd (0.12 mgd anticipated actual flow)
Total Projected daily flow	=	1.00 mgd (0.889 mgd anticipated actual flow)
Excess capacity	=	**0.10 mgd (0.22 mgd anticipated actual excess capacity)**

* The average daily flows are based on the Wastewater Facility Operation and Reports for the treatment plant. Review of the reports as well as discussions with the Town Engineer indicate that there was a problem with the meter during December 2005 and January 2006 such that the recorded flow increased daily and consistently throughout December 2005 and January 2006. In

[2] The Carmel Corporate Park project is proposed to be revised into an age-restricted housing development with approximately 380 two-bedroom units. The proposed flow for the housing development is greater than the previously approved office park, therefore this flow will be used.

order to be conservative the 2005 average daily flow (higher flow) was utilized to assess the capacity. This data is erroneous and therefore was not included in the above flows.

Based on review of the attached reports there is sufficient capacity in the wastewater treatment plant (WWTP) to service the proposed Fairways project as well as the other major proposed projects currently under review in CSD#2.

It is our understanding that the Town Engineer is planning on performing sewer system evaluation studies (SSES) of localized sewer collection infrastructure to identify and eliminate any inflow or infiltration problems. The project applicant has offered to make a monetary contribution to mitigate the SSES costs for the Old Route 6 system, and Fair Street/Michael's Brook system, which are the sections of sewers planned to receive project sewer flows.

4.0 PROPOSED CONNECTIONS TO CARMEL SEWER DISTRICT #2

4.1 Pump Pit and Force Main Sizing

Flow from the Fairways will be collected along the proposed roadway by gravity sewer mains and conveyed to two pump stations. Pump Station 1 will be located east of the proposed access road near building F-6. This station is proposed to service 120 senior housing units and will lift the flow to the existing 8" sewer main in Kelly Ridge Road. Pump Station 2 will be located near the northern end of the proposed access road and will service 30 senior housing units. The force main from this pump station will run south to the proposed emergency access drive where it will connect to the proposed force main from Pump Station 1. Preliminary sizing of the proposed pump stations is provided below.

Pump Station 1

Peak Hourly Flow:	(120 units) x (240 gpd/unit) = 28,800 gpd
	(28,800 gpd) ÷ (24 hr/day) ÷ (60 min/hr) = 20 gpm
	Peak Hourly Flow = 20 gpm x 4 = 80 gpm = 0.178 ft^3/s
Force Main Sizing:	4" Main = 0.0872 ft^2 area
	(0.178 ft^3/s) ÷ (0.0872 ft^2) = 2.04 ft/s > 2.0 ft/s OK
Pump Sizing:	Pumping Rate = Peak Hourly Flow = **80 gpm**
	Elevation Head = 60 ft
	Pipe Friction Loss = $\frac{(10.44)*(2300\ ft)*(80\ gpm)^{1.85}}{(120^{1.85})*(4\ in)^{4.87}}$ = 13 ft
	Total Dynamic Head = 60 ft + 13 ft = **73 ft**

Pump Station 2

Peak Hourly Flow: (30 units) x (240 gpd/unit) = 7,200 gpd

(7,200 gpd) ÷ (24 hr/day) ÷ (60 min/hr) = 5 gpm

Peak Hourly Flow = 5 gpm x 4.25 = 22 gpm = 0.049 ft^3/s

Force Main Sizing: 2" Main = 0.0218 ft^2 area

(0.049 ft^3/s) ÷ (0.0218 ft^2) = 2.25 ft/s > 2.0 ft/s OK

Pump Sizing: Pumping Rate = Peak Hourly Flow = **22 gpm**

Elevation Head = 100 ft

Pipe Friction Loss in 2" main = $\frac{(10.44)*(1300\ ft)*(22\ gpm)^{1.85}}{(120^{1.85})*(2\ in)^{4.87}}$ = 20 ft

Pipe Friction Loss in 4" main = $\frac{(10.44)*(1300\ ft)*(22\ gpm)^{1.85}}{(120^{1.85})*(4\ in)^{4.87}}$ = 1 ft

Total Dynamic Head = 100 ft + 21 ft = **121 ft**

A 2" diameter line is necessary to maintain a velocity of 2.0 ft/s or greater (as required by RSWF Paragraph 49.1 for cleansing) in the Pump Station 2 force main. Because this diameter is smaller than the minimum pipe diameter for raw wastewater (4"), grinder pumps will be specified in Pump Station 2. Non-clog type pumps are proposed in Pump Station 1. Two pumps will be provided at each pump station, with each pump being capable of handling the peak hourly flow individually. The pumps will operate in an alternating lead/lag configuration with the lag pump activating at the high level alarm. Wet wells are proposed for each pump station with an effective volume based on the design average flow and a filling time of less than 30 minutes. The required effective volume of each wet well is calculated as follows:

Pump Station 1 (20 gpm) x (30 min) = 600 gal wet well

Pump Station 2 (5 gpm) x (30 min) = 150 gal wet well

The final effective volume of each wet well will be based on the minimum cycle time recommended by the pump manufacturer.

4.2 Existing Collection System Analysis

Both pump stations will discharge to the existing 8" sewer main in Kelly Ridge Road. Flow from this main travels by gravity to an 8" sewer main in Fair Street. From the 8" main the flow is directed into the 12" (steep portions are 8" and 10") Fair Street relief sewer, which in turn feeds into the 14" St. Michael's Brook relief sewer. The St. Michael's Brook relief sewer increases in size steadily to 24" until its connection with the original St. Michael's Brook sewer near the district wastewater treatment plant. This sewer flows to a 20" relief sewer that directs the flow into the WWTP. The capacity and current flow at several critical segments (shallow slope and/or small pipe diameter) were estimated to determine the impact the additional flow from the proposed project will have on the existing CSD #2 wastewater collection system:

NYSDEC Hydraulic Loading Rates

3 Bedroom Apartment: 400 gpd

4 Bedroom Home: 475 gpd

Note that the 20% reduction for water saving fixtures was not taken because of the older construction in the area being analyzed. The number and type of users contributing to each segment in the collection system was estimated by aerial photography. All individual houses were considered to have four bedrooms, and all apartment/condo units were considered to

have 3 bedrooms. Please see Figure 1 at the end of this report for locations of the segments below.

Fair Street Collector MH C5-14 to MH C5-13

Pipe: 8" tile, Slope: 0.81%, Roughness Coefficient: 0.014

Manning's equation capacity: 1.0 cfs or 449 gpm

Flow to segment: (170± homes) x (475 gpd) = 80,750 gpd

Peak Hourly Flow: (80,750 gpd) ÷ (24 hr/day) ÷ (60min/hr) x 4 = 224 gpm

Percentage of utilized capacity: (224 gpm) ÷ (449 gpm) = **50%**

Additional flow from proposed project = 102 gpm

Percentage of utilized capacity with proposed project = (326 gpm) ÷ (449 gpm) = **72%**

Fair Street Collector MH C5-10 to MH C5-09

Pipe: 8" tile, Slope: 2.43%, Roughness Coefficient: 0.014

Manning's equation capacity: 1.74 cfs or 781 gpm

Flow to segment: (203± homes) x (475 gpd) = 96,425 gpd
+ (149± condos) x (400 gpd) = 59,600 gpd = 156,025 gpd

Peak Hourly Flow: (156,025 gpd) ÷ (24 hr/day) ÷ (60min/hr) x 4 = 433 gpm

Percentage of utilized capacity: (433 gpm) ÷ (781 gpm) = **55%**

Additional flow from proposed project = 102 gpm

Percentage of utilized capacity with proposed project = (535 gpm) ÷ (781 gpm) = **68%**

Fair Street Relief Sewer MH 1+15 to MH 0+00

Pipe: 12" DIP, Slope: 0.87%, Roughness Coefficient: 0.013

Manning's equation capacity: 3.32 cfs or 1,490 gpm

Flow to segment: (265± homes) x (475 gpd) = 125,875 gpd
+ (149± condos) x (400 gpd) = 59,600 gpd = 185,475 gpd

Peak Hourly Flow: (185,475 gpd) ÷ (24 hr/day) ÷ (60min/hr) x 4 = 515 gpm

Percentage of utilized capacity: (515 gpm) ÷ (1,490 gpm) = **34%**

Additional flow from proposed project = 102 gpm

Percentage of utilized capacity with proposed project = (617 gpm) ÷ (1,490 gpm) = **41%**

St. Michaels Brook Relief Sewer MH 30+19 to MH 28+39

Pipe: 16" DIP, Slope: 0.19%, Roughness Coefficient: 0.013

Manning's equation capacity: 3.34 cfs or 1,500 gpm

Flow to segment: (335± homes) x (475 gpd) = 159,125 gpd
+ (260± condos) x (400 gpd) = 104,000 gpd
+ Shoprite Plaza Flow = 35,000 gpd
+ Misc. commercial flows = 10,000 gpd = 308,125 gpd

Peak Hourly Flow: (308,125 gpd) ÷ (24 hr/day) ÷ (60min/hr) x 4 = 856 gpm

Percentage of utilized capacity: (856 gpm) ÷ (1,500 gpm) = **57%**

Additional flow from proposed project = 102 gpm

Percentage of utilized capacity with proposed project = (958 gpm) ÷ (1,500 gpm) = **64%**

Two large sewers from the high school and Route 52 discharge to the St Michaels Brook Relief sewer after the segment between MH 30+19 and MH 28+39. At this point the additional flow from the proposed project becomes a small fraction of the total flow in the sewer, therefore the analysis was not extended beyond this segment.

Several points should be considered when evaluating the above calculations. First, the estimations of existing flow do not include additional flow from inflow and infiltration (I&I) into the collection system. Much of the sewer main in the area in question was replaced between 1997 and 1999 in part to remedy I&I issues, hence I&I is expected to be minimal in the sewer mains in question. Second, the calculations above assume that the peak flows from all sources will arrive at a segment simultaneously. In reality, the peak flows arrive at a segment at different times due to the travel time between the source and the segment, and the time at which the peak flows are generated (residential vs. commercial). These different arrival times mean that the actual peak flow in the segment is likely lower than the peak flow calculated above. Third, the daily flow of 308,125 gpd in the segment of St. Michaels Brook relief sewer calculated above represents 41% of the 2005 average daily flow of 760,000 gpd to the WWTP. From review of the overall CSD#2 collection system mapping it appears that this percentage is higher that the percentage of users served indicating that the average and peak flows calculated are slightly overestimated and that the actual utilized capacity of the sewer mains is lower.

In conclusion, the sewer collection system from the proposed project to the WWTP has adequate capacity to convey the additional flow from the proposed project.

PROJECT: THE FAIRWAYS

U.S. ROUTE 6, TOWN OF CARMEL, PUTNAM COUNTY, NEW YORK

DRAWING: OFF-SITE SEWER SYSTEM SCHEMATIC

INSITE
ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C.
3 Garrett Place • Carmel, New York 10512
Phone (845) 225-9690 • Fax (845) 225-9717
www.insite-eng.com

DATE:	4-20-06
SCALE:	1"=500'±
PROJECT NO.:	05140.100
FIGURE:	1

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF July ,20 05

Forms by EnviroMan (312 244 1600)

SPDES PERMIT NO. NY– 0031356 | FACILITY NAME: Carmel Sewer District #2 | FACILITY OWNER: Town Of Carmel | FACILITY LOCATION: Carmel NY

			VOLUME OF SEWAGE TREATED			TEMPERATURE (°F.)		pH (S.U)				SETTLEABLE SOLIDS (ml/l)		cB.O.D.$_5$ (mg/l)		SUSPENDED SOLIDS (ml/l)	
Day	Date	Daily Precip In/day	Inst.Max. MGD	Daily Average MGD	Inst. Min MGD	Influent (2)	Effluent (2)	Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	Influent Maximum	Effluent Maximum	Influent Type	Effluent Type	Influent Type	Effluent Type
Fri	01	1.5		0.675		68	71	7.7	7.7	7.9	7.8	11.0	0				
Sat	02	1.4		0.676		69	72	7.7	7.6	7.8	7.7	9.0	0				
Sun	03			0.719		69	72	7.5	7.9	7.7	7.9	14.0	0				
Mon	04			0.694		67	67	7.3	7.3	7.6	7.0	8.0	0				
Tue	05			0.753		67	70	7.7	7.6	7.9	8.0	10.0	0				
Wed	06	0.35		0.718		68	71	7.9	8.1	7.9	8.0	20.0	0	170	2	220	5
Thu	07			0.688		67	71	7.9	7.7	8.1	8.1	5.0	0				
Fri	08	0.2		0.926		69	70	7.6	8.0	7.9	8.1	14.0	0				
Sat	09	1.2		0.814		70	71	7.8	7.6	7.9	7.8	7.0	0				
Sun	10			0.746		70	72	7.7	7.6	7.7	7.7	10.0	0				
Mon	11			0.722		68	71	8.0	7.8	8.2	8.2	9.0	0				
Tue	12			0.719		66	73	7.9	7.6	7.9	8.0	13.0	0				
Wed	13	0.4		0.738		68	72	8.2	8.1	7.8	8.1	15.0	0	230	2		
Thu	14			0.685		69	72	7.9	8.2	7.9	8.0	7.0	0				
Fri	15			0.748		69	72	7.6	7.8	7.9	7.6	10.0	0				
Sat	16			0.620		69	74	8.0	7.9	7.5	8.8	4.0	0				
Sun	17	1.1		0.768		70	74	7.5	7.4	7.4	7.4	12.0	0				
Mon	18			1.001		71	74	7.8	7.4	8.0	7.6	26.0	0				
Tue	19	2.25		0.863		71	72	7.4	7.2	7.6	7.6	12.0	0				
Wed	20			0.731		70	75	7.7	8.0	7.4	7.5	13.0	0	121	2	140	5
Thu	21			0.722		70	72	7.5	7.2	7.5	7.3	11.0	0				
Fri	22			0.717		70	75	7.4	7.2	7.3	7.2	10.0	0				
Sat	23			0.655		76	76	7.2	7.1	7.6	7.6	8.0	0				
Sun	24			0.685		73	76	7.4	7.4	7.9	7.8	12.0	0				
Mon	25			0.732		70	75	7.5	7.6	7.6	7.6	11.0	0				
Tue	26	0.1		0.692		73	71	7.1	7.2	7.6	7.6	13.0	0				
Wed	27			0.663		71	75	7.6	7.1	7.5	7.3	10.0	0	317	2	310	6
Thu	28			0.654		72	75	7.4	7.5	7.6	7.4	22.0	0				
Fri	29			0.700		70	74	7.3	7.2	7.4	7.6	9.0	0				
Sat	30			0.612		72	75	7.2	7.2	7.2	6.9	23.0	0				
Sun	31			0.645		73	75	7.6	7.6	7.5	7.5	9.0	0				
		Total Precip. 6.5		Monthly Average 0.728		Monthly Average Influent 70	Monthly Average Effluent 73	Minimum 7.1	Monthly Maximum 8.2	Minimum 6.9	Maximum 8.2	Monthly Maximum 26	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 209.5	Eff.(mg/l) 2.0	Rem.% 99.0%	30 day flow-weighted avg (1) Inf.(mg/l) 223.3	Eff.(mg/l) 5.0	Rem.% 97.8%
												30 Day Average Quanity Loading(1)		12.14	lbs/day		30.35	lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

92-15-7 (7/91)-27c

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF August 20 05

Forms by EnviroWin (312-244-6900)

SPDES PERMIT NO. NY-- 0031356

FACILITY NAME: Carmel Sewer District #2

FACILITY OWNER: Town Of Carmel

FACILITY LOCATION: Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED: Inst.Max MGD	Daily Average MGD	Inst. Min MGD	TEMPERATURE (°F.): Influent (2)	Effluent (2)	pH (S.U): Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	SETTLEABLE SOLIDS (ml/l): Influent Maximum	Effluent Maximum	cBOD5 (mg/l): Influent Type	Effluent Type	SUSPENDED SOLIDS (mg/l): Influent Type	Effluent Type
Mon	01			0.675		71	74	7.7	7.5	7.7	7.5	14.0	0				
Tue	02			0.679		67	75	7.7	7.4	7.6	7.3	15.0	0				
Wed	03			0.689		75	78	7.3	6.4	7.1	6.9	14.0	0	125	2	170	6.5
Thu	04			0.658		66	78	6.2	7.5	6.7	6.8	15.0	0				
Fri	05			0.658		70	78	7.5	7.3	7.1	6.5	14.0	0				
Sat	06			0.690		72	72	7.2	7.1	6.5	6.5	12.0	0				
Sun	07			0.681		72	73	7.4	7.3	6.5	7.2	15.0	0				
Mon	08			0.660		70	77	7.6	7.3	7.6	7.7	12.0	0				
Tue	09			0.637		71	78	7.8	7.4	7.9	7.3	20.0	0				
Wed	10			0.693		71	79	7.6	7.3	7.7	7.7	14.0	0				
Thu	11			0.629		72	79	7.6	7.7	7.9	7.3	15.0	0	232	2	150	5
Fri	12			0.657		71	79	7.6	7.3	7.7	7.5	16.0	0				
Sat	13	0.2		0.657		76	80	7.6	7.3	7.8	7.3	20.0	0				
Sun	14			0.633		77	80	7.0	7.5	7.5	7.5	15.0	0				
Mon	15	0.3		0.676		71	79	7.3	7.4	7.8	7.2	14.0	0				
Tue	16			0.658		70	77	8.1	8.1	8.3	8.1	18.0	0				
Wed	17			0.634		70	74	7.8	7.8	8.2	8.0	16.0	0	173	2	230	5
Thu	18			0.637		71	74	8.0	7.9	8.0	7.5	14.0	0				
Fri	19			0.641		71	74	7.8	7.7	8.0	7.5	11.0	0				
Sat	20			0.630		76	75	7.4	7.4	7.7	7.4	30.0	0				
Sun	21			0.630		75	78	7.9	7.8	7.6	7.5	12.0	0				
Mon	22			0.651		72	75	7.7	7.7	8.1	7.5	20.0	0				
Tue	23			0.624		72	74	7.9	7.5	8.0	7.7	15.0	0				
Wed	24			0.696		71	74	7.8	7.7	8.0	7.4	16.0	0	244	2	270	5
Thu	25			0.730		70	76	8.5	8.0	8.5	8.4	15.0	0				
Fri	26			0.719		76	77	8.0	7.8	8.5	7.8	15.0	0				
Sat	27			0.745		72	73	7.5	7.3	7.6	7.7	8.0	0				
Sun	28	0.4		0.683		72	73	7.3	7.3	7.9	7.9	7.0	0				
Mon	29			0.658		71	74	8.1	7.7	8.1	7.8	11.0	0				
Tue	30			0.658		71	74	7.5	7.6	7.8	7.8	15.0	0				
Wed	31	0.1		0.672		72	76	7.9	7.3	8.0	7.9	14.0	0	183	2	220	5
		Total Precip. 1		Monthly Average 0.667		Monthly Average Influent 72	Monthly Average Effluent 76	Minimum 6.2	Monthly Maximum 8.5	Minimum 6.5	Maximum 8.6	Monthly Maximum 30	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 191.4	Eff.(mg/l) 2.0	Rem.% 99.0%	30 day flow-weighted avg (1) Inf.(mg/l) 208.0	Eff.(mg/l) 5.3	Rem.% 97.5%
												30 Day Average Quanity Loading(1)		11.12	lbs/day		29.47	lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removed, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF September ,20 05

Forms by EnviroWin (315) 344-15

SPDES PERMIT NO.	FACILITY NAME	FACILITY OWNER	FACILITY LOCATION
NY-- 0031356	Carmel Sewer District #2	Town Of Carmel	Carmel NY

			VOLUME OF SEWAGE TREATED			TEMPERATURE (°F.)		pH (S.U)				SETTLEABLE SOLIDS (ml/l)		cB.O.D.$_5$ (mg/l)		SUSPENDED SOLIDS (m	
Day	Date	Daily Precip in/day	Inst.Max. MGD	Daily Average MGD	Inst. Min MGD	Influent (2)	Effluent (2)	Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	Influent Maximum	Effluent Maximum	Influent Type	Effluent Type	Influent Type	Effluent Type
Thu	01	0.5		0.663		72	76	7.4	7.4	8.0	7.8	10.0	<0.1				
Fri	02			0.658		70	75	7.6	7.6	7.8	7.9	13.0	<0.1				
Sat	03	0.1		0.629		73	73	7.4	7.6	7.9	7.8	14.0	<0.1				
Sun	04			0.610		72	74	7.6	7.6	7.9	7.9	12.0	<0.1				
Mon	05			0.663		76	77	8.1	7.7	8.5	8.5	12.0	<0.1				
Tue	06			0.655		70	73	7.9	7.9	8.3	8.2	17.0	<0.1				
Wed	07	0.1		0.682		70	73	8.4	7.5	8.3	8.4	19.0	<0.1	160	2	200	5.0
Thu	08			0.660		72	73	7.4	7.3	7.7	7.6	16.0	<0.1				
Fri	09			0.645		72	74	7.6	7.3	7.7	7.8	15.0	<0.1				
Sat	10			0.599		71	77	7.3	7.3	7.8	7.9	8.0	<0.1				
Sun	11	0.1		0.636		72	77	7.6	7.5	7.5	7.4	12.0	<0.1				
Mon	12			0.639		71	73	7.6	7.5	7.9	7.5	16.0	<0.1				
Tue	13			0.685		70	74	8.0	7.3	7.6	7.4	9.0	<0.1				
Wed	14			0.640		71	75	7.7	7.5	7.6	7.6	16.0	<0.1	240	2	210	5
Thu	15	0.1		0.664		72	75	7.4	7.8	7.4	7.4	17.0	<0.1				
Fri	16			0.638		73	75	7.7	7.0	7.4	7.3	12.0	<0.1				
Sat	17			0.641		73	80	7.0	7.2	7.1	7.1	10.0	<0.1				
Sun	18	0.75		0.637		74	77	7.0	7.0	7.2	7.1	12.0	<0.1				
Mon	19			0.671		71	75	7.5	7.4	7.5	7.1	15.0	<0.1				
Tue	20			0.636		71	74	7.6	7.6	7.0	6.7	17.0	<0.1				
Wed	21			0.756		71	74	7.6	7.8	6.8	6.5	8.0	<0.1	160	2	180	5
Thu	22			0.764		72	73	7.5	7.7	7.1	7.3	17.0	<0.1				
Fri	23	0.01		0.678		69	72	7.6	7.4	7.6	7.8	10.0	<0.1				
Sat	24			0.688		68	71	7.8	7.4	7.7	7.7	15.0	<0.1				
Sun	25			0.690		70	68	7.2	7.2	7.3	7.3	4.0	<0.1				
Mon	26	0.1		0.761		68	69	7.6	7.6	7.6	7.7	11.0	<0.1				
Tue	27			0.720		67	70	7.7	7.4	7.6	7.3	13.0	<0.1				
Wed	28			0.759		67	69	7.5	7.5	7.7	7.7	8.0	<0.1	125	2	130	5
Thu	29	0.35		0.758		70	69	7.5	7.6	8.1	7.8	15.0	<0.1				
Fri	30			0.767		66	67	7.4	7.4	7.8	7.5	12.0	<0.1				
Sat	01																
		Total Precip. 2.11		Monthly Average 0.690		Monthly Average Influent 71	Monthly Average Effluent 73	Monthly Minimum 7.0	Monthly Maximum 8.4	Minimum 6.5	Maximum 8.5	Monthly Maximum 19	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 176.3	Eff.(mg/l) 2.0	Rem.% 98.9%	30 day flow-weighted avg (1 Inf.(mg/l) 180.0	Eff.(mg/l) 5.0	Rem.% 97.2
												30 Day Average Quanity Loading(1)		11.50	lbs/day		28.76		lbs/

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab

32-15-7 (7/91)-27c

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION
DIVISION OF WATER

NAS1: WATER FACILITY OPERATION REPORT FOR THE MONTH OF October 20 05

SPDES PERMIT NO.	FACILITY NAME	FACILITY OWNER	FACILITY LOCATION
NY- 0031345	Carmel Sewer District #2	Town Of Carmel	Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED: Inst Max MGD	Daily Average MGD	Inst Min MGD	TEMPERATURE (°F): Influent (2)	Effluent (2)	pH (S.U): Influent A.M	Influent P.M.	Effluent A.M	Effluent P.M.	SETTLEABLE SOLIDS (ml/l): Influent Maximum	Effluent Maximum	cBOD5 (mg/l): Influent Type	Effluent Type	SUSPENDED SOLIDS (ml/l): Influent Type	Effluent Type
Sat	01			0.722		70	73	7.4	7.4	7.7	7.6	15.0	<0.1				
Sun	02			0.733		71	71	7.4	7.4	7.6	7.5	13.0	<0.1				
Mon	03			0.770		67	67	7.5	7.5	7.9	7.8	11.0	<0.1				
Tue	04			0.739		69	69	7.4	7.6	7.9	7.5	10.0	<0.1				
Wed	05			0.713		68	69	7.7	7.9	8.0	7.7	16.0	<0.1	158	2	200	5
Thu	06			0.652		69	69	7.5	7.6	7.9	7.7	14.0	<0.1				
Fri	07			0.620		70	71	7.6	7.4	7.5	7.7	13.0	<0.1				
Sat	08	2.7		0.738		70	72	7.7	7.4	7.1	7.3	11.0	<0.1				
Sun	09	5		1.695		68	69	7.5	7.5	7.5	7.5	11.0	<0.1				
Mon	10	0.1		0.696		66	68	7.4	7.6	7.6	7.7	15.0	<0.1				
Tue	11			0.650		67	68	7.7	7.8	8.0	7.7	15.0	<0.1				
Wed	12	2		0.908		66	67	7.5	7.4	7.6	7.5	14.0	<0.1	170	2	280	5
Thu	13	2.3		1.489		65	67	7.5	7.5	7.8	7.6	7.0	<0.1				
Fri	14	0.2		1.231		67	67	7.4	7.5	7.7	7.9	7.0	<0.1				
Sat	15	2		2.888		68	69	7.2	7.2	7.4	7.4	14.0	<0.1				
Sun	16			0.829		68	68	7.3	7.1	7.4	7.4	11.0	<0.1				
Mon	17			0.877		66	67	7.7	7.4	8.1	7.8	15.0	<0.1				
Tue	18			0.651		69	65	7.3	7.4	6.9	7.6	10.0	<0.1				
Wed	19			0.801		65	65	7.4	7.4	8.2	7.8	12.0	<0.1	195	2	300	5
Thu	20			0.753		64	65	7.7	7.5	7.8	8.0	9.0	<0.1				
Fri	21			0.748		66	65	7.6	7.7	7.8	7.9	8.0	<0.1				
Sat	22	0.1		0.929		64	63	7.4	7.7	7.5	7.8	14.0	<0.1				
Sun	23	1.7		0.856		64	63	6.7	6.9	7.4	7.3	8.0	<0.1				
Mon	24			1.051		62	63	7.6	7.4	7.5	7.4	18.0	<0.1				
Tue	25	1.5		1.266		63	63	7.5	7.5	7.5	7.6	9.0	<0.1				
Wed	26	2.4		0.984		64	62	7.5	7.6	7.6	7.9	8.0	<0.1	120	2	150	5
Thu	27			0.904		61	61	7.7	7.6	7.8	8.1	8.0	<0.1				
Fri	28			0.835		62	61	7.8	7.6	7.7	7.8	11.0	<0.1				
Sat	29			1.701		63	61	7.6	7.5	8.0	7.6	12.0	<0.1				
Sun	30			0.000		63	61	7.7	7.7	7.9	7.9	14.0	<0.1				
Mon	31			0.760		62	62	7.6	7.6	7.4	7.9	20.0	<0.1				
		Total Precip. 20.0		Monthly Average 0.955		Monthly Average Influent 66	Effluent 66	Monthly Minimum 6.7	Maximum 7.9	Minimum 6.9	Maximum 8.2	Monthly Maximum 20	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 160.8	Eff.(mg/l) 2.0	Rem.% 98.8%	30 day flow-weighted avg (1) Inf.(mg/l) 232.5	Eff.(mg/l) 5.0	Rem.% 97.8%
												30 Day Average Quantity Loading(1)		15.93 lbs/day			39.63 lbs/day		

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum/minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

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NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF November 20 05

Forms by Enviroviin (312-244-1900)

SPDES PERMIT NO. NY– 0031356 | FACILITY NAME: Carmel Sewer District #2 | FACILITY OWNER: Town Of Carmel | FACILITY LOCATION: Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED: Inst. Max. MGD	Daily Average MGD	Inst. Min MGD	TEMPERATURE (°F.): Influent (2)	Effluent (2)	pH (S.U.): Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	SETTLEABLE SOLIDS (ml/l): Influent Maximum	Effluent Maximum	cB.O.D.$_5$ (mg/l): Influent Type	Effluent Type	SUSPENDED SOLIDS (mg/l): Influent Type	Effluent Type
Tue	01			0.790		62	62	7.6	7.4	6.8	7.5	15.0	<0.1				
Wed	02			0.734		63	62	7.8	7.7	7.6	7.6	10.0	<0.1	157	2	160	5
Thu	03			0.737		62	62	7.7	7.7	7.5	7.6	12.0	<0.1				
Fri	04			0.747		63	62	7.5	7.5	7.5	7.5	15.0	<0.1				
Sat	05			0.612		60	63	7.3	7.3	7.6	7.7	13.0	<0.1				
Sun	06			0.788		61	61	7.9	7.3	7.7	7.5	18.0	<0.1				
Mon	07			0.725		63	62	7.7	7.5	7.4	7.7	11.0	<0.1				
Tue	08			0.702		62	62	7.8	7.6	7.4	7.8	10.0	<0.1				
Wed	09			0.783		62	60	7.7	7.4	7.5	7.7	12.0	<0.1	202	2	280	5
Thu	10	0.75		0.740		61	61	7.7	7.7	7.4	7.8	12.0	<0.1				
Fri	11			0.790		60	60	7.5	8.1	7.2	7.2	14.0	<0.1				
Sat	12			0.619		60	59	7.8	7.3	7.4	7.0	13.0	<0.1				
Sun	13			0.686		63	61	7.4	7.5	6.6	7.7	12.0	<0.1				
Mon	14			0.696		63	61	7.7	7.4	6.8	6.8	16.0	<0.1				
Tue	15			0.683		63	60	7.1	7.1	7.0	7.2	9.0	<0.1				
Wed	16			0.842		62	62	7.0	7.6	7.3	7.4	18.0	<0.1	168	2	170	5
Thu	17	1.4		0.777		60	61	7.6	7.8	7.2	7.9	17.0	<0.1				
Fri	18			0.757		59	58	7.5	7.8	7.1	7.8	11.0	<0.1				
Sat	19			0.691		60	60	7.4	7.6	7.5	6.8	12.0	<0.1				
Sun	20			0.782		58	60	7.5	7.5	7.7	7.6	12.0	<0.1				
Mon	21			0.807		57	58	7.3	7.4	7.0	7.7	12.0	<0.1				
Tue	22	0.6		1.057		58	57	7.5	7.4	7.8	7.0	13.0	<0.1				
Wed	23	1		0.816		57	56	7.6	7.6	7.5	7.4	5.0	<0.1				
Thu	24	0.2		0.787		56	57	7.6	7.7	7.3	7.4	8.0	<0.1				
Fri	25			0.737		60	57	7.5	7.7	7.6	7.5	12.0	<0.1				
Sat	26			0.748		57	58	7.6	7.6	7.0	7.7	6.0	<0.1				
Sun	27			0.766		57	58	7.7	7.8	7.4	7.5	13.0	<0.1				
Mon	28			0.737		59	56	7.8	7.4	7.5	7.5	12.0	<0.1	125	2	230	5
Tue	29			0.987		58	58	7.6	7.5	7.6	7.3	17.0	<0.1				
Wed	30	1.45		0.936		58	59	7.5	7.8	7.2	7.3	9.0	<0.1	162	2	340	5
Thu	01																
		Total Precip. 5.4		Monthly Average 0.769		Monthly Average Influent 60	Effluent 60	Minimum 7.0	Monthly Maximum 8.1	Minimum 6.6	Maximum 7.9	Monthly Maximum 18	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 160.8	Eff.(mg/l) 2.0	Rem.% 98.8%	30 day flow-weighted avg (1) Inf.(mg/l) 236.0	Eff.(mg/l) 5.0	Rem.% 97.9%
												30 Day Average Quanity Loading(1)		12.82	lbs/day		32.05	lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF December ,20 05

SPDES PERMIT NO. NY– 0031356 | FACILITY NAME: Carmel Sewer District #2 | FACILITY OWNER: Town Of Carmel | FACILITY LOCATION: Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED: Inst.Max. MGD	Daily Average MGD	Inst. Min MGD	TEMPERATURE (°F.): Influent (2)	Effluent (2)	pH (S.U): Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	SETTLEABLE SOLIDS (ml/l): Influent Maximum	Effluent Maximum	cB.O.D.5 (mg/l): Influent Type	Effluent Type	SUSPENDED SOLIDS (ml/l): Influent Type	Effluent Type
Thu	01			0.887		57	56	7.5	7.6	7.2	7.5	13.0	<0.1				
Fri	02			0.888		57	56	7.6	7.8	7.8	7.5	13.0	<0.1				
Sat	03			0.888		57	54	7.6	7.6	8.1	7.3	15.0	<0.1				
Sun	04	0.14		0.889		53	53	7.4	7.4	7.2	7.4	6.0	<0.1				
Mon	05	0.1		0.890		54	54	7.9	7.7	7.3	7.9	10.0	<0.1				
Tue	06			0.891		54	54	7.9	7.6	7.4	7.5	13.0	<0.1				
Wed	07			0.892		53	52	7.7	7.7	7.4	7.4	7.0	<0.1	176	2	230	5.0
Thu	08			0.892		54	52	7.6	7.7	7.4	7.6	12.0	<0.1				
Fri	09	0.8		0.893		47	46	7.6	7.8	7.1	7.6	12.0	<0.1				
Sat	10			0.894		54	47	7.6	7.5	7.8	7.8	16.0	<0.1				
Sun	11			0.894		56	51	7.3	6.8	6.6	7.4	12.0	<0.1				
Mon	12			0.895		53	52	7.8	7.6	7.2	7.9	12.0	<0.1				
Tue	13			0.896		52	50	7.8	7.4	7.1	6.8	11.0	<0.1				
Wed	14			0.897		49	49	7.8	7.9	6.8	7.1	12.0	<0.1	188	2	450	5
Thu	15			0.897		50	49	7.8	7.6	7.0	7.0	20.0	<0.1				
Fri	16	0.85		0.898		53	51	7.8	7.5	7.2	7.2	14.0	<0.1				
Sat	17	0.9		0.899		53	50	8.0	7.4	7.2	7.2	5.0	<0.1				
Sun	18			0.900		53	52	7.8	7.3	6.9	7.3	15.0	<0.1				
Mon	19			0.900		52	51	7.9	7.9	7.4	7.7	12.0	<0.1				
Tue	20			0.901		54	50	7.7	7.9	7.2	7.8	8.0	<0.1				
Wed	21			0.902		51	50	7.8	7.5	7.6	7.7	8.0	<0.1	165	2	200	5
Thu	22			0.903		54	50	7.8	7.8	7.9	7.6	15.0	<0.1				
Fri	23			0.903		55	55	7.6	8.2	7.4	8.1	12.0	<0.1				
Sat	24			0.904		54	54	7.5	7.4	7.6	7.4	20.0	<0.1				
Sun	25			0.905		53	55	7.3	7.5	7.8	7.6	6.0	<0.1				
Mon	26	1.1		0.906		53	56	7.6	7.5	7.2	7.3	10.0	<0.1				
Tue	27	0.1		0.906		52	51	7.4	7.5	7.4	7.6	7.0	<0.1				
Wed	28			0.907		54	51	7.4	7.3	7.1	7.6	11.0	<0.1	170	2	200	5
Thu	29	1		0.908		55	52	7.6	7.8	7.2	7.6	11.0	<0.1				
Fri	30	0.7		0.909		53	52	7.4	7.4	7.7	7.2	12.0	<0.1				
Sat	31			0.910		53	50	7.2	7.6	7.5	7.3	11.0	<0.1				
		Total Precip. 5.69		Monthly Average 0.898		Monthly Average Influent 53	Monthly Average Effluent 52	Monthly Minimum 6.8	Monthly Maximum 8.2	Monthly Minimum 6.8	Monthly Maximum 8.1	Monthly Maximum 20	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 174.8	Eff.(mg/l) 2.0	Rem.% 98.9%	30 day flow-weighted avg (1) Inf.(mg/l) 270.0	Eff.(mg/l) 5.0	Rem.% 98.1%
												30 Day Average Quantity Loading(1)		14.98	lbs/day		37.45	lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF January ,20 06

Form by EnviroWin (312-244-1800)

SPDES PERMIT NO. NY-- 0031356

FACILITY NAME: Carmel Sewer District #2

FACILITY OWNER: Town Of Carmel

FACILITY LOCATION: Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED: Inst.Max. MGD	Daily Average MGD	Inst. Min MGD	TEMPERATURE (°F.): Influent (2)	Effluent (2)	pH (S.U): Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	SETTLEABLE SOLIDS (ml/l): Influent Maximum	Effluent Maximum	cB.O.D.$_5$ (mg/l): Influent Type	Effluent Type	SUSPENDED SOLIDS (mg/l): Influent Type	Effluent Type
Sun	01	0.3		0.911		52	56	7.4	7.4	7.2	7.0	12.0	<0.1				
Mon	02			0.912		54	53	7.5	7.5	7.1	7.6	13.0	<0.1				
Tue	03	1.2		0.912		55	49	7.7	7.4	7.6	7.5	9.0	<0.1				
Wed	04	0.2		0.913		50	50	7.8	8.0	7.5	7.8	5.0	<0.1	218	2	350	5
Thu	05			0.914		53	50	7.6	7.5	7.4	7.4	13.0	<0.1				
Fri	06			0.915		52	50	7.6	7.6	7.2	7.9	18.0	<0.1				
Sat	07			0.916		52	50	7.4	7.6	7.4	6.9	15.0	<0.1				
Sun	08			0.917		54	50	7.6	7.7	7.3	7.4	13.0	<0.1				
Mon	09			0.918		52	51	7.6	8.2	7.0	7.0	9.0	<0.1				
Tue	10			0.919		52	51	7.5	7.7	7.3	7.5	11.0	<0.1				
Wed	11			0.919		52	50	7.7	7.6	7.5	7.6	12.0	<0.1	200	2	240	5
Thu	12	0.7		0.920		52	51	7.3	7.6	7.6	7.4	10.0	<0.1				
Fri	13	1.0		0.921		50	51	7.6	7.6	7.6	7.8	10.0	<0.1				
Sat	14	1.3		0.922		51	50	7.6	7.8	7.4	7.5	13.0	<0.1				
Sun	15			0.923		50	50	7.5	7.6	7.5	7.4	9.0	<0.1				
Mon	16			0.924		48	47	7.9	7.8	8.0	7.7	8.0	<0.1				
Tue	17			0.925		48	47	7.9	7.9	7.9	7.9	16.0	<0.1				
Wed	18	0.7		0.926		53	50	7.6	7.5	7.9	7.4	5.0	<0.1	150	2	140	5
Thu	19	0.4		0.928		50	49	7.7	7.7	8.1	7.7	6.0	<0.1				
Fri	20			0.929		51	50	7.5	7.2	7.3	7.6	9.0	<0.1				
Sat	21			0.930		56	53	7.6	7.1	7.6	7.5	10.0	<0.1				
Sun	22			0.931		51	52	7.6	7.6	7.5	7.6	12.0	<0.1				
Mon	23	0.8		0.931		50	50	7.5	8.1	7.6	7.7	3.0	<0.1				
Tue	24	1.0		0.932		50	50	7.6	7.6	7.6	8.0	8.0	<0.1				
Wed	25	0.3		0.933		52	50	7.5	7.5	7.8	7.6	17.0	<0.1	180	2	300	5
Thu	26			0.934		50	49	8.0	8.0	8.1	7.8	10.0	<0.1				
Fri	27			0.935		52	49	7.7	8.0	7.5	7.7	12.0	<0.1				
Sat	28			0.936		51	55	7.6	7.6	7.6	7.4	11.0	<0.1				
Sun	29			0.937		52	50	7.8	7.8	7.7	7.6	8.0	<0.1				
Mon	30	0.2		0.938		52	51	7.6	7.9	7.3	7.4	8.0	<0.1				
Tue	31			0.938		53	50	7.4	7.5	7.4	7.3	31.0	<0.1				
		Total Precip. 8.0		Monthly Average 0.925		Monthly Average Influent 51	Effluent 49	Monthly Minimum 7.1	Maximum 8.2	Minimum 6.9	Maximum 8.1	Monthly Maximum 31	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 186.5	Eff.(mg/l) 2.0	Rem.% 98.9%	30 day flow-weighted avg (1) Inf.(mg/l) 257.5	Eff.(mg/l) 5.0	Rem.% 98.1%
														30 Day Average Quanity Loading(1)		15.42 lbs/day			38.55 lbs/day

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF February 20 06

Forms by EnviroWin (312-244-1900)

SPDES PERMIT NO. NY– 0031356

FACILITY NAME: Carmel Sewer District #2

FACILITY OWNER: Town Of Carmel

FACILITY LOCATION: Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED: Inst. Max. MGD	VOLUME OF SEWAGE TREATED: Daily Average MGD	VOLUME OF SEWAGE TREATED: Inst. Min MGD	TEMPERATURE (°F.): Influent (2)	TEMPERATURE (°F.): Effluent (2)	pH (S.U): Influent A.M.	pH (S.U): Influent P.M.	pH (S.U): Effluent A.M.	pH (S.U): Effluent P.M.	SETTLEABLE SOLIDS (ml/l): Influent Maximum	SETTLEABLE SOLIDS (ml/l): Effluent Maximum	cBOD5 (mg/l): Influent Type	cBOD5 (mg/l): Effluent Type	SUSPENDED SOLIDS (ml/l): Influent Type	SUSPENDED SOLIDS (ml/l): Effluent Type
Wed	01			0.797		50	50	7.6	7.6	7.4	7.4	8.0	<0.1	175	2	220	5
Thu	02			0.765		52	50	7.7	7.9	7.4	7.4	10.0	<0.1				
Fri	03	0.6		0.869		51	51	7.5	7.8	7.2	7.1	19.0	<0.1				
Sat	04			0.883		51	51	7.6	7.5	7.4	7.4	12.0	<0.1				
Sun	05	0.6		0.924		51	51	7.5	7.5	7.3	7.4	8.0	<0.1				
Mon	06			0.824		51	50	8.1	7.9	8.1	8.0	8.0	<0.1				
Tue	07			0.795		51	50	7.8	7.3	7.5	7.7	9.0	<0.1				
Wed	08			0.789		50	49	7.7	7.8	7.5	8.0	5.0	<0.1	114	2	160	5
Thu	09			0.768		50	49	7.7	7.7	7.8	7.7	7.0	<0.1				
Fri	10			0.756		49	48	7.7	7.8	7.5	7.7	20.0	<0.1				
Sat	11			0.708		49	48	8.1	7.8	7.6	7.6	12.0	<0.1				
Sun	12	0.3		0.760		48	48	7.9	7.8	7.8	7.7	14.0	<0.1				
Mon	13	0.3		0.752		49	47	7.7	7.7	7.3	7.3	12.0	<0.1				
Tue	14			0.746		50	48	7.8	8.1	7.5	7.8	11.0	<0.1				
Wed	15			0.739		54	49	7.6	7.5	7.7	7.5	15.0	<0.1	177	2	270	5
Thu	16			0.765		52	50	7.4	8.1	7.5	7.7	10.0	<0.1				
Fri	17			0.719		51	48	7.6	7.6	7.0	7.8	8.0	<0.1				
Sat	18			0.750		49	47	7.8	7.5	7.0	7.1	10.0	<0.1				
Sun	19			0.788		47	48	7.6	7.5	7.5	7.2	8.0	<0.1				
Mon	20			0.742		49	48	7.7	7.6	7.2	7.1	5.0	<0.1				
Tue	21			0.719		50	48	8.0	8.1	7.1	6.8	7.0	<0.1				
Wed	22			0.691		50	49	7.8	8.0	7.2	7.5	8.0	<0.1	153	2	160	5
Thu	23			0.702		51	49	8.0	7.6	7.5	7.2	19.0	<0.1				
Fri	24			0.688		51	49	7.9	7.8	7.5	7.4	7.0	<0.1				
Sat	25			0.689		51	48	7.9	8.0	7.5	7.2	15.0	<0.1				
Sun	26			0.739		52	47	8.1	8.0	7.6	7.6	13.0	<0.1				
Mon	27			0.687		51	46	7.8	8.3	7.2	7.5	10.0	<0.1				
Tue	28			0.694		48	46	8.0	7.9	6.9	7.2	15.0	<0.1				
Wed	01																
Thu	02																
Fri	03																
		Total Precip. 1.8		Monthly Average 0.760		Monthly Average Influent 50	Monthly Average Effluent 48	Monthly Minimum 7.3	Monthly Maximum 8.3	Minimum 6.8	Maximum 8.1	Monthly Maximum 20	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 154.8	Eff.(mg/l) 2.0	Rem.% 98.7%	30 day flow-weighted avg (1) Inf.(mg/l) 202.5	Eff.(mg/l) 5.0	Rem.% 97.5%
													30 Day Average Quanity Loading(1)	12.67	lbs/day		31.68	lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

92-15-7 (7/91)-27c

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF March ,20 06

Forms by EnviroWin (312-244-1900)

SPDES PERMIT NO.	FACILITY NAME	FACILITY OWNER	FACILITY LOCATION
NY- 0031356	Carmel Sewer District #2	Town Of Carmel	Carmel NY

			VOLUME OF SEWAGE TREATED			TEMPERATURE (°F.)		pH (S.U)				SETTLEABLE SOLIDS (ml/l)		cB.O.D.$_5$ (mg/l)		SUSPENDED SOLIDS (mll)	
Day	Date	Daily Precip in/day	Inst.Max. MGD	Daily Average MGD	Inst. Min MGD	Influent (2)	Effluent (2)	Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	Influent Maximum	Effluent Maximum	Influent Type	Effluent Type	Influent Type	Effluent Type
Wed	01			0.671		51	47	7.9	8.0	7.2	7.0	13.0	<0.1	123	2	300	5
Thu	02			0.672		49	48	7.9	8.2	7.1	7.0	13.0	<0.1				
Fri	03	0.4		0.591		49	46	7.6	7.8	7.1	7.0	25.0	<0.1				
Sat	04			0.806		52	55	7.8	8.0	7.5	7.1	12.0	<0.1				
Sun	05			0.651		53	52	7.9	8.3	7.3	7.7	14.0	<0.1				
Mon	06			0.701		53	48	7.9	8.3	7.9	7.9	11.0	<0.1				
Tue	07			0.672		50	49	8.2	7.9	7.6	7.6	13.0	<0.1				
Wed	08			0.628		50	49	7.9	7.5	7.2	7.1	7.0	<0.1	136	2	520	5
Thu	09			0.753		52	50	7.7	7.6	7.3	7.1	13.0	<0.1				
Fri	10			0.631		51	51	8.0	8.1	7.6	7.4	13.0	<0.1				
Sat	11	0.1		0.728		52	52	7.8	7.9	7.2	7.5	12.0	<0.1				
Sun	12	0.1		0.734		53	50	7.9	7.4	7.5	7.4	11.0	<0.1				
Mon	13	0.1		0.707		52	52	7.8	7.9	7.2	7.5	12.0	<0.1				
Tue	14			0.716		53	53	8.0	7.8	7.7	7.4	13.0	<0.1				
Wed	15			0.683		50	50	8.0	7.9	7.3	7.2	12.0	<0.1	172	2	240	5
Thu	16			0.707		52	50	7.8	8.1	7.6	7.7	16.0	<0.1				
Fri	17			0.661		53	48	7.9	7.7	7.2	7.4	11.0	<0.1				
Sat	18			0.715		52	50	7.7	7.7	7.5	7.6	23.0	<0.1				
Sun	19			0.700		52	50	7.7	7.7	7.9	7.7	10.0	<0.1				
Mon	20			0.706		53	50	7.6	8.0	7.6	8.0	13.0	<0.1				
Tue	21			0.701		51	49	8.1	7.9	7.3	7.6	14.0	<0.1				
Wed	22			0.681		52	48	7.7	8.2	7.1	8.9	12.0	<0.1	57	2	280	1
Thu	23			0.671		54	50	7.7	7.9	7.4	7.2	10.0	<0.1				
Fri	24			0.694		52	51	8.0	7.7	7.1	7.1	13.0	<0.1				
Sat	25			0.689		53	55	8.0	8.2	7.8	8.1	8.0	<0.1				
Sun	26			0.653		53	55	8.0	7.8	7.7	7.4	15.0	<0.1				
Mon	27			0.649		53	52	7.9	7.9	7.8	7.3	8.0	<0.1				
Tue	28			0.671		53	53	7.9	7.5	8.1	7.5	16.0	<0.1				
Wed	29			0.647		53	52	7.7	8.7	7.0	7.1	11.0	<0.1	120	2	220	5
Thu	30			0.654		54	53	8.1	7.9	7.6	7.6	12.0	<0.1				
Fri	31			0.627		56	54	8.0	7.8	7.1	7.5	14.0	<0.1				
		Total Precip.		Monthly Average		Monthly Average Influent	Monthly Average Effluent	Monthly Minimum	Monthly Maximum	Minimum	Maximum	Monthly Maximum	Monthly Maximum	30 day flow-weighted avg (1) Inf.(mg/l)	Eff.(mg/l) Rem.%	30 day flow-weighted avg (1) Inf.(mg/l)	Eff.(mg/l) Rem.%
		0.7		0.682		52	50	7.4	8.7	6.9	8.1	25	<0.1	121.6	2.0 98.4%	312.0	4.2 98.7%
												30 Day Average Quanity Loading(1)		11.38 lbs/day		23.90 lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

92-15-7 (7/91)-27c

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF April ,20 06

SPDES PERMIT NO. NY– 0031356

FACILITY NAME: Carmel Sewer District #2

FACILITY OWNER: Town Of Carmel

FACILITY LOCATION: Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED: Inst. Max. MGD	Daily Average MGD	Inst. Min MGD	TEMPERATURE (°F.): Influent (2)	Effluent (2)	pH (S.U.): Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	SETTLEABLE SOLIDS (ml/l): Influent Maximum	Effluent Maximum	cBOD5 (mg/l): Influent Type	Effluent Type	SUSPENDED SOLIDS (ml/l): Influent Type	Effluent Type
Sat	01			0.651		53	54	8.0	7.5	7.2	7.6	15.0	<0.1				
Sun	02			0.635		53	53	7.7	7.8	7.4	7.5	12.0	<0.1				
Mon	03			0.760		53	54	7.9	8.0	7.5	8.3	18.0	<0.1				
Tue	04			0.735		54	53	8.1	8.4	8.3	7.5	10.0	<0.1				
Wed	05			0.700		53	52	7.9	7.8	7.9	7.5	11.0	<0.1	90	2	290	5
Thu	06			0.684		53	53	8.0	8.0	7.3	7.6	13.0	<0.1				
Fri	07			0.718		53	53	7.8	7.6	7.5	7.2	12.0	<0.1				
Sat	08	0.6		0.729		52	53	7.5	7.8	7.6	7.5	15.0	<0.1				
Sun	09			0.672		52	53	7.6	7.5	7.5	7.6	14.0	<0.1				
Mon	10			0.675		54	53	7.6	7.6	7.8	7.5	5.0	<0.1				
Tue	11			0.659		54	54	7.7	7.5	7.5	7.5	6.0	<0.1				
Wed	12			0.668		54	54	7.5	7.6	7.5	7.6	9.0	<0.1				
Thu	13			0.677		56	56	7.7	7.7	7.5	7.6	10.0	<0.1	170	2	270	5
Fri	14			0.702		54	55	7.6	7.6	7.5	7.6	12.0	<0.1				
Sat	15			0.670		58	61	7.6	8.0	7.3	7.5	15.0	<0.1				
Sun	16			0.669		58	60	8.5	8.0	8.4	8.6	13.0	<0.1				
Mon	17			0.679		55	57	8.6	8.1	8.5	7.7	13.0	<0.1				
Tue	18			0.661		58	58	7.7	7.9	7.5	7.3	13.0	<0.1				
Wed	19			0.664		57	57	7.9	7.7	7.7	7.4	13.0	<0.1				
Thu	20			0.665		58	58	7.6	8.1	7.6	7.5	13.0	<0.1	100	2	450	5
Fri	21			0.664		58	59	7.6	8.0	7.5	7.6	13.0	<0.1				
Sat	22	1.1		0.850		56	56	7.8	7.7	7.8	7.4	13.0	<0.1				
Sun	23			1.025		53	56	7.8	7.6	7.2	7.4	10.0	<0.1				
Mon	24			0.849		55	56	7.8	7.8	7.2	7.2	8.0	<0.1				
Tue	25			0.793		56	57	7.4	7.5	7.3	7.2	12.0	<0.1				
Wed	26			0.778		56	57	7.9	8.0	7.3	6.9	9.0	<0.1				
Thu	27			0.729		57	58	7.7	7.6	7.1	7.6	12.0	<0.1	64	2	200	5
Fri	28			0.723		57	57	8.0	7.5	7.7	7.7	12.0	<0.1				
Sat	29			0.691		61	59	7.6	7.8	7.0	7.3	29.0	<0.1				
Sun	30			0.717		60	60	7.6	7.6	7.5	7.7	18.0	<0.1				
Mon	01											13.0	<0.1				
		Total Precip. 1.9		Monthly Average 0.717		Monthly Average Influent 55	Monthly Average Effluent 58	Monthly Minimum 7.4	Monthly Maximum 8.6	Monthly Minimum 6.9	Monthly Maximum 8.5	Monthly Maximum 29	Monthly Maximum <0.1	30 day flow-weighted avg (1) lbs/(mg/l) 111.9	Eff.(mg/l) 2.0	Rem.% 98.2%	30 day flow-weighted avg (1) lbs/(mg/l) 302.6	Eff.(mg/l) 6.0	Rem.% 98.3%
												30 Day Average Quanity Loading(1)		11.95	lbs/day		29.89	lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum, minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

Appendix G

Wastewater Engineering Report
for Gateway Summit

INSITE
ENGINEERING, SURVEYING &
LANDSCAPE ARCHITECTURE, P.C.

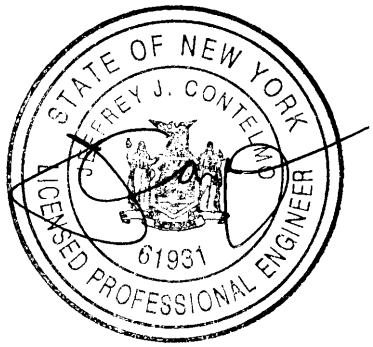
WASTEWATER ENGINEERING REPORT

For

GATEWAY SUMMIT
Town of Carmel, New York

July 20, 2006

Prepared By
Insite Engineering, Surveying & Landscape Architecture, P.C.
3 Garrett Place
Carmel, New York 10512



1.0 INTRODUCTION

The subject project is located on four parcels totaling 85.6 ± acres in the Town of Carmel. The site is located along the northern side of NYS Route 6 with frontage stretching from the intersection with Old Route 6 east to the Southeast Town line. The properties are designated as tax map parcel numbers 55.11-1-32, 55.-2-24, 55.-2-25, and 55.-2-23.1.

The majority of the property is undeveloped, although a portion of the southern part of the site along Route 6 is developed with an existing building and parking area. The existing development was the former home of the Town of Carmel Highway Department.

The subject site is proposed to be developed as an eight lot subdivision with varied uses across the site. Lot 1 of the proposed subdivision is proposed to be developed as a hotel complex with a banquet center and associated parking. The hotel will be located along the southeastern corner of the property along the site's frontage with Route 6. Lots 2, 3, and 4 will be developed with two restaurants and an office building on a pad in the southwestern property corner. Lot 5 is located to the south of the YMCA site and is proposed to be developed as an office building with associated parking. Lot 7 is proposed to be developed with 150 senior housing units. These units are located in the northwest property corner adjacent to the Centennial Golf Course. A clubhouse is proposed for the use of residents and their guests only. Lot 6 of the subdivision, located northwest of Lot 1, is proposed to be developed with a recreation building for the YMCA. Access to the site for lots 1, 5, 6 and 7 will be provided by a road off NYS Route 6. The road will gain access to the site in the southeast property corner, climb through the eastern portion of the site, cross the stream and continue to traverse the ridgeline on the western side of the stream. The proposed road will continue through to the property to service the proposed development of the Fairways project to the north. Access to lots 2, 3, and 4 will be provided by an additional access road servicing the site off NYS Route 6.

Water supply and wastewater generated by the proposed project will be serviced by the Town of Carmel Water District #2 (CWD#2) and Sewer District #2 (CSD#2) respectively.

2.0 PROJECT DESIGN FLOWS

The average daily wastewater design flows for the proposed project are based on the hydraulic loading rates listed in the Putnam County Department of Health Bulletin CS-31. For residential and commercial wastewater uses, bulletin CS-31 references the loading rates given in the New York State Department of Environmental Conservation's (NYSDEC) publication *Design Standards for Wastewater Treatment Works – 1988*. The following table lists the proposed uses, associated hydraulic loading rates, and the design flow rates (gallons per day or gpd) for the Gateway Summit project. Note that no additional flow is expected for the clubhouse because it is proposed to serve residents and their guests, 400 gpd has been included for potential visitors. The NYSDEC publication allows for a 20% decrease in hydraulic loading rates for premises equipped with water saving plumbing fixtures. Since current standards dictate that water saving devices be used in all new construction, this 20% reduction is reflected in the table below. Also listed are anticipated actual flows which are estimated at 50% of the design flow:

Lot	Proposed Use	Hydraulic Loading Rate*	Average Daily Design Flow (gpd)	Anticipated Actual Flows (gpd)
1	Hotel (150 rooms)	96 gpd/room	14,400	7,200
	Banquet (400 seats)	16 gpd/seat	6,400	3,200
2	Restaurant (230 seats)	28 gpd/seat	6,440	3,220
3	Restaurant (200 seats)	28 gpd/seat	5,600	2,800
4	Office (10,000 sf)	0.08 gpd/sf	800	400
5	Office/Retail (6,000 sf)	0.08 gpd/sf	480	240
6	YMCA (500 people)	20 gpd/person	10,000	5,000
7A	150 2-BR Senior Housing Units	240 gpd/unit	36,000	18,000
7A	Clubhouse (visitors)	400 gpd	400	200
Total			**80,520**	**40,260**

* Hydraulic loading rate from NYSDEC publication *Design Standards for Wastewater Treatment Works – 1988*

The average daily water flow is calculated in the *Water Engineering Report for Gateway Summit* as 89,520 gpd, or 9,000 gpd more than the average daily wastewater flow. For residential water demand, bulletin CS-31 does not allow a 20% reduction for water saving fixtures. This accounts for water uses such as car washing, plant watering, and others that create additional water demand, but do not add to wastewater flows.

The peak hourly flow for domestic is calculated using a peaking factor that is based on the population of the subject project. The publication *Recommended Standards for Wastewater Facilities - 2004*[1] was used to determine a peaking factor of four.

Peak Hourly Flow

80,520 gpd ÷ (24 hr/day) ÷ (60 min/hr) = 55.9 gallons per minute (gpm)

Peak Hourly Flow = 55.9 gpm x 4 ≈ **224 gpm**

3.0 EVALUATION OF EXISTING WASTEWATER TREATMENT PLANT CAPACITY

As requested by the Town of Carmel Engineer, the impacts of The Gateway Summit project on CSD#2 have been assessed in conjunction with several other major proposed developments in the district. Based on the latest Water Supply and Wastewater Disposal Engineer's Reports for these projects the following wastewater design flows and anticipated actual flows (50% of design flows) have been established:

[1] Published by the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers

	Design Flow	Anticipated Actual Flow
Gateway Summit	80,520 gpd	40,260 gpd
Fairways	36,400 gpd	18,200 gpd
Carmel Corporate Park[2]	91,200 gpd	45,600 gpd
Hillcrest Commons	36,400 gpd	18,200 gpd
Total Project Design Flows	**244,520 gpd**	**122,260 gpd**
	0.24 mgd	**0.12 mgd**

Note these daily estimates of usage are design flows for engineering design and permitting purposes. Historically actual wastewater usage is typically 50% to 80% of the design flow. In order to present conservative estimates the following estimate of available systems capacities utilizes the projects' design flows.

Sewer District #2

Plant capacity	=	1.10 mgd (per 1.1 MGD addendum to Facility Report Supplement, September 1992 by J. Robert Folchetti & Associates, LLC)
2005 average daily flow	=	*0.76 mgd (per information supplied by Town of Carmel)
2006 average daily flow through June	=	*0.70 mgd (per information supplied by Town of Carmel)
Project design flows	=	0.24 mgd (0.12 mgd anticipated actual flow)
Total Projected daily flow	=	1.00 mgd (0.889 mgd anticipated actual flow)
Excess capacity	**=**	**0.10 mgd (0.22 mgd anticipated actual excess capacity)**

* The average daily flows are based on the Wastewater Facility Operation and Reports for the treatment plant. Review of the reports as well as discussions with the Town Engineer indicate that there was a problem with the meter during December 2005 and January 2006 such that the recorded flow increased daily and consistently throughout December 2005 and January 2006. In order to be conservative the 2005 average daily flow (higher flow) was utilized to assess the capacity. This data is erroneous and therefore was not included in the above flows.

Based on review of the attached reports there is sufficient capacity in the wastewater treatment plant (WWTP) to service the proposed Gateway Summit project as well as the other major proposed projects currently under review in CSD#2.

It is our understanding that the Town Engineer is planning on performing sewer system evaluation studies (SSES) of localized sewer collection infrastructure to identify and eliminate any inflow or infiltration problems. The project applicant has offered to make a monetary contribution to mitigate the SSES costs for the Old Route 6 system, and Fair Street/Michael's Brook system, which are the sections of sewers planned to receive project sewer flows.

[2] The Carmel Corporate Park project is proposed to be revised into an age-restricted housing development with approximately 380 two-bedroom units. The proposed flow for the housing development is greater than the previously approved office park, therefore this flow will be used.

4.0 PROPOSED CONNECTIONS TO CARMEL SEWER DISTRICT #2

Wastewater from the Gateway Summit project will be collected in gravity sewer mains and conveyed to the 8" sewer main that runs along Old Route 6. This 8" sewer main connects to the 8" Old Brewster Road relief sewer. This line flows to the Old Brewster Road pump station, which lifts the flow to the district WWTP across the street. The capacity of and current flow in the existing sewer main were estimated to determine the impact the additional flow from the proposed project will have on the existing sewer main and pump station:

NYSDEC Hydraulic Loading Rate: 0.1 gpd/sf commercial space

Note that the 20% reduction for water saving fixtures was not taken because of the older construction in the area being analyzed. The number and type of users contributing to each segment in the collection system was estimated by aerial photography. Please see Figure 1 at the end of this report for the location of the segment below.

Old Brewster Road Relief Sewer MH 3+80 to MH 0+00

Pipe: 8" DIP, Slope: 0.48%, Roughness Coefficient: 0.013

Manning's equation capacity: 0.84 cfs or 377 gpm

Flow to segment: (54,500 sf commercial) x (0.1 gpd/sf) = 5,450 gpd

Peak Hourly Flow: (5,540gpd) ÷ (24 hr/day) ÷ (60min/hr) x 4 = 16 gpm

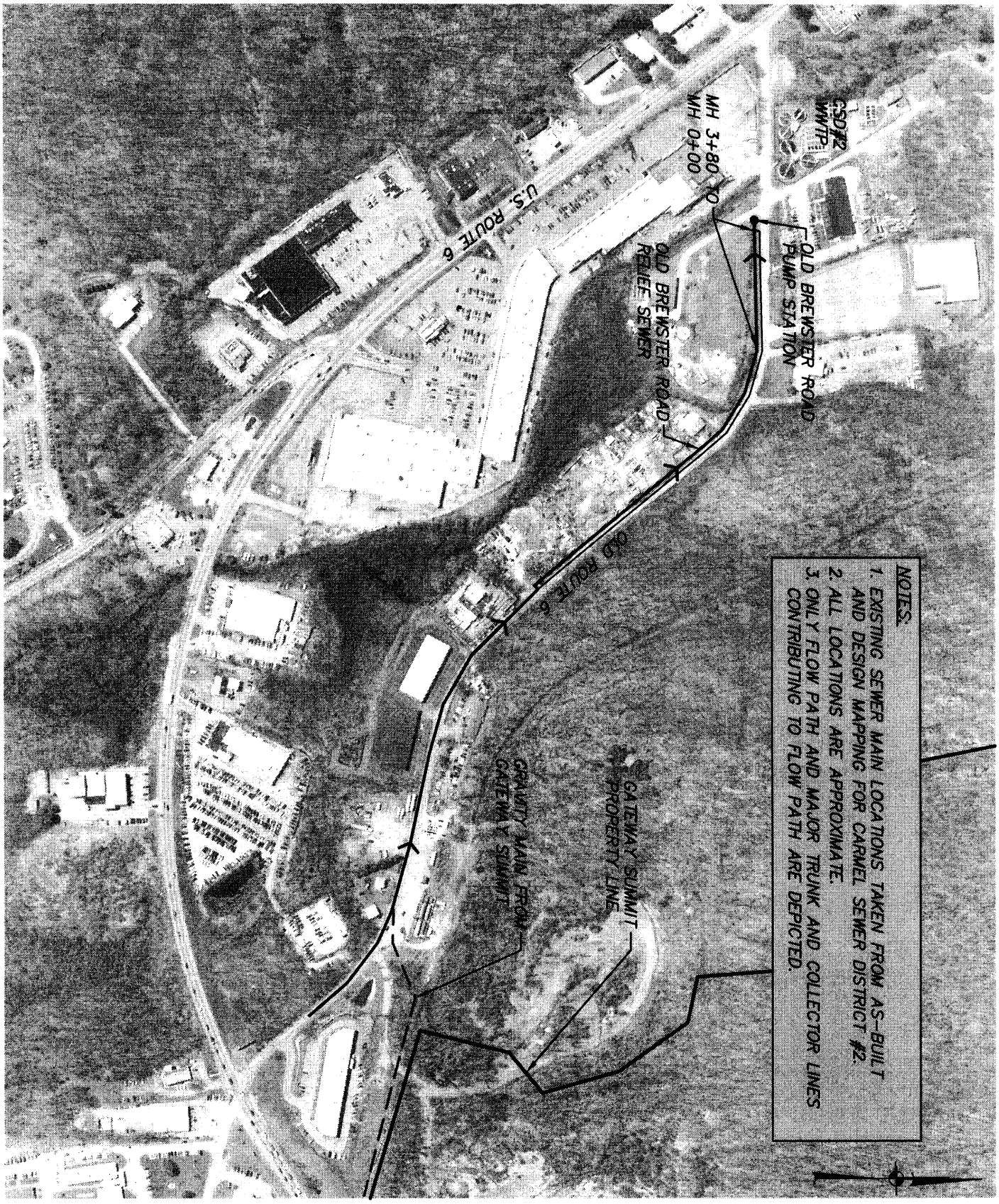
Percentage of utilized capacity: (16 gpm) ÷ (377 gpm) = **4%**

Additional flow from proposed project = 224 gpm

Percentage of utilized capacity with proposed project = (240 gpm) ÷ (377 gpm) = **64%**

Old Brewster Road Pump Station

According to the CSD#2 "Wastewater Collection System Additions Contract Documents" (October 1994) prepared by J. Robert Folchetti and Associates, the Old Brewster Road pump station design flow is 480 gpm. This pumping capacity is adequate to handle the 240 gpm total peak hourly flow anticipated from the proposed project and existing connections.



PROJECT: GATEWAY SUMMIT U.S. ROUTE 6, TOWN OF CARMEL, PUTNAM COUNTY, NEW YORK	INSITE ENGINEERING, SURVEYING & LANDSCAPE ARCHITECTURE, P.C. 3 Garrett Place • Carmel, New York 10512 Phone (845) 225-9690 • Fax (845) 225-9717 www.insite-eng.com
DRAWING: OFF-SITE SEWER SYSTEM SCHEMATIC	DATE: 4-20-06 SCALE: 1"=400'± PROJECT NO.: 04232.100 FIGURE: 1

~~92-15-7 (7/91)-27c~~

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF July ,20 05

Forms by EnviroMan (312-244-1800)

SPDES PERMIT NO.	FACILITY NAME	FACILITY OWNER	FACILITY LOCATION
NY- 0031356	Carmel Sewer District #2	Town Of Carmel	Carmel NY

			VOLUME OF SEWAGE TREATED			TEMPERATURE (°F.)		pH (S.U)				SETTLEABLE SOLIDS (ml/l)		cB.O.D.$_5$ (mg/l)		SUSPENDED SOLIDS (mg/l)	
Day	Date	Daily Precip In/day	Inst.Max. MGD	Daily Average MGD	Inst. Min MGD	Influent (2)	Effluent (2)	Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	Influent Maximum	Effluent Maximum	Influent Type	Effluent Type	Influent Type	Effluent Type
Fri	01	1.5		0.675		68	71	7.7	7.7	7.9	7.8	11.0	0				
Sat	02	1.4		0.676		69	72	7.7	7.6	7.6	7.7	9.0	0				
Sun	03			0.719		69	72	7.5	7.9	7.7	7.9	14.0	0				
Mon	04			0.694		67	67	7.3	7.3	7.6	7.0	8.0	0				
Tue	05			0.753		67	70	7.7	7.6	7.9	8.0	10.0	0				
Wed	06	0.35		0.718		68	71	7.9	8.1	7.9	8.0	20.0	0	170	2	220	5
Thu	07			0.688		67	71	7.9	7.7	8.1	8.1	5.0	0				
Fri	08	0.2		0.926		69	70	7.6	8.0	7.9	8.1	14.0	0				
Sat	09	1.2		0.814		70	71	7.8	7.6	7.9	7.8	7.0	0				
Sun	10			0.746		70	72	7.7	7.6	7.7	7.7	10.0	0				
Mon	11			0.722		68	71	8.0	7.8	8.2	8.2	9.0	0				
Tue	12			0.719		68	73	7.9	7.6	7.9	8.0	13.0	0				
Wed	13	0.4		0.736		68	72	8.2	8.1	7.8	8.1	15.0	0	230	2		
Thu	14			0.685		69	72	7.9	8.2	7.9	8.0	7.0	0				
Fri	15			0.748		69	72	7.6	7.6	7.9	7.6	10.0	0				
Sat	16			0.620		69	74	8.0	7.9	7.5	6.8	4.0	0				
Sun	17	1.1		0.768		70	74	7.5	7.4	7.4	7.4	12.0	0				
Mon	18			1.001		71	74	7.8	7.4	8.0	7.6	26.0	0				
Tue	19	2.25		0.863		71	72	7.4	7.2	7.6	7.6	12.0	0				
Wed	20			0.731		70	75	7.7	8.0	7.4	7.5	13.0	0	121	2	140	5
Thu	21			0.722		70	72	7.5	7.2	7.5	7.3	11.0	0				
Fri	22			0.717		70	75	7.4	7.2	7.3	7.2	10.0	0				
Sat	23			0.655		76	76	7.2	7.1	7.6	7.6	8.0	0				
Sun	24			0.665		73	76	7.4	7.4	7.9	7.9	12.0	0				
Mon	25			0.732		70	75	7.5	7.6	7.6	7.6	11.0	0				
Tue	26	0.1		0.692		73	71	7.1	7.2	7.6	7.6	13.0	0				
Wed	27			0.663		71	75	7.6	7.1	7.5	7.3	10.0	0	317	2	310	6
Thu	28			0.654		72	75	7.4	7.5	7.6	7.4	22.0	0				
Fri	29			0.700		70	74	7.3	7.2	7.4	7.6	9.0	0				
Sat	30			0.612		72	75	7.2	7.2	7.2	6.9	23.0	0				
Sun	31			0.645		73	75	7.6	7.6	7.5	7.5	9.0	0				
		Total Precip. 6.5		Monthly Average 0.728		Monthly Average Influent 70	Monthly Average Effluent 73	Minimum 7.1	Monthly Maximum 8.2	Minimum 6.8	Maximum 8.2	Monthly Maximum 26	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 209.5	Eff.(mg/l) 2.0	Rem.% 99.0%	30-day flow-weighted avg (1) Inf.(mg/l) 223.3	Eff.(mg/l) 5.0	Rem.% 97.8%
												30 Day Average Quanity Loading(1)		12.14	lbs/day		30.35	lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids in grab.

92-15-7 (7/91)-27c

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF August 20 05

SPDES PERMIT NO. NY-- 0031356 | FACILITY NAME: Carmel Sewer District #2 | FACILITY OWNER: Town Of Carmel | FACILITY LOCATION: Carmel NY

			VOLUME OF SEWAGE TREATED			TEMPERATURE (°F.)		pH (S.U)				SETTLEABLE SOLIDS (ml/l)		cB.O.D.$_5$ (mg/l)		SUSPENDED SOLIDS (mg/l)	
Day	Date	Daily Precip in/day	Inst.Max MGD	Daily Average MGD	Inst. Min MGD	Influent (2)	Effluent (2)	Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	Influent Maximum	Effluent Maximum	Influent Type	Effluent Type	Influent Type	Effluent Type
Mon	01			0.675		71	74	7.7	7.5	7.7	7.5	14.0	0				
Tue	02			0.679		67	75	7.7	7.4	7.6	7.3	15.0	0				
Wed	03			0.689		75	76	7.3	6.4	7.1	6.9	14.0	0	125	2	170	6.5
Thu	04			0.658		66	78	6.2	7.5	6.7	6.8	15.0	0				
Fri	05			0.658		70	78	7.5	7.3	7.1	6.5	14.0	0				
Sat	06			0.690		72	72	7.2	7.1	6.5	6.5	12.0	0				
Sun	07			0.691		72	73	7.4	7.3	6.5	7.2	15.0	0				
Mon	08			0.680		70	77	7.6	7.3	7.6	7.7	12.0	0				
Tue	09			0.637		71	78	7.6	7.4	7.9	7.3	20.0	0				
Wed	10			0.693		71	79	7.6	7.3	7.7	7.7	14.0	0				
Thu	11			0.629		72	79	7.6	7.7	7.9	7.3	15.0	0	232	2	150	5
Fri	12			0.657		71	79	7.6	7.3	7.7	7.5	16.0	0				
Sat	13	0.2		0.657		76	80	7.6	7.3	7.8	7.3	20.0	0				
Sun	14			0.633		77	80	7.0	7.5	7.5	7.5	15.0	0				
Mon	15	0.3		0.676		71	79	7.3	7.4	7.6	7.2	14.0	0				
Tue	16			0.656		70	77	8.1	8.1	8.3	8.1	16.0	0				
Wed	17			0.634		70	74	7.8	7.8	8.2	8.0	16.0	0	173	2	230	5
Thu	18			0.637		71	74	8.0	7.9	8.0	7.5	14.0	0				
Fri	19			0.641		71	74	7.8	7.7	8.0	7.5	11.0	0				
Sat	20			0.630		76	75	7.4	7.4	7.7	7.4	30.0	0				
Sun	21			0.630		75	78	7.9	7.8	7.6	7.5	12.0	0				
Mon	22			0.651		72	75	7.7	7.7	8.1	7.5	20.0	0				
Tue	23			0.624		72	74	7.9	7.5	8.0	7.7	15.0	0				
Wed	24			0.696		71	74	7.8	7.7	8.0	7.4	16.0	0	244	2	270	5
Thu	25			0.730		70	76	8.5	8.0	8.5	8.4	15.0	0				
Fri	26			0.719		76	77	8.0	7.9	8.5	7.8	15.0	0				
Sat	27			0.745		72	73	7.5	7.3	7.6	7.7	8.0	0				
Sun	28	0.4		0.683		72	73	7.3	7.3	7.9	7.9	7.0	0				
Mon	29			0.658		71	74	8.1	7.7	8.1	7.9	11.0	0				
Tue	30			0.658		71	74	7.5	7.6	7.8	7.8	15.0	0				
Wed	31	0.1		0.672		72	76	7.9	7.3	8.0	7.9	14.0	0	183	2	220	5
		Total Precip. 1		Monthly Average 0.667		Monthly Average Influent 72	Monthly Average Effluent 76	Minimum 6.2	Monthly Maximum 8.5	Minimum 6.5	Maximum 8.6	Monthly Maximum 30	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 191.4	Eff.(mg/l) 2.0	Rem.% 99.0%	30 day flow-weighted avg (1) Inf.(mg/l) 208.0	Eff.(mg/l) 5.3	Rem.% 97.5%
												30 Day Average Quanity Loading(1)		11.12	lbs/day		29.47	lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF September ,20 05

Forms by EnviroWin (315) 244-15

SPDES PERMIT NO. NY- 0031356 | FACILITY NAME: Carmel Sewer District #2 | FACILITY OWNER: Town Of Carmel | FACILITY LOCATION: Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED: Inst.Max. MGD	Daily Average MGD	Inst. Min MGD	TEMPERATURE (°F): Influent (2)	Effluent (2)	pH (S.U): Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	SETTLEABLE SOLIDS (ml/l): Influent Maximum	Effluent Maximum	cBOD5 (mg/l): Influent Type	Effluent Type	SUSPENDED SOLIDS (mg/l): Influent Type	Effluent Type
Thu	01	0.5		0.663		72	76	7.4	7.4	8.0	7.8	10.0	<0.1				
Fri	02			0.658		70	75	7.6	7.6	7.8	7.9	13.0	<0.1				
Sat	03	0.1		0.629		73	73	7.4	7.6	7.9	7.8	14.0	<0.1				
Sun	04			0.610		72	74	7.6	7.6	7.9	7.9	12.0	<0.1				
Mon	05			0.663		76	77	8.1	7.7	8.5	8.5	12.0	<0.1				
Tue	06			0.655		70	73	7.9	7.9	8.3	8.2	17.0	<0.1				
Wed	07	0.1		0.682		70	73	8.4	7.5	8.3	8.4	19.0	<0.1	160	2	200	5.0
Thu	08			0.660		72	73	7.4	7.3	7.7	7.6	16.0	<0.1				
Fri	09			0.645		72	74	7.6	7.3	7.7	7.8	15.0	<0.1				
Sat	10			0.599		71	77	7.3	7.3	7.8	7.9	8.0	<0.1				
Sun	11	0.1		0.636		72	77	7.6	7.5	7.5	7.4	12.0	<0.1				
Mon	12			0.639		71	73	7.6	7.5	7.9	7.5	16.0	<0.1				
Tue	13			0.685		70	74	8.0	7.3	7.6	7.4	9.0	<0.1				
Wed	14			0.640		71	75	7.7	7.5	7.6	7.6	16.0	<0.1	240	2	210	5
Thu	15	0.1		0.664		72	75	7.4	7.8	7.4	7.4	17.0	<0.1				
Fri	16			0.638		73	75	7.7	7.0	7.4	7.3	12.0	<0.1				
Sat	17			0.641		73	80	7.0	7.2	7.1	7.1	10.0	<0.1				
Sun	18	0.75		0.637		74	77	7.0	7.0	7.2	7.1	12.0	<0.1				
Mon	19			0.671		71	75	7.5	7.4	7.5	7.1	15.0	<0.1				
Tue	20			0.636		71	74	7.6	7.6	7.0	6.7	17.0	<0.1				
Wed	21			0.756		71	74	7.6	7.8	6.8	6.5	8.0	<0.1	160	2	180	5
Thu	22			0.764		72	73	7.5	7.7	7.1	7.3	17.0	<0.1				
Fri	23	0.01		0.676		69	72	7.6	7.4	7.6	7.8	10.0	<0.1				
Sat	24			0.888		68	71	7.8	7.4	7.7	7.7	15.0	<0.1				
Sun	25			0.890		70	68	7.2	7.2	7.3	7.3	4.0	<0.1				
Mon	26	0.1		0.761		68	69	7.6	7.6	7.6	7.7	11.0	<0.1				
Tue	27			0.720		67	70	7.7	7.4	7.6	7.3	13.0	<0.1				
Wed	28			0.759		67	69	7.5	7.5	7.7	7.7	8.0	<0.1	125	2	130	5
Thu	29	0.35		0.758		70	69	7.5	7.6	8.1	7.8	15.0	<0.1				
Fri	30			0.767		66	67	7.4	7.4	7.8	7.5	12.0	<0.1				
Sat	01																
		Total Precip. 2.11		Monthly Average 0.690		Monthly Average Influent 71	Effluent 73	Minimum 7.0	Monthly Maximum 8.4	Minimum 6.5	Maximum 8.5	Monthly Maximum 19	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 176.3	Eff.(mg/l) 2.0	Rem.% 98.9%	30 day flow-weighted avg (1) Inf.(mg/l) 180.0	Eff.(mg/l) 5.0	Rem.% 97.2
												30 Day Average Quanity Loading(1)		11.50	lbs/day		28.76		lbs/

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids in grab

92-15-? (7/91)-27c

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF October 2005

SPDES PERMIT NO.	FACILITY NAME	FACILITY OWNER	FACILITY LOCATION
NY-- 0031345	Carmel Sewer District #2	Town Of Carmel	Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED Inst Max. MGD	Daily Average MGD	Inst Min MGD	TEMPERATURE (°F) Influent (2)	Effluent (2)	pH (S.U) Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	SETTLEABLE SOLIDS (ml/l) Influent Maximum	Effluent Maximum	cBOD₅ (mg/l) Influent Type	Effluent Type	SUSPENDED SOLIDS (mg/l) Influent Type	Effluent Type
Sat	01			0.722		70	73	7.4	7.4	7.7	7.5	15.0	<0.1				
Sun	02			0.733		71	71	7.4	7.4	7.6	7.5	18.0	<0.1				
Mon	03			0.770		67	67	7.5	7.5	7.9	7.8	11.0	<0.1				
Tue	04			0.739		69	69	7.4	7.6	7.9	7.5	10.0	<0.1				
Wed	05			0.713		68	69	7.7	7.9	8.0	7.7	16.0	<0.1	158	2	200	5
Thu	06			0.652		69	69	7.5	7.8	7.9	7.7	14.0	<0.1				
Fri	07			0.620		70	71	7.6	7.4	7.5	7.7	13.0	<0.1				
Sat	08	2.7		0.738		70	72	7.7	7.4	7.1	7.3	11.0	<0.1				
Sun	09	5		1.695		68	68	7.5	7.5	7.5	7.5	11.0	<0.1				
Mon	10	0.1		0.696		68	68	7.4	7.6	7.6	7.7	15.0	<0.1				
Tue	11			0.860		67	68	7.7	7.8	8.0	7.7	15.0	<0.1				
Wed	12	2		0.908		66	67	7.5	7.4	7.6	7.5	14.0	<0.1	170	2	280	5
Thu	13	2.3		1.489		65	67	7.5	7.5	7.8	7.6	7.0	<0.1				
Fri	14	0.2		1.231		67	67	7.4	7.5	7.7	7.9	7.0	<0.1				
Sat	15	2		2.888		68	69	7.2	7.2	7.4	7.4	14.0	<0.1				
Sun	16			0.829		68	68	7.3	7.1	7.4	7.4	11.0	<0.1				
Mon	17			0.877		66	67	7.7	7.4	8.1	7.8	15.0	<0.1				
Tue	18			0.851		69	65	7.3	7.4	6.9	7.6	10.0	<0.1				
Wed	19			0.801		65	65	7.4	7.4	8.2	7.8	12.0	<0.1	195	2	300	5
Thu	20			0.753		64	65	7.7	7.5	7.8	8.0	9.0	<0.1				
Fri	21			0.746		65	65	7.6	7.7	7.8	7.9	8.0	<0.1				
Sat	22	0.1		0.929		64	63	7.4	7.7	7.5	7.8	14.0	<0.1				
Sun	23	1.7		0.856		64	63	6.7	6.9	7.4	7.3	8.0	<0.1				
Mon	24			1.051		62	63	7.6	7.4	7.5	7.4	18.0	<0.1				
Tue	25	1.5		1.266		63	63	7.5	7.5	7.5	7.6	9.0	<0.1				
Wed	26	2.4		0.984		64	62	7.5	7.6	7.6	7.9	8.0	<0.1	120	2	150	5
Thu	27			0.904		61	61	7.7	7.6	7.8	8.1	8.0	<0.1				
Fri	28			0.835		62	61	7.8	7.6	7.7	7.8	11.0	<0.1				
Sat	29			1.701		63	61	7.6	7.6	8.0	7.6	12.0	<0.1				
Sun	30			0.000		63	61	7.7	7.7	7.9	7.9	14.0	<0.1				
Mon	31			0.760		62	62	7.6	7.6	7.4	7.9	20.0	<0.1				

Total Precip.	Monthly Average	Monthly Influent	Average Effluent	pH Minimum	pH Monthly Maximum	pH Minimum	pH Maximum	Settleable Monthly Maximum	Settleable Monthly Maximum
20.0	0.955	66	66	6.7	7.9	6.9	8.2	20	<0.1

	cBOD₅: 30 day flow-weighted avg (1) Inf.(mg/l)	Eff.(mg/l)	Rem.%	Suspended Solids: 30 day flow-weighted avg (1) Inf.(mg/l)	Eff.(mg/l)	Rem.%
	160.8	20	98.8%	232.5	5.0	97.8%
30 Day Average Quantity Loading(1)	15.93 lbs/day			39.63 lbs/day		

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum, minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids in grab.

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NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF November 20 05

Forms by Envirowin (312-244-1900)

SPDES PERMIT NO. NY– 0031356 | FACILITY NAME: Carmel Sewer District #2 | FACILITY OWNER: Town Of Carmel | FACILITY LOCATION: Carmel NY

			VOLUME OF SEWAGE TREATED			TEMPERATURE (°F.)		pH (S.U.)				SETTLEABLE SOLIDS (ml/l)		cB.O.D.5 (mg/l)		SUSPENDED SOLIDS (mg/l)	
Day	Date	Daily Precip in/day	Inst. Max. MGD	Daily Average MGD	Inst. Min MGD	Influent (2)	Effluent (2)	Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	Influent Maximum	Effluent Maximum	Influent Type	Effluent Type	Influent Type	Effluent Type
Tue	01			0.790		62	62	7.6	7.4	6.8	7.5	15.0	<0.1				
Wed	02			0.734		63	62	7.8	7.7	7.6	7.6	10.0	<0.1	157	2	160	5
Thu	03			0.737		62	62	7.7	7.7	7.5	7.6	12.0	<0.1				
Fri	04			0.747		63	62	7.5	7.5	7.5	7.5	15.0	<0.1				
Sat	05			0.612		60	63	7.3	7.3	7.6	7.7	13.0	<0.1				
Sun	06			0.788		61	61	7.9	7.3	7.7	7.5	18.0	<0.1				
Mon	07			0.725		63	62	7.7	7.5	7.4	7.7	11.0	<0.1				
Tue	08			0.702		62	62	7.8	7.6	7.4	7.8	10.0	<0.1				
Wed	09			0.783		62	60	7.7	7.4	7.5	7.7	12.0	<0.1	202	2	280	5
Thu	10	0.75		0.740		61	61	7.7	7.7	7.4	7.8	12.0	<0.1				
Fri	11			0.790		60	60	7.6	8.1	7.2	7.2	14.0	<0.1				
Sat	12			0.618		60	59	7.8	7.3	7.4	7.0	13.0	<0.1				
Sun	13			0.686		63	61	7.4	7.5	6.6	7.7	12.0	<0.1				
Mon	14			0.696		63	61	7.7	7.4	6.8	6.8	16.0	<0.1				
Tue	15			0.683		63	60	7.1	7.1	7.0	7.2	9.0	<0.1				
Wed	16			0.842		62	62	7.0	7.6	7.3	7.4	18.0	<0.1	168	2	170	5
Thu	17	1.4		0.777		60	61	7.6	7.8	7.2	7.9	17.0	<0.1				
Fri	18			0.757		59	58	7.5	7.8	7.1	7.8	11.0	<0.1				
Sat	19			0.691		60	60	7.4	7.6	7.5	6.8	12.0	<0.1				
Sun	20			0.782		58	60	7.5	7.5	7.7	7.6	12.0	<0.1				
Mon	21			0.807		57	58	7.3	7.4	7.0	7.7	12.0	<0.1				
Tue	22	0.6		1.057		58	57	7.5	7.4	7.6	7.0	13.0	<0.1				
Wed	23	1		0.816		57	56	7.6	7.6	7.5	7.4	5.0	<0.1				
Thu	24	0.2		0.787		56	57	7.6	7.7	7.3	7.4	8.0	<0.1				
Fri	25			0.737		60	57	7.5	7.7	7.6	7.5	12.0	<0.1				
Sat	26			0.748		57	58	7.6	7.6	7.0	7.7	6.0	<0.1				
Sun	27			0.766		57	58	7.7	7.8	7.4	7.5	13.0	<0.1				
Mon	28			0.737		59	56	7.8	7.4	7.5	7.5	12.0	<0.1	125	2	230	6
Tue	29			0.987		58	58	7.6	7.5	7.6	7.3	17.0	<0.1				
Wed	30	1.45		0.936		58	59	7.5	7.8	7.2	7.3	9.0	<0.1	152	2	340	5
Thu	01																
		Total Precip. 5.4		Monthly Average 0.769		Monthly Average Influent 60	Monthly Average Effluent 60	Minimum 7.0	Monthly Maximum 8.1	Minimum 6.6	Maximum 7.9	Monthly Maximum 18	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 160.8	Eff.(mg/l) 2.0	Rem.% 98.8%	30 day flow-weighted avg (1) Inf.(mg/l) 236.0	Eff.(mg/l) 5.0	Rem.% 97.9%
													30 Day Average Quanity Loading(1)		12.82	lbs/day		32.05	lbs/day

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids in grab.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF December ,20 05

Forms by Envirowin (312-244-1900)

SPDES PERMIT NO.	FACILITY NAME	FACILITY OWNER	FACILITY LOCATION
NY– 0031356	Carmel Sewer District #2	Town Of Carmel	Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED: Inst.Max MGD	Daily Average MGD	Inst. Min MGD	TEMPERATURE (°F.): Influent (2)	Effluent (2)	pH (S.U): Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	SETTLEABLE SOLIDS (ml/l): Influent Maximum	Effluent Maximum	cB.O.D 5 (mg/l): Influent Type	Effluent Type	SUSPENDED SOLIDS (ml/l): Influent Type	Effluent Type
Thu	01			0.887		57	58	7.5	7.6	7.2	7.5	13.0	<0.1				
Fri	02			0.888		57	56	7.6	7.8	7.8	7.5	13.0	<0.1				
Sat	03			0.888		57	54	7.6	7.6	8.1	7.3	15.0	<0.1				
Sun	04	0.14		0.889		53	53	7.4	7.4	7.2	7.4	8.0	<0.1				
Mon	05	0.1		0.890		54	54	7.9	7.7	7.3	7.9	10.0	<0.1				
Tue	06			0.891		54	54	7.9	7.6	7.4	7.5	13.0	<0.1				
Wed	07			0.892		53	52	7.7	7.7	7.4	7.4	7.0	<0.1	176	2	230	5.0
Thu	08			0.892		54	52	7.6	7.7	7.4	7.6	12.0	<0.1				
Fri	09	0.8		0.893		47	46	7.6	7.8	7.1	7.6	12.0	<0.1				
Sat	10			0.894		54	47	7.6	7.5	7.8	7.8	16.0	<0.1				
Sun	11			0.894		56	51	7.3	6.8	6.8	7.4	12.0	<0.1				
Mon	12			0.895		53	52	7.8	7.8	7.2	7.9	12.0	<0.1				
Tue	13			0.896		52	50	7.8	7.4	7.1	6.8	11.0	<0.1				
Wed	14			0.897		49	49	7.8	7.9	6.8	7.1	12.0	<0.1	188	2	450	5
Thu	15			0.897		50	49	7.6	7.6	7.0	7.0	20.0	<0.1				
Fri	16	0.85		0.898		53	51	7.6	7.5	7.2	7.2	14.0	<0.1				
Sat	17	0.9		0.899		53	50	8.0	7.4	7.2	7.2	5.0	<0.1				
Sun	18			0.900		53	52	7.8	7.3	6.9	7.3	15.0	<0.1				
Mon	19			0.900		52	51	7.9	7.9	7.4	7.7	12.0	<0.1				
Tue	20			0.901		54	50	7.7	7.9	7.2	7.8	8.0	<0.1				
Wed	21			0.902		51	50	7.8	7.5	7.6	7.7	8.0	<0.1	165	2	200	5
Thu	22			0.903		54	50	7.8	7.8	7.9	7.6	15.0	<0.1				
Fri	23			0.903		55	55	7.6	8.2	7.4	8.1	12.0	<0.1				
Sat	24			0.904		54	54	7.5	7.4	7.6	7.4	20.0	<0.1				
Sun	25			0.905		53	55	7.3	7.5	7.8	7.6	6.0	<0.1				
Mon	26	1.1		0.906		53	56	7.6	7.5	7.2	7.3	10.0	<0.1				
Tue	27	0.1		0.906		52	51	7.4	7.5	7.4	7.6	7.0	<0.1				
Wed	28			0.907		54	51	7.4	7.3	7.1	7.6	11.0	<0.1	170	2	200	5
Thu	29	1		0.908		55	52	7.6	7.8	7.2	7.6	11.0	<0.1				
Fri	30	0.7		0.909		53	52	7.4	7.4	7.7	7.2	12.0	<0.1				
Sat	31			0.910		53	50	7.2	7.6	7.5	7.3	11.0	<0.1				
		Total Precip. 5.69		Monthly Average 0.898		Monthly Average Influent 53	Monthly Average Effluent 52	Monthly Minimum 6.8	Monthly Maximum 8.2	Minimum 6.8	Maximum 8.1	Monthly Maximum 20	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 174.8	Eff.(mg/l) 2.0	Rem.% 98.9%	30 day flow-weighted avg (1) Inf.(mg/l) 270.0	Eff.(mg/l) 5.0	Rem.% 98.1%
												30 Day Average Quanity Loading(1)		14.98	lbs/day		37.45	lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF January 20 06

Form by EnviroWin (312-244-1800)

SPDES PERMIT NO. NY-- 0031356 | FACILITY NAME: Carmel Sewer District #2 | FACILITY OWNER: Town Of Carmel | FACILITY LOCATION: Carmel NY

			VOLUME OF SEWAGE TREATED			TEMPERATURE (°F.)		pH (S.U)				SETTLEABLE SOLIDS (ml/l)		cB.O.D.$_5$ (mg/l)		SUSPENDED SOLIDS (ml/l)	
Day	Date	Daily Precip in/day	Inst.Max. MGD	Daily Average MGD	Inst. Min MGD	Influent (2)	Effluent (2)	Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	Influent Maximum	Effluent Maximum	Influent Type	Effluent Type	Influent Type	Effluent Type
Sun	01	0.3		0.911		52	56	7.4	7.4	7.2	7.0	12.0	<0.1				
Mon	02			0.912		54	53	7.5	7.5	7.1	7.6	13.0	<0.1				
Tue	03	1.2		0.912		55	49	7.7	7.4	7.6	7.5	9.0	<0.1				
Wed	04	0.2		0.913		50	50	7.8	8.0	7.5	7.8	5.0	<0.1	216	2	350	5
Thu	05			0.914		53	50	7.6	7.5	7.4	7.4	13.0	<0.1				
Fri	06			0.915		52	50	7.6	7.8	7.2	7.9	18.0	<0.1				
Sat	07			0.916		52	50	7.4	7.6	7.4	6.9	15.0	<0.1				
Sun	08			0.917		54	50	7.6	7.7	7.3	7.4	13.0	<0.1				
Mon	09			0.918		52	51	7.6	8.2	7.0	7.0	9.0	<0.1				
Tue	10			0.919		52	51	7.5	7.7	7.3	7.5	11.0	<0.1				
Wed	11			0.919		52	50	7.7	7.6	7.5	7.6	12.0	<0.1	200	2	240	5
Thu	12	0.7		0.920		52	51	7.3	7.6	7.6	7.4	10.0	<0.1				
Fri	13	1.0		0.921		50	51	7.6	7.6	7.6	7.8	10.0	<0.1				
Sat	14	1.3		0.922		51	50	7.6	7.8	7.4	7.5	13.0	<0.1				
Sun	15			0.923		50	50	7.5	7.6	7.5	7.4	9.0	<0.1				
Mon	16			0.924		48	47	7.9	7.8	8.0	7.7	8.0	<0.1				
Tue	17			0.925		48	47	7.9	7.9	7.9	7.9	16.0	<0.1				
Wed	18	0.7		0.926		53	50	7.6	7.5	7.9	7.4	5.0	<0.1	150	2	140	5
Thu	19	0.4		0.928		50	49	7.7	7.7	8.1	7.7	6.0	<0.1				
Fri	20			0.929		51	50	7.5	7.2	7.3	7.6	9.0	<0.1				
Sat	21			0.930		56	53	7.6	7.1	7.6	7.5	10.0	<0.1				
Sun	22			0.931		51	52	7.6	7.6	7.5	7.6	12.0	<0.1				
Mon	23	0.8		0.931		50	50	7.6	8.1	7.6	7.7	3.0	<0.1				
Tue	24	1.0		0.932		50	50	7.6	7.6	7.6	8.0	8.0	<0.1				
Wed	25	0.3		0.933		52	50	7.5	7.5	7.8	7.6	17.0	<0.1	180	2	300	5
Thu	26			0.934		50	49	8.0	8.0	8.1	7.8	10.0	<0.1				
Fri	27			0.935		52	48	7.7	8.0	7.5	7.7	12.0	<0.1				
Sat	28			0.936		51	55	7.6	7.6	7.6	7.4	11.0	<0.1				
Sun	29			0.937		52	50	7.8	7.8	7.7	7.6	6.0	<0.1				
Mon	30	0.2		0.938		52	51	7.6	7.9	7.3	7.4	8.0	<0.1				
Tue	31			0.938		53	50	7.4	7.5	7.4	7.3	31.0	<0.1				
		Total Precip. 8.0		Monthly Average 0.925		Monthly Average Influent 51	Monthly Average Effluent 48	Monthly Minimum 7.1	Monthly Maximum 8.2	Minimum 6.9	Maximum 8.1	Monthly Maximum 31	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 186.5	Eff.(mg/l) 2.0	Rem.% 98.9%	30 day flow-weighted avg (1) Inf.(mg/l) 257.5	Eff.(mg/l) 5.0	Rem.% 98.1%
														30 Day Average Quanity Loading(1)		15.42 lbs/day			38.55 lbs/day

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum, minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF February 20 06

Forms by EnviroMin (315-244-1900)

SPDES PERMIT NO. NY- 0031356 | FACILITY NAME: Carmel Sewer District #2 | FACILITY OWNER: Town Of Carmel | FACILITY LOCATION: Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED: Inst. Max. MGD	Daily Average MGD	Inst. Min MGD	TEMPERATURE (°F.): Influent (2)	Effluent (2)	pH (S.U): Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	SETTLEABLE SOLIDS (ml/l): Influent Maximum	Effluent Maximum	cB.O.D.$_5$ (mg/l): Influent Type	Effluent Type	SUSPENDED SOLIDS (ml/l): Influent Type	Effluent Type
Wed	01			0.797		50	50	7.6	7.6	7.4	7.4	6.0	<0.1	176	2	220	5
Thu	02			0.765		52	50	7.7	7.9	7.4	7.4	10.0	<0.1				
Fri	03	0.6		0.669		51	51	7.5	7.8	7.2	7.1	19.0	<0.1				
Sat	04			0.683		51	51	7.6	7.5	7.4	7.4	12.0	<0.1				
Sun	05	0.6		0.924		51	51	7.5	7.5	7.3	7.4	8.0	<0.1				
Mon	06			0.824		51	50	8.1	7.9	8.1	8.0	8.0	<0.1				
Tue	07			0.795		51	50	7.8	7.3	7.5	7.7	9.0	<0.1				
Wed	08			0.789		50	49	7.7	7.8	7.5	8.0	5.0	<0.1	114	2	160	5
Thu	09			0.768		50	49	7.7	7.7	7.8	7.7	7.0	<0.1				
Fri	10			0.756		49	48	7.7	7.8	7.5	7.7	20.0	<0.1				
Sat	11			0.708		49	48	8.1	7.8	7.6	7.6	12.0	<0.1				
Sun	12	0.3		0.760		48	48	7.9	7.8	7.8	7.7	14.0	<0.1				
Mon	13	0.3		0.752		49	47	7.7	7.7	7.3	7.3	12.0	<0.1				
Tue	14			0.746		50	48	7.8	8.1	7.5	7.9	11.0	<0.1				
Wed	15			0.739		54	49	7.6	7.5	7.7	7.5	15.0	<0.1	177	2	270	5
Thu	16			0.766		52	50	7.4	8.1	7.5	7.7	10.0	<0.1				
Fri	17			0.719		51	48	7.6	7.6	7.0	7.0	6.0	<0.1				
Sat	18			0.750		49	47	7.8	7.5	7.0	7.1	10.0	<0.1				
Sun	19			0.788		47	48	7.6	7.5	7.5	7.2	8.0	<0.1				
Mon	20			0.742		49	48	7.7	7.6	7.2	7.1	5.0	<0.1				
Tue	21			0.719		50	48	8.0	8.1	7.1	6.8	7.0	<0.1				
Wed	22			0.691		50	49	7.6	8.0	7.2	7.5	8.0	<0.1	153	2	160	5
Thu	23			0.702		51	49	8.0	7.6	7.5	7.2	19.0	<0.1				
Fri	24			0.668		51	49	7.9	7.8	7.5	7.4	7.0	<0.1				
Sat	25			0.669		51	48	7.9	8.0	7.5	7.2	15.0	<0.1				
Sun	26			0.739		52	47	8.1	8.0	7.6	7.6	13.0	<0.1				
Mon	27			0.667		51	46	7.8	8.3	7.2	7.5	10.0	<0.1				
Tue	28			0.694		48	46	8.0	7.9	6.9	7.2	15.0	<0.1				
Wed	01																
Thu	02																
Fri	03																
		Total Precip. 1.8		Monthly Average 0.760		Monthly Average Influent 50	Monthly Average Effluent 48	Minimum 7.3	Monthly Maximum 8.3	Minimum 6.8	Maximum 8.1	Monthly Maximum 20	Monthly Maximum <0.1	30 day flow-weighted avg (1) Inf.(mg/l) 154.8	Eff.(mg/l) 2.0	Rem.% 98.7%	30 day flow-weighted avg (1) Inf.(mg/l) 202.5	Eff.(mg/l) 5.0	Rem.% 97.5%
												30 Day Average Quanity Loading(1)		12.67	lbs/day		31.68	lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

92-15-7 (7/91)-27c

NEW YORK STATE DEPARTMENT OF ENVIROMENTAL CONSERVATION

DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF March ,20 06

Forms by EnviroWin (312-244-1800)

SPDES PERMIT NO.	FACILITY NAME	FACILITY OWNER	FACILITY LOCATION
NY- 0031356	Carmel Sewer District #2	Town Of Carmel	Carmel NY

			VOLUME OF SEWAGE TREATED			TEMPERATURE (°F.)		pH (S.U)				SETTLEABLE SOLIDS (ml/l)		cBOD$_5$ (mg/l)		SUSPENDED SOLIDS (mll)	
Day	Date	Daily Precip in/day	Inst.Max MGD	Daily Average MGD	Inst. Min MGD	Influent (2)	Effluent (2)	Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	Influent Maximum	Effluent Maximum	Influent Type	Effluent Type	Influent Type	Effluent Type
Wed	01			0.671		51	47	7.9	8.0	7.2	7.0	13.0	<0.1	123	2	300	5
Thu	02			0.672		49	48	7.9	8.2	7.1	7.0	13.0	<0.1				
Fri	03	0.4		0.591		49	46	7.6	7.8	7.1	7.0	25.0	<0.1				
Sat	04			0.806		52	55	7.8	8.0	7.5	7.1	12.0	<0.1				
Sun	05			0.651		53	52	7.9	8.3	7.3	7.7	14.0	<0.1				
Mon	06			0.701		53	48	7.9	8.3	7.9	7.9	11.0	<0.1				
Tue	07			0.672		50	49	8.2	7.9	7.6	7.6	13.0	<0.1				
Wed	08			0.628		50	49	7.9	7.5	7.2	7.1	7.0	<0.1	136	2	520	5
Thu	09			0.753		52	50	7.7	7.6	7.3	7.1	13.0	<0.1				
Fri	10			0.631		51	51	8.0	8.1	7.6	7.4	13.0	<0.1				
Sat	11	0.1		0.729		52	52	7.8	7.9	7.2	7.5	12.0	<0.1				
Sun	12	0.1		0.734		53	50	7.9	7.4	7.5	7.4	11.0	<0.1				
Mon	13	0.1		0.707		52	52	7.8	7.9	7.2	7.5	12.0	<0.1				
Tue	14			0.716		53	53	8.0	7.8	7.7	7.4	13.0	<0.1				
Wed	15			0.683		50	50	8.0	7.9	7.3	7.2	12.0	<0.1	172	2	240	5
Thu	16			0.707		52	50	7.8	8.1	7.5	7.7	16.0	<0.1				
Fri	17			0.661		53	48	7.9	7.7	7.2	7.4	11.0	<0.1				
Sat	18			0.715		52	50	7.7	7.7	7.5	7.6	23.0	<0.1				
Sun	19			0.700		52	50	7.7	7.7	7.9	7.7	10.0	<0.1				
Mon	20			0.706		53	50	7.6	8.0	7.6	8.0	13.0	<0.1				
Tue	21			0.701		51	49	8.1	7.9	7.3	7.6	14.0	<0.1				
Wed	22			0.661		52	48	7.7	8.2	7.1	6.9	12.0	<0.1	57	2	280	1
Thu	23			0.671		54	50	7.7	7.9	7.4	7.2	10.0	<0.1				
Fri	24			0.694		52	51	8.0	7.7	7.1	7.1	13.0	<0.1				
Sat	25			0.689		53	55	8.0	8.2	7.8	8.1	8.0	<0.1				
Sun	26			0.653		53	55	8.0	7.8	7.7	7.4	15.0	<0.1				
Mon	27			0.649		53	52	7.9	7.9	7.8	7.3	8.0	<0.1				
Tue	28			0.671		53	53	7.9	7.5	8.1	7.5	16.0	<0.1				
Wed	29			0.647		53	52	7.7	8.7	7.0	7.1	11.0	<0.1	120	2	220	5
Thu	30			0.654		54	53	8.1	7.9	7.6	7.6	12.0	<0.1				
Fri	31			0.627		56	54	8.0	7.8	7.1	7.5	14.0	<0.1				
		Total Precip.		Monthly Average		Monthly Average Influent	Monthly Average Effluent	Minimum	Monthly Maximum	Minimum	Maximum	Monthly Maximum	Monthly Maximum	30 day flow-weighted avg (1) Inf.(mg/l)	Eff.(mg/l)	Rem.%	30 day flow-weighted avg (1) Inf.(mg/l)	Eff.(mg/l)	Rem.%
		0.7		0.682		52	50	7.4	8.7	6.9	8.1	25	<0.1	121.6	2.0	98.4%	312.0	4.2	98.7%
												30 Day Average Quanity Loading(1)		11.38	lbs/day		23.90	lbs/day	

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

92-15-7 (7/91)-27c

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER

WASTEWATER FACILITY OPERATION REPORT FOR THE MONTH OF April 20 06

SPDES PERMIT NO. NY- 0031366 | FACILITY NAME: Carmel Sewer District #2 | FACILITY OWNER: Town Of Carmel | FACILITY LOCATION: Carmel NY

Day	Date	Daily Precip in/day	VOLUME OF SEWAGE TREATED: Inst. Max. MGD	Daily Average MGD	Inst. Min MGD	TEMPERATURE (°F): Influent (2)	Effluent (2)	pH (S.U.): Influent A.M.	Influent P.M.	Effluent A.M.	Effluent P.M.	SETTLEABLE SOLIDS (ml/l): Influent Maximum	Effluent Maximum	CBOD5 (mg/l): Influent Type	Effluent Type	SUSPENDED SOLIDS (ml/l): Influent Type	Effluent Type
Sat	01			0.651		53	54	8.0	7.5	7.2	7.6	15.0	<0.1				
Sun	02			0.635		53	53	7.7	7.8	7.4	7.5	12.0	<0.1				
Mon	03			0.760		53	54	7.9	8.0	7.5	8.3	16.0	<0.1				
Tue	04			0.735		54	53	8.1	8.4	8.3	7.5	10.0	<0.1	90	2	290	5
Wed	05			0.700		53	52	7.9	7.8	7.9	7.5	11.0	<0.1				
Thu	06			0.684		53	53	8.0	8.0	7.3	7.6	13.0	<0.1				
Fri	07			0.718		53	53	7.8	7.6	7.5	7.2	12.0	<0.1				
Sat	08	0.6		0.729		52	53	7.5	7.8	7.6	7.5	15.0	<0.1				
Sun	09			0.672		52	53	7.6	7.5	7.5	7.6	14.0	<0.1				
Mon	10			0.675		54	53	7.6	7.6	7.8	7.5	5.0	<0.1				
Tue	11			0.659		54	54	7.7	7.5	7.5	7.5	6.0	<0.1				
Wed	12			0.668		54	54	7.5	7.6	7.5	7.6	8.0	<0.1				
Thu	13			0.677		56	56	7.7	7.7	7.5	7.8	10.0	<0.1	170	2	270	5
Fri	14			0.702		54	55	7.8	7.6	7.5	7.8	12.0	<0.1				
Sat	15			0.670		60	61	7.8	8.0	7.3	7.5	15.0	<0.1				
Sun	16			0.660		58	60	8.5	8.0	8.4	8.5	13.0	<0.1				
Mon	17			0.679		55	57	8.6	8.1	8.5	7.7	13.0	<0.1				
Tue	18			0.661		56	56	7.7	7.9	7.5	7.3	13.0	<0.1				
Wed	19			0.664		57	57	7.9	7.7	7.7	7.4	13.0	<0.1				
Thu	20			0.665		58	58	7.6	8.1	7.6	7.5	13.0	<0.1	100	2	450	5
Fri	21			0.664		58	59	7.6	8.0	7.5	7.8	13.0	<0.1				
Sat	22	1.1		0.850		56	56	7.8	7.7	7.8	7.4	10.0	<0.1				
Sun	23			1.025		53	56	7.8	7.6	7.2	7.4	8.0	<0.1				
Mon	24			0.849		55	56	7.8	7.8	7.2	7.2	12.0	<0.1				
Tue	25			0.793		56	57	7.4	7.5	7.3	7.2	9.0	<0.1				
Wed	26			0.778		56	57	7.9	8.0	7.3	6.9	12.0	<0.1				
Thu	27			0.729		57	58	7.7	7.6	7.1	7.6	12.0	<0.1	64	2	200	5
Fri	28			0.723		57	57	8.0	7.5	7.7	7.7	29.0	<0.1				
Sat	29			0.691		61	59	7.6	7.8	7.0	7.3	18.0	<0.1				
Sun	30			0.717		60	60	7.6	7.6	7.5	7.7	13.0	<0.1				
Mon	01																
		Total Precip. 1.9		Monthly Average 0.717		Monthly Average Influent 55	Effluent 56	Monthly Minimum 7.4	Monthly Maximum 8.6	Minimum 6.9	Maximum 8.5	Monthly Maximum 29	Monthly Maximum <0.1	30 day flow-weighted avg (1) lbs/day 111.0	mg/l Eff. 2.0	Rem.% 98.2%	30 day flow-weighted avg (1) lbs/day 302.6	mg/l Eff. 5.0	Rem.% 98.3%
												30 Day Average Quantity Loading(1)		11.95 lbs/day			29.68 lbs/day		

(1) Refer to current edition of "Notice to SPDES Permittees Regarding Use of the National Pollutant Discharge Elimination System (NPDES) Discharge Monitoring Report Form" for procedures to calculate loadings, flow-weighted average, geometric mean, maximum, minimum, percent removal, etc.

(2) If temperature is measured more than once a day, report the average for the day.

NOTE: Refer to current SPDES permit for specific monitoring requirements. Sample type for temperature, pH and settleable solids is grab.

Appendix H

Water Engineering Report
for the Fairways

INSITE
ENGINEERING, SURVEYING &
LANDSCAPE ARCHITECTURE, P.C.

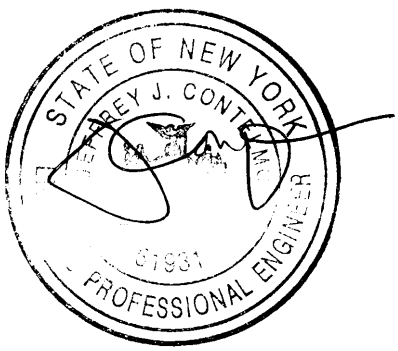
WATER ENGINEERING REPORT

For

THE FAIRWAYS
Town of Carmel, New York

July 20, 2006

Prepared By
Insite Engineering, Surveying & Landscape Architecture, P.C.
3 Garrett Place
Carmel, New York 10512



1.0 INTRODUCTION

The subject project is located on three parcels totaling 100.6± acres located in the Town of Carmel. The site is located between the parcels to the south to be developed as Gateway Summit and the Centennial Golf Course to the west, north, and east. The properties are designated as tax map parcel numbers 44.-2-1, 44.15-2-2, and 44.15-2-4.

The project site is located on the undeveloped hillside adjacent to the existing golf course. The proposed development on the site will consist of 150 senior housing units on either side of a proposed access road and a clubhouse. The clubhouse is proposed for use by the residents and their guests only. The access road is an extension of the proposed Town road servicing the Gateway Summit site. The Town road travels in a northerly direction as it climbs through the Gateway property to the south. The Town road then crosses onto the subject property near the southwest property corner and becomes a private road, which crosses from south to north before terminating at a cul-de-sac at the northern end of the site.

Water supply and wastewater generated by the proposed project will be serviced by the Town of Carmel Water District #2 (CWD#2) and Sewer District #2 (CSD#2) respectively.

2.0 PROJECT DESIGN FLOWS

2.1 Domestic Water Demand

The average daily water design flows for the proposed project are based on the hydraulic loading rates listed in the Putnam County Department of Health Bulletin CS-31. The following table lists the proposed uses, associated hydraulic loading rates, and the design flow rates (gallons per day or gpd) for the Fairways project. Also listed are anticipated actual flows which are estimated at 50% of the design flow:

Proposed Use	Hydraulic Loading Rate	Average Daily Design Flow (gpd)	Anticipated Actual Flow (gpd)
150 2-BR Senior Housing Units	300 gpd/unit*	45,000	22,500
Clubhouse (visitors)	400 gpd	400	200
Total		**45,400**	**22,700**

* Hydraulic loading rate from Putnam County Department of Health Bulletin CS-31

The average daily wastewater flow is calculated in the *Wastewater Engineering Report for The Fairways* as 36,400 gpd, or 9,000 gpd less than the average daily water demand. For wastewater flows, bulletin CS-31 references the loading rates given in the New York State Department of Environmental Conservation (NYSDEC) publication *Design Standards for Wastewater Treatment Works – 1988.*. This publication allows a 20% reduction in the loading rate to account for water saving fixtures. For residential water demand, bulletin CS-31 does not allow this reduction.

Note that the hydraulic loading rate for a two bedroom senior housing unit is 300 gpd. Bulletin CS-31 calculates the hydraulic loading rate for a two bedroom attached housing unit based on the assumption that four people will be living in the unit. In the subject project, it is more likely that only two people will be living in each senior housing unit. Using a per capita loading rate of 75 gpd from bulletin CS-31, a more realistic hydraulic loading for each two bedroom senior housing unit would be 150 gpd. This would lower the average daily domestic water design flow for the Fairways project to

22,900 gpd. In order to present conservative estimates however, the full design flow of 45,400 gpd will be used for this report.

The peak hourly flow for domestic is calculated using a peaking factor that is based on the population of the subject project. *Recommended Standards for Wastewater Facilities - 2004*[1] was used to determine a peaking factor of four.

Peak Hourly Flow

45,400 gpd ÷ (24 hr/day) ÷ (60 min/hr) = 31.5 gallons per minute (gpm)

Peak Hourly Flow = 31.5 gpm x 4 ≈ **126 gpm**

A preliminary fracture trace analysis and an analysis of nearby wells performed by SSEC, Inc. indicate that the existing system of bedrock fractures at the site has the potential to supply supplemental water to the site. This source could be used to supply water for irrigation purposes, limiting the impact the project would have on the water district to domestic demand only.

2.2 Fire Flow Demand

The amount of fire flow available at a point in a distribution system is dependant on several factors including the elevation of the point, the size and arrangement of mains providing service to the point, the supply of water available, and the surrounding area's demand at the time of the fire flow. The amount of flow required to suppress a fire in a structure is dependant on, among other things, the type of the construction, the occupancy, the proximity of other structures, and the presence of fire suppression systems such as sprinklers.

The required fire flow capacities in a distribution system should be established by the district authorities in conjunction with the local fire department. A system evaluation performed by J. Robert Folchetti and Associates, LLC in 1999 assessed pressures at various points in the CWD#2 distribution system using a simulated 500 gpm fire flow. (See Section 5.0 for further discussion on Folchetti report) In accordance with the Town of Carmel zoning law, (Section 63-10Y.Note 25.II.j.), all 150 units of senior housing in the proposed Fairways project will contain fire suppression systems. Section 7.0.1.a of "The Recommended Standards for Water Works" states that "fire flow requirements established by the appropriate state Insurance Services Office (ISO) should be satisfied where fire protection is provided". ISO does not determine a needed fire flow for buildings protected by an automatic sprinkler system meeting the applicable National Fire Protection Association (NFPA) standards. All of the proposed buildings will be sprinklered meeting the NFPA requirements therefore the NFPA standards would apply to the project. The maximum NFPA sprinkler demand for the project is 600 gpm for the proposed 16 unit multi family dwellings. Based on review of the ISO's report to the Town of Carmel Board of Fire Commissioners dated December 5, 2001 the fire flow demand for the subject project is far less than fire flow demand for existing structures within CWD #2.

3.0 SOURCE WATER ASSESSMENT

The source water for CWD #2 is Lake Gleneida. Lake Gleneida is a New York City Department of Environmental Protection (NYCDEP) controlled lake. The Town of Carmel has an agreement with the NYCDEP that dates back to the early 1900's which allows the Town to draw water from either Lake Gleneida or the West Branch Reservoir. Based on review of reports prepared by the Town of Carmel and NYCDEP Lake Gleneida is spring fed. Historically the source water supply for CWD #2 has not been a problem. Lake Gleneida is physically connected with the West Branch Reservoir via a sluiceway. This sluiceway allows water to either flow from Lake Gleneida to the West Branch Reservoir or from the West Branch Reservoir to Lake Gleneida. Flashboards are routinely installed and removed in the sluiceway by the Town in order to raise the level in Lake Gleneida. Based on discussion with the Town Engineer these flashboards can raise the level of Lake Gleneida approximately 5 feet. Based on discussions with the Town Engineer on

[1] Published by the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers

May 23, 2006 the flashboards are currently installed and had raised the lake level by approximately 3 feet. If these flashboards were removed Lake Gleneida would discharge water to the West Branch Reservoir until the lake dropped approximately 3 feet to the elevation of the sluiceway.

During times of drought the flashboards have been removed so that water could flow from the West Branch Reservoir into Lake Gleneida. Based on discussions with the Town Engineer in 2001/2002 the Town requested that the NYCDEP raise the level of the West Branch Reservoir (which they did) to allow water to flow into Lake Gleneida (which happened). In the event that drought conditions became severe such that the West Branch Reservoir was not able to be kept at a level high enough to discharge into Lake Gleneida the Town has the right to pump water from the West Branch to Lake Gleneida. A temporary/portable pump could be used in an emergency and if necessary a permanent pump station could be constructed. Note that this is extremely unlikely based on the minimal flow that the Town draws from Lake Gleneida compared with its overall volume. The Town Engineer has indicated that Lake Gleneida is over 100 deep and the source water intakes are approximately 25' below the normal level (sluiceway elevation) of the lake. Based on this the level of Lake Gleneida would have to drop more than 20' before the supply would become an emergency situation.

The Town Engineer has identified groundwater supply as a future supplemental water source. Future drilled wells would provide source redundancy and possible economic benefits to the district. The applicant is willing to grant the Town a water supply easement to allow the Town to drill wells in the future as a supplemental water supply. This easement would allow the Town to develop supply wells, construct a pump station and treatment facilities if necessary as well as a feasible access. This would provide the Town with an affordable way to provide additional water to the system.

4.0 EVALUATION OF EXISTING WATER TREATMENT PLANT CAPACITY

The subject site is located in CWD#2, which is operated under contract by Severn Trent Environmental Services (STE). The CWD#2 supply source is Lake Gleneida.

As requested by the Town of Carmel Engineer, the impacts of the Fairways project on CWD#2 have been assessed in conjunction with several other major proposed developments in the district. Based on the latest Water Engineering Reports for these projects, the following average daily water design flows and anticipated actual flows (50% of design flows) have been established:

	Design Flow	Anticipated Actual Flow
Gateway Summit	89,520 gpd	44,760 gpd
Fairways	45,400 gpd	22,700 gpd
Carmel Corporate Park[2]	91,200 gpd	45,600 gpd
Hillcrest Commons	45,400 gpd	22,700 gpd
Total Project Design Flows	**271,520 gpd**	**135,760 gpd**
	0.27 mgd	**0.14 mgd**

Note these daily estimates of usage are design flows for engineering and permitting purposes. Historically actual water usage is typically 50% to 80% of the design flow. In order to present conservative estimates the following estimate of available systems capacities utilizes the projects' design flows. Note that 2005 average daily flow = 0.77 mgd, 2004 average daily flow of 0.85 mgd is maximum historical usage.

[2] The Carmel Corporate Park project is proposed to be revised into an age-restricted housing development with approximately 380 two-bedroom units. The proposed flow for the housing development is greater than the previously approved office park, therefore this flow will be used.

Water District #2

Plant capacity	=	1.50 mgd (per Water District No. 2, Water System Evaluation, March 1999 by J. Robert Folchetti & Associates, LLC)
2004 average daily flow	=	0.85 mgd (per information supplied by Town of Carmel)
Total project design flows	=	0.27 mgd (0.14 mgd anticipated actual flow)
Projected daily design flow	=	1.12 mgd (0.99 mgd anticipated actual flow)
Excess capacity	=	**0.38 mgd (0.51 mgd anticipated excess actual capacity)**

There is sufficient capacity in the water plant to service the proposed Fairways project as well as the other major proposed projects currently under review in CWD#2.

5.0 EVALUATION OF EXISTING WATER STORAGE CAPACITY

Water storage for CWD#2 is provided in three water storage tanks: a 500,000 gallon tank located on Raymond Hill, a 300,000 gallon tank located at the end of Lindy Drive, and a 300,000 gallon tank located at the end of Everett Road near the northwest corner of the site. These three tanks provide a total storage capacity of 1.1 million gallons.

The *Recommended Standards for Water Works - 2003*[3] (RSWW) states that "storage facilities should have sufficient capacity, as determined from engineering studies, to meet domestic demands, and where fire protection is provided, fire flow demands" (§7.0.1). Section 7.0.1.c states that "Excessive storage capacity should be avoided to prevent potential water quality deterioration". In order to assess the adequacy of the storage the domestic demand, equalization volume, and fire protection volumes must be assessed.

Equalization volume is defined as the volume of water needed for use when water demand in a system exceeds the constant pumping capacity of the system. In a typical community water system, water demand peaks in the morning and evening hours when water use is at a maximum. In order to operate water supply and treatment facilities most efficiently, water is produced at a constant supply rate that is lower than the peak demand rate. During periods of low demand (nighttime), this constant supply rate exceeds the demand and the excess water is stored. During periods of high demand above the constant supply rate, water from storage is used to supplement the constant pumping capacity of the system. The volume of water needed for this is the equalization volume.

The amount of equalization volume needed for a particular system can only be accurately determined when continuous flow rate information is available to generate a demand curve. Equalization storage can be approximated however as 25 percent of the maximum day demand[4], where the maximum day demand is two times the average day demand (two is the maximum day peaking factor). For the projects analyzed above, the approximate required equalization volume would be:

Maximum Day Demand = 2 x 1.14 mgd = 2.28 mgd

Equalization Storage = 0.25 x 2.28 mgd = 570,000 gal

The remaining storage in the tanks is considered fire protection storage. The fire protection volume that remains available in the existing storage tanks is:

Fire Protection Storage = 1,100,000 gal – 570,000 gal = 530,000 gal

[3] Published by the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers

[4] Mays, Larry W., *Hydraulic Design Handbook*, McGraw-Hill Companies, Inc., New York, 1999.

Based on the calculated fire protection volume and the discussion provided in Section 8.0 it is believed that there is sufficient storage in the water system. In addition the Fire Department Chief was contacted relative to the water storage volume available and he indicated that there was adequate storage volume in the system. Although it is believed there is adequate storage within the system the applicant is willing to include the installation of a 135,000 gallon storage tank adjacent to the existing tank.

6.0 EVALUATION OF EXISTING WATER DISTRIBUTION SYSTEM

The existing water distribution system in the vicinity of the subject site is reportedly composed of 6" and 8" water mains and the 300,000 gallon storage tank at the end of Everett Road. An 8" main reportedly runs from the tank southwest downhill to an 8" main beneath Old Route 6. A 6" main in Everett Road connects to the 8" main feeding from the tank, and a 6" main runs beneath Kelly Ridge Road. The main in Kelly Ridge Road is looped to the main in Everett Road by main in Bard Road.

According to the system evaluation performed by Folchetti in 1999, there are low pressure problems in the Kelly Ridge and Everett Road area under static and simulated fire flow conditions. RSWW recommends that normal working pressures in a distribution system should be approximately 60 to 80 psi, and not less than 35 psi (§8.2.1) at ground level. RSWW and AWWA M31 recommend that a minimum of 20 psi be maintained at ground level at all points in the water distribution system during fire flows. According to the evaluation, the current static pressure in the Kelly Ridge and Everett Road area ranges from 31.6 to 38.3 psi. In order to help alleviate this existing low pressure condition, it is proposed to connect dwellings in this area to the booster pump system in the proposed adjoining Gateway project, as detailed in the *Water Engineering Report for Gateways*.

7.0 PROPOSED CONNECTIONS TO CARMEL WATER DISTRICT #2

Potable water supply for the proposed project will be supplied by a connection to the proposed distribution system for the Gateway Summit project and a connection to the existing 6" main in Kelly Ridge Road. The connection to the Kelly Ridge Road main will create a loop through the project, allowing continuous service to most of the site, even when one portion of the line is shut down for repairs. Looping also allows for supply from two directions for fire flows.

As stated previously, the RSWW recommends that normal working pressures in a distribution system should be approximately 60 to 80 psi, and not less than 35 psi (§8.2.1). RSWW and AWWA M31 recommend that a minimum of 20 psi be maintained at all points in the water distribution system during fire flows. The approximate elevation at which these pressures can be maintained in the distribution system are calculated as follows:

Peak Daily Flow (Normal Operating Conditions)

- Minimum Volume of Water in Storage System
  = Capacity – Equalization Volume = 1,100,000 gal - 570,000 gal = 530,000 gal

- Everett Tank Percentage of System Storage (based on approximate area of tanks)
  = Everett / (Everett + Lindy + Raymond) = 1260 ft^2 / (1260 ft^2 + 1260 ft^2 + 1809 ft^2) = 0.29

- Minimum Volume of Water in Everett Road Tank
  = 0.29 x 530,000 gal = 153,700 gal

- Minimum Water Level in Everett Road Tank
  = 153,700 gal / 7.48 gal/ft^3 / 1260ft^2 = 16.3'
  = Base Elevation + Water Level = 733' + 16' = 749'

- Elevation at which 35 psi is maintained
  - Assume Head Loss = 5'

= 749' – (2.31ft/psi)(35 psi) – 5'
= 663'

The maximum elevation at which 35 psi can be maintained under normal operating conditions is approximately 660'. The highest proposed service connection elevation is below approximately 650'.

Fire Flow Conditions

- Minimum Pressure in Distribution System
  = 20 psi
- Minimum Water Elevation in Everett Road Tank Required to Maintain 20 psi
  - Assume Head Loss = 20' (will vary depending on flow rate and main size)
  - Highest Proposed Service Connection Elevation approximately 650'
  = 650' + (2.31ft/psi)(20 psi) + 20'
  = 716'

The Everett Road tank base elevation is 733', therefore 20 psi or greater will maintained in the distribution system throughout the entire drawdown of the fire storage volume (530,000 gal).

8.0 ASSESSMENT OF SYSTEM'S PUBLIC PROTECTION CLASSIFICATION

Insurance Services Office (ISO) uses a Fire Suppression Rating Schedule (FSRS) to measure the majority of the elements of a community's fire suppression system and develops a numerical grading called a Public Protection Classification (PPC ™). The FSRS allocates credit by evaluating the following three major features: fire alarm and communication system (10% of the total classification), fire department (50% of the total classification), water system (40% of the total classification). ISO analyzes three primary factors in the evaluation of the water supply which includes capacity of the supply works, capacity of the water mains and distribution system, and distribution of the hydrants.

The storage tank requirements are calculated by ISO based on the flow – sustainable for the needed duration-from both suction storage tanks and gravity storage tanks, based on the capacity of the tanks at their average daily minimum levels. Based on discussions with the Carmel Water District #2 operator the tanks are normally kept within 6 to 10 feet of their maximum capacity. Based on this, the average daily minimum volume of water in the tanks is approximately 775,000 gallons to 900,000 gallons. AWWA Manual M31 references the NFPA Fire Protection Handbook for the duration of fire flows and ISO provides credits based on the fire flow durations. The needed duration for flow is based on a duration of 2 hours for needed fire flows of 2,500 GPM and less based on AWWA M31 and less than 3,000 GPM based on ISO. A duration of 3 hours for needed fire flows of 3,000 GPM to 3,500 GPM for both AWWA M31 and ISO. Based on a 3,500 GPM needed fire flow and a duration of 3 hours a volume of 630,000 gallons is calculated. Similarly a fire flow of 2,500 GPM would require 300,000 gallons. Based on the capacity of the tanks at their average daily minimum levels there is a volume of approximately 775,000 gallons to 900,000 gallons in the tanks which exceeds the ISO calculation. ISO typically only considers needed fire flows up to 3,500 gpm when calculating durations and associated volumes. Based on this analysis as well as the analysis in Section 5.0 we believe there is sufficient storage in the water system.

In addition we believe the subject project will not effect the Town's ISO Public Protection Classification. This is based on the fact that the subject project will be protected by fire sprinklers, and ISO has already assigned the maximum credit for storage to the Town's grading. Based on review of the ISO's report to the Town of Carmel Board of Fire Commissioners dated December 5, 2001 it appears that in order for the Town to improve their Public Protection Classification distribution system improvements, not storage improvements, would be needed. These distribution system improvements would be needed in areas such as Gleneida Avenue at Fowler Avenue where the needed fire flow is 3,000 GPM and the available flow is 1,400 GPM. Note that at this available flow there would be several locations in the existing system where the system pressure would drop below 20 psi. ISO does not calculate a needed fire flow for buildings protected by an automatic sprinkler system meeting NFPA standards. The proposed project will not affect the ISO credits

based on needed fire flows since ISO does not consider sprinklered buildings when grading water systems.

Appendix I

Water Engineering Report
for Gateway Summit

INSITE
ENGINEERING, SURVEYING &
LANDSCAPE ARCHITECTURE, P.C.

WATER ENGINEERING REPORT

For

GATEWAY SUMMIT
Town of Carmel, New York

July 20, 2006

Prepared By
Insite Engineering, Surveying & Landscape Architecture, P.C.
3 Garrett Place
Carmel, New York 10512

1.0 INTRODUCTION

The subject project is located on four parcels totaling 85.6 ± acres in the Town of Carmel. The site is located along the northern side of US Route 6 with frontage stretching from the intersection with Old Route 6 east to the Southeast Town line. The properties are designated as tax map parcel numbers 55.11-1-32, 55.-2-24, 55.-2-25, and 55.-2-23.1.

The majority of the property is undeveloped, although a portion of the southern part of the site along Route 6 is developed with an existing building and parking area. The existing development was the formerly occupied by the Town of Carmel Highway Department.

The subject site is proposed to be developed as an eight-lot subdivision with varied uses across the site. Lot 1 of the proposed subdivision is proposed to be developed as a hotel complex with a banquet center and associated parking. The hotel will be located along the southeastern corner of the property along the site's frontage with US Route 6. Lots 2, 3, 4, and 5 will be developed with two restaurants and two office buildings. Lot 6 of the subdivision, located northwest of Lot 1, is proposed to be developed with a recreation building for the YMCA. Lot 7 is proposed to be developed with 150 senior housing units and a clubhouse. The clubhouse is proposed for use by the residents and their guests only. These units are located in the northwest property corner adjacent to the Centennial Golf Course. Lot 8 is located to the north of the other lots and is proposed to be developed with senior housing, as a separate project known as The Fairways. Access to the site for lots 1, 5, 6, 7, and 8 will be provided by an access road off US Route 6. The road will gain access to the site in the southeast property corner, climb through the eastern portion of the site, cross the stream and continue to traverse the ridgeline on the western side of the stream. The proposed road will continue through to the property to service the proposed development of the Fairways project to the north. Access to lots 2, 3, and 4 will be provided by an additional access road servicing the site off NYS Route 6.

Water supply and wastewater generated by the proposed project will be serviced by the Town of Carmel Water District #2 (CWD#2) and Sewer District #2 (CSD#2) respectively.

2.0 PROJECT DESIGN FLOWS

2.1 Domestic Water Demand

The average daily water design flows for the proposed project are based on the hydraulic loading rates listed in the Putnam County Department of Health Bulletin CS-31. For commercial water uses, bulletin CS-31 references the loading rates given in the New York State Department of Environmental Conservation (NYSDEC) publication *Design Standards for Wastewater Treatment Works – 1988.* This publication allows for a 20% decrease in hydraulic loading rates for premises equipped with water saving plumbing fixtures. Note that for residential water demand bulletin CS-31 does not allow a 20% reduction. The following table lists the proposed uses, associated hydraulic loading rates, and the design flow rates (gallons per day or gpd) for the Gateway Summit project. Since current standards dictate that water saving devices be used in all new construction, a 20% reduction is reflected (where applicable) in the table below. Also listed are anticipated actual flows which are estimated at 50% of the design flow:

Lot	Proposed Use	Hydraulic Loading Rate	Average Daily Design Flow (gpd)	Anticipated Actual Flow (gpd)
1	Hotel (150 rooms)	96 gpd/room*	14,400	7,200
	Banquet (400 seats)	16 gpd/seat*	6,400	3,200
2	Restaurant (230 seats)	28 gpd/seat*	6,440	3,220
3	Restaurant (200 seats)	28 gpd/seat*	5,600	2,800
4	Office (10,000 sf)	0.08 gpd/sf*	800	400
5	Office/Retail (6,000 sf)	0.08 gpd/sf*	480	240
6	YMCA (500 people)	20 gpd/person*	10,000	5,000
7A	150 2-BR Senior Housing Units	300 gpd/unit**	45,000	22,500
7A	Clubhouse (visitors)	400 gpd	400	200
Total			**89,520**	**44,760**

* Hydraulic loading rate from NYSDEC publication *Design Standards for Wastewater Treatment Works – 1988*
** Hydraulic loading rate from Putnam County Department of Health Bulletin CS-31

The average daily wastewater flow is calculated in the *Wastewater Engineering Report for Gateway Summit* as 80,520 gpd, or 9,000 gpd less than the average daily water demand. For wastewater flows, bulletin CS-31 references the loading rates given in the New York State Department of Environmental Conservation's (NYSDEC) publication *Design Standards for Wastewater Treatment Works – 1988.* This publication allows a 20% reduction in the wastewater loading rates to account for water saving fixtures for both commercial and residential uses.

Note that the hydraulic loading rate for a two bedroom senior housing unit is 300 gpd. Bulletin CS-31 calculates the hydraulic loading rate for a two bedroom attached housing unit based on the assumption that four people will be living in the unit. In the subject project, it is more likely that only two people will be living in each senior housing unit. Using a per capita loading rate of 75 gpd from bulletin CS-31, a more realistic hydraulic loading for each two bedroom senior housing unit would be 150 gpd. This would lower the average daily domestic water design flow for the Gateway Summit project to 67,020 gpd. In order to present conservative estimates however, the full design flow of 89,520 gpd will be used for this report.

The peak hourly flow for domestic water use is calculated using a peaking factor that is based on the population of the subject project. The publication *Recommended Standards for Wastewater Facilities - 2004*[1] was used to determine a peaking factor of four.

Peak Hourly Flow

89,520gpd ÷ (24 hr/day) ÷ (60 min/hr) = 62.2 gallons per minute (gpm)

Peak Hourly Flow = 62.2 gpm x 4 ≈ **249 gpm**

A preliminary fracture trace analysis and an analysis of nearby wells performed by SSEC, Inc. indicate that the existing system of bedrock fractures at the site has the potential to supply supplemental water to the site. This source could be used to supply water for irrigation purposes, limiting the impact the project would have on the water district to domestic demand only.

[1] Published by the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers

2.2 Fire Flow Demand

The amount of fire flow available at a point in a distribution system is dependant on several factors including the elevation of the point, the size and arrangement of mains providing service to the point, the supply of water available, and the surrounding area's demand at the time of the fire flow. The amount of flow required to suppress a fire in a structure is dependant on, among other things, the type of the construction, the occupancy, the proximity of other structures, and the presence of fire suppression systems such as sprinklers.

The required fire flow capacities in a distribution system should be established by the district authorities in conjunction with the local fire department. A system evaluation performed by J. Robert Folchetti and Associates, LLC in 1999 assessed pressures at various points in the CWD#2 distribution system using a simulated 500 gpm fire flow. (See Section 6.0 for further discussion on Folchetti report) In accordance with the Town of Carmel zoning law, (Section 63-10Y.Note 25.II.j.), all 150 units of senior housing in the proposed Gateway project are required to have fire suppression systems. The commercial properties proposed (clubhouse, hotel, offices, YMCA, and restaurants) will also be sprinklered. Section 7.0.1.a of "The Recommended Standards for Water Works" states that "fire flow requirements established by the appropriate state Insurance Services Office (ISO) should be satisfied where fire protection is provided". ISO does not determine a needed fire flow for buildings protected by an automatic sprinkler system meeting the applicable National Fire Protection Association (NFPA) standards. All of the proposed buildings will be sprinklered meeting the NFPA requirements therefore the NFPA standards would apply to the project. The maximum NFPA sprinkler demand for the project is 650 gpm for the proposed hotel. Based on review of the ISO's report to the Town of Carmel Board of Fire Commissioners dated December 5, 2001 the fire flow demand for the subject project is far less than fire flow demand for existing structures within CWD #2.

3.0 SOURCE WATER ASSESSMENT

The source water for CWD #2 is Lake Gleneida. Lake Gleneida is a New York City Department of Environmental Protection (NYCDEP) controlled lake. The Town of Carmel has an agreement with the NYCDEP that dates back to the early 1900's which allows the Town to draw water from either Lake Gleneida or the West Branch Reservoir. Based on review of reports prepared by the Town of Carmel and NYCDEP Lake Gleneida is spring fed. Historically the source water supply for CWD #2 has not been a problem. Lake Gleneida is physically connected with the West Branch Reservoir via a sluiceway. This sluiceway allows water to either flow from Lake Gleneida to the West Branch Reservoir or from the West Branch Reservoir to Lake Gleneida. Flashboards are routinely installed and removed in the sluiceway by the Town in order to raise the level in Lake Gleneida. Based on discussion with the Town Engineer these flashboards can raise the level of Lake Gleneida approximately 5 feet. Based on discussions with the Town Engineer on May 23, 2006 the flashboards are currently installed and had raised the lake level by approximately 3 feet. If these flashboards were removed Lake Gleneida would discharge water to the West Branch Reservoir until the lake dropped approximately 3 feet to the elevation of the sluiceway.

During times of drought the flashboards have been removed so that water could flow from the West Branch Reservoir into Lake Gleneida. Based on discussions with the Town Engineer in 2001/2002 the Town requested that the NYCDEP raise the level of the West Branch Reservoir (which they did) to allow water to flow into Lake Gleneida (which happened). In the event that drought conditions became severe such that the West Branch Reservoir was not able to be kept at a level high enough to discharge into Lake Gleneida the Town has the right to pump water from the West Branch to Lake Gleneida. A temporary/portable pump could be used in an emergency and if necessary a permanent pump station could be constructed. Note that this is extremely unlikely based on the minimal flow that the Town draws from Lake Gleneida compared with its overall volume. The Town Engineer has indicated that Lake Gleneida is over 100 deep and the source water intakes are approximately 25' below the normal level (sluiceway elevation) of the lake. Based on this the level of Lake Gleneida would have to drop more than 20' before the supply would become an emergency situation.

The Town Engineer has identified groundwater supply as a future supplemental water source. Future drilled wells would provide source redundancy and possible economic benefits to the district. The applicant is willing to grant the Town a water supply easement to allow the Town to drill wells in the future as a supplemental water supply. This easement would allow the Town to develop supply wells, construct a pump station and treatment facilities if necessary as well as a feasible access. This would provide the Town with an affordable way to provide additional water to the system.

4.0 EVALUATION OF EXISTING WATER TREATMENT PLANT CAPACITY

The subject site is located in CWD#2, which is operated under contract by Severn Trent Environmental Services (STE). The CWD#2 supply source is Lake Gleneida.

As requested by the Town of Carmel Engineer, the impacts of the Gateway Summit project on CWD#2 have been assessed in conjunction with several other major proposed developments in the district. Based on the latest Water Engineering Reports for these projects, the following average daily water design flows and anticipated actual flows (50% of design flows) have been established:

	Design Flow	Anticipated Actual Flow
Gateway Summit	89,520 gpd	44,760 gpd
Fairways	45,400 gpd	22,700 gpd
Carmel Corporate Park[2]	91,200 gpd	45,600 gpd
Hillcrest Commons	45,400 gpd	22,700 gpd
Total Project Design Flows	**271,520 gpd**	**135,760 gpd**
	0.27 mgd	**0.14 mgd**

Note these daily estimates of usage are design flows for engineering and permitting purposes. Historically actual water usage is typically 50% to 80% of the design flow. In order to present conservative estimates the following estimate of available systems capacities utilizes the projects' design flows. Note that 2005 average daily flow = 0.77 mgd, 2004 average daily flow of 0.85 mgd is maximum historical usage.

Water District #2

Plant capacity	=	1.50 mgd (per Water District No. 2, Water System Evaluation, March 1999 by J. Robert Folchetti & Associates, LLC)
2004 average daily flow	=	0.85 mgd (per information supplied by Town of Carmel)
Total project design flows	=	0.27 mgd (0.14 mgd anticipated actual flow)
Projected daily design flow	=	1.12 mgd (0.99 mgd anticipated actual flow)
Excess capacity	**=**	**0.38 mgd(0.51 mgd anticipated actual excess capacity)**

There is sufficient capacity in the water plant to service the proposed Gateway Summit project as well as the other major proposed projects currently under review in CWD#2.

[2] The Carmel Corporate Park project is proposed to be revised into an age-restricted housing development with approximately 380 two-bedroom units. The proposed flow for the housing development is greater than the previously approved office park, therefore this flow will be used.

5.0 EVALUATION OF EXISTING WATER STORAGE CAPACITY

Water storage for CWD#2 is provided in three water storage tanks: a 500,000 gallon tank located on Raymond Hill, a 300,000 gallon tank located at the end of Lindy Drive, and a 300,000 gallon tank located at the end of Everett Road near the northwest corner of the site. These three tanks provide a total storage capacity of 1.1 million gallons.

The *Recommended Standards for Water Works – 2003*[3] (RSWW) states that "storage facilities should have sufficient capacity, as determined from engineering studies, to meet domestic demands, and where fire protection is provided, fire flow demands" (§7.0.1). Section 7.0.1.c states that "Excessive storage capacity should be avoided to prevent potential water quality deterioration". In order to assess the adequacy of the storage the domestic demand, equalization volume, and fire protection volumes must be assessed.

Equalization volume is defined as the volume of water needed for use when water demand in a system exceeds the constant pumping capacity of the system. In a typical community water system, water demand peaks in the morning and evening hours when water use is at a maximum. In order to operate water supply and treatment facilities most efficiently, water is produced at a constant supply rate that is lower than the peak demand rate. During periods of low demand (nighttime), this constant supply rate exceeds the demand and the excess water is stored. During periods of high demand above the constant supply rate, water from storage is used to supplement the constant pumping capacity of the system. The volume of water needed for this is the equalization volume.

The amount of equalization volume needed for a particular system can only be accurately determined when continuous flow rate information is available to generate a demand curve. Equalization storage can be approximated however as 25 percent of the maximum day demand[4], where the maximum day demand is two times the average day demand (two is the maximum day peaking factor). For the projects analyzed above, the approximate required equalization volume would be:

Maximum Day Demand = 2 x 1.14 mgd = 2.28 mgd

Equalization Storage = 0.25 x 2.28 mgd = 570,000 gal

The remaining storage in the tanks is considered fire protection storage. The fire protection volume is available in the existing storage tanks is:

Fire Protection Storage = 1,100,000 gal – 570,000 gal = 530,000 gal

Based on the calculated fire protection volume and the discussion provided in Section 8.0 it is believed that there is sufficient storage in the water system. In addition the Fire Department Chief was contacted relative to the water storage volume available and he indicated that there was adequate storage volume in the system. Although it is believed there is adequate storage within the system the applicant is willing to include the installation of a 135,000 gallon storage tank adjacent to the existing tank.

6.0 EVALUATION OF EXISTING WATER DISTRIBUTION SYSTEM

The existing water distribution system in the vicinity of the subject site is reportedly composed of 6" and 8" water mains and the 300,000 gallon storage tank at the end of Everett Road. An 8" main reportedly runs from the tank southwest downhill to an 8" main beneath Old Route 6. A 6" main in Everett Road connects to the 8" main feeding from the tank, and a 6" main runs beneath Kelly Ridge Road. The main in Kelly Ridge Road is looped to the main in Everett Road by a main in Bard Road.

According to the system evaluation performed Folchetti in 1999, there are low pressure problems in the Kelly Ridge and Everett Road area under static and simulated fire flow conditions.

[3] Published by the Great Lakes – Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers

[4] Mays, Larry W., *Hydraulic Design Handbook*, McGraw-Hill Companies, Inc., New York, 1999.

RSWW recommends that normal working pressures in a distribution system should be approximately 60 to 80 psi, and not less than 35 psi (§8.2.1) at ground level. RSWW and AWWA M31 recommend that a minimum of 20 psi be maintained at ground level at all points in the water distribution system during fire flows. According to the evaluation, the current static pressure in the Kelly Ridge and Everett Road area ranges from 31.6 to 38.3 psi. See Section 7.0 for proposed improvements to alleviate this existing pressure problem. The evaluation found that static pressures in the 8" under Old Route 6 near the site are more than adequate to meet the RSWW recommendations for normal operation (156.9 to 161.1 psi under static conditions).

7.0 PROPOSED CONNECTIONS TO CARMEL WATER DISTRICT #2

Review of hydrant flow test data in the report entitled "Water District # 2 Water System Evaluation" dated March 1999, prepared by J. Robert Folchetti & Associates, LLC and ISO's report to the Town of Carmel Board of Fire Commissioners dated December 5, 2001 indicates that the existing water system can deliver the domestic and fire flow requirements to the majority of the proposed project while maintaining acceptable pressure in the highest point in the system.

The upper portion of the Gateway Summit project will require a booster pump station ("high" system) for the domestic demands and sprinkler fire flow demands. The applicant is willing to fund significant improvements, which will allow this system to alleviate the existing pressure problems on Kelly Ridge Road, Everett Drive and Bard Road. The existing residences above elevation approximately 660 are proposed to be connected to the booster station. The existing and proposed residences below elevation approximately 660 will be supplied from the overall system pressure ("low" system). During normal operating conditions the system pressure below elevation approximately 660 will be 35 PSI or greater. A system pressure of 20 PSI or greater will be maintained in the distribution system below approximately elevation 660 during the proposed project's sprinkler fire flow demand.

The critical sprinkler fire flow demand is for the 16-unit multifamily dwellings located in the proposed high-pressure zone of the upper portion of the Gateway Summit project. Based on a booster station pumping rate of 800 gallons per minute (600 gallons per minute sprinkler demand + 200 gallons per minute domestic demand) friction losses of approximately 2' per 100' can be expected in the existing 8" main from the existing tank. Only approximately 200' of this main will experience this flow for approximately 4' of friction loss. It is estimated that 20 PSI or greater can be maintained at approximately elevation 660 or lower throughout the entire drawdown of the existing tank assuming 20' of friction loss. This leaves 16' of friction loss for domestic demands.

The low system will connect to existing CWD#2 facilities in three locations. The first connection will be to the water main feeding from the Everett Road storage tank. This proposed main will serve the hotel, office space, clubhouse, and restaurants. The main will be connected at the southern end of the site to the existing 8" main under Old Route 6. The low system will also serve the proposed Fairways project adjacent to the north. A connection to the 6" main in Kelly Ridge Road will be made through the Fairways project. These connections will form a loop through the two projects, allowing continuous service to most of the site, even when one portion of the line is shut down for repairs. Looping also allows for supply from two directions for fire flows.

As stated previously, RSWW recommends that normal working pressures in a distribution system should be approximately 60 to 80 psi, and not less than 35 psi (§8.2.1). RSWW and AWWA M31 recommend that a minimum of 20 psi be maintained at all points in the water distribution system during fire flows. The approximate elevations at which these pressures can be maintained in the low distribution system are calculated as follows:

Peak Daily Flow (Normal Operating Conditions)

- Minimum Volume of Water in Storage System
  = Capacity – Equalization Volume = 1,100,000 gal - 570,000 gal = 530,000 gal

- Everett Tank Percentage of System Storage (based on approximate area of tanks)
  = Everett / (Everett + Lindy + Raymond) = 1260 ft^2 / (1260 ft^2 + 1260 ft^2 + 1809 ft^2) = 0.29

- Minimum Volume of Water in Everett Road Tank
  = 0.29 x 530,000 gal = 153,700 gal

- Minimum Water Level in Everett Road Tank
  = 153,700 gal / 7.48 gal/ft^3 / 1260ft^2 = 16.3'
  = Base Elevation + Water Level = 733' + 16' = 749'

- Elevation at which 35 psi is maintained
  - Assume Head Loss = 5'
  = 749' – (2.31ft/psi)(35 psi) – 5'
  = 663'

The maximum elevation at which 35 psi can be maintained under normal operating conditions is approximately 660'. The highest proposed service connection elevation in the low distribution system is approximately 660'.

Fire Flow Conditions

- Minimum Pressure in Distribution System
  = 20 psi
- Minimum Water Elevation in Everett Tank Required to Maintain 20 psi
  - Assume Head Loss = 20' (will vary depending on flow rate and main size)
  - Highest Proposed Service Connection Elevation 660'
  = 660' + (2.31ft/psi)(20 psi) + 20'
  = 726'

The Everett Road tank base elevation is 733', therefore 20 psi or greater will maintained in the Gateway distribution system throughout the entire drawdown of the fire storage volume (530,000 gal).

Pressure in Lower Portion of Gateway Project

- Lowest Ground Elevation in Vicinity of Service Connections = 444'

- Maximum Water Elevation in Everett Road Tank
  = 300,000 gal / 7.48 gal/ft^3 / 1260ft^2 = 32'
  = Base Elevation + Water Elevation = 733' + 32' = 765'

- Approximate Pressure at 444'
  Assume Head Loss = 10'
  = (765' – 444' – 10')/(2.31psi/ft)
  = 134 psi

This pressure is similar to the static pressures simulated in the Old Route 6 area in the 1999 Folchetti report. It is however higher than the maximum of 80 psi recommended by RSWW. Pressure reducing valves will be required to reduce pressures in the lower portion of the Gateway project to lower pressures to the recommended levels.

The high system will utilize booster pumps to supply adequate pressure to the proposed dwellings on lot 7, some of which are at roughly the same elevation as the Everett Road storage tank. This system will draw from a connection to the low system near the storage tank, and be looped around the access road to the dwellings. The high system will be designed to supply the sprinkler systems in its service area.

The high system will be also be used to alleviate the low pressures that currently occur near the end of Kelly Ridge and Everett Road. The upper portions of the mains servicing dwellings on Everett and Kelly Ridge Road, and the main in Bard Road will be disconnected from the existing distribution system, and connected to the high system via a line from the end of Everett Road to the proposed booster pump station. The lower portion of the existing remaining main in Everett Road and the main to St. Michael's Terrace will be reconnected to the storage tank by a new gravity main. The lower portion of the existing main in Kelly Ridge Road will be looped by a connection to the low system in the proposed Fairways project. Refer to Figure 1 at the end of this report for a schematic of this arrangement. Fire protection flow will be provided to the dwellings at the end of Everett Road by new hydrants on the new gravity main to the storage tank. Fire protection to the dwellings at the end of Kelly Ridge Road will continue to be provided by the hydrants on the remaining existing main.

The high system will serve the upper portion of the proposed Gateway project, as well as the upper dwellings on Kelly Ridge, Everett, and Bard Road. Elevations in the proposed service area range from 720' to 650'. The high system will be composed of booster pumps to build pressure for distribution to the site, as well as a hydropneumatic tank to cycle the pumps.

An alternative to using booster pumps to increase pressures in the high zone would be to construct a higher storage tank. The new storage tank at the end of Everett Road would need to be approximately 80' high, or two and a half times the height of the existing tank, to provide adequate pressure throughout the drawdown of the equalization volume. A higher tank would eliminate the additional operational and maintenance costs that would be incurred by the booster pump option, but doing so would have other impacts on the distribution system as a whole. A higher tank would cause issues with its interaction with the other two tanks in the system, possibly further increase the already high pressures in the southern portion of the system, impact the pumping capacity of the treatment plant, and have aesthetic impacts on the area. The booster pump option allows pressures to be raised locally without affecting the system as a whole.

8.0 ASSESSMENT OF SYSTEM'S PUBLIC PROTECTION CLASSIFICATION

Insurance Services Office (ISO) uses a Fire Suppression Rating Schedule (FSRS) to measure the majority of the elements of a community's fire suppression system and develops a numerical grading called a Public Protection Classification (PPC ^{TM}). The FSRS allocates credit by evaluating the following three major features: fire alarm and communication system (10% of the total classification), fire department (50% of the total classification), water system (40% of the total classification). ISO analyzes three primary factors in the evaluation of the water supply which includes capacity of the supply works, capacity of the water mains and distribution system, and distribution of the hydrants.

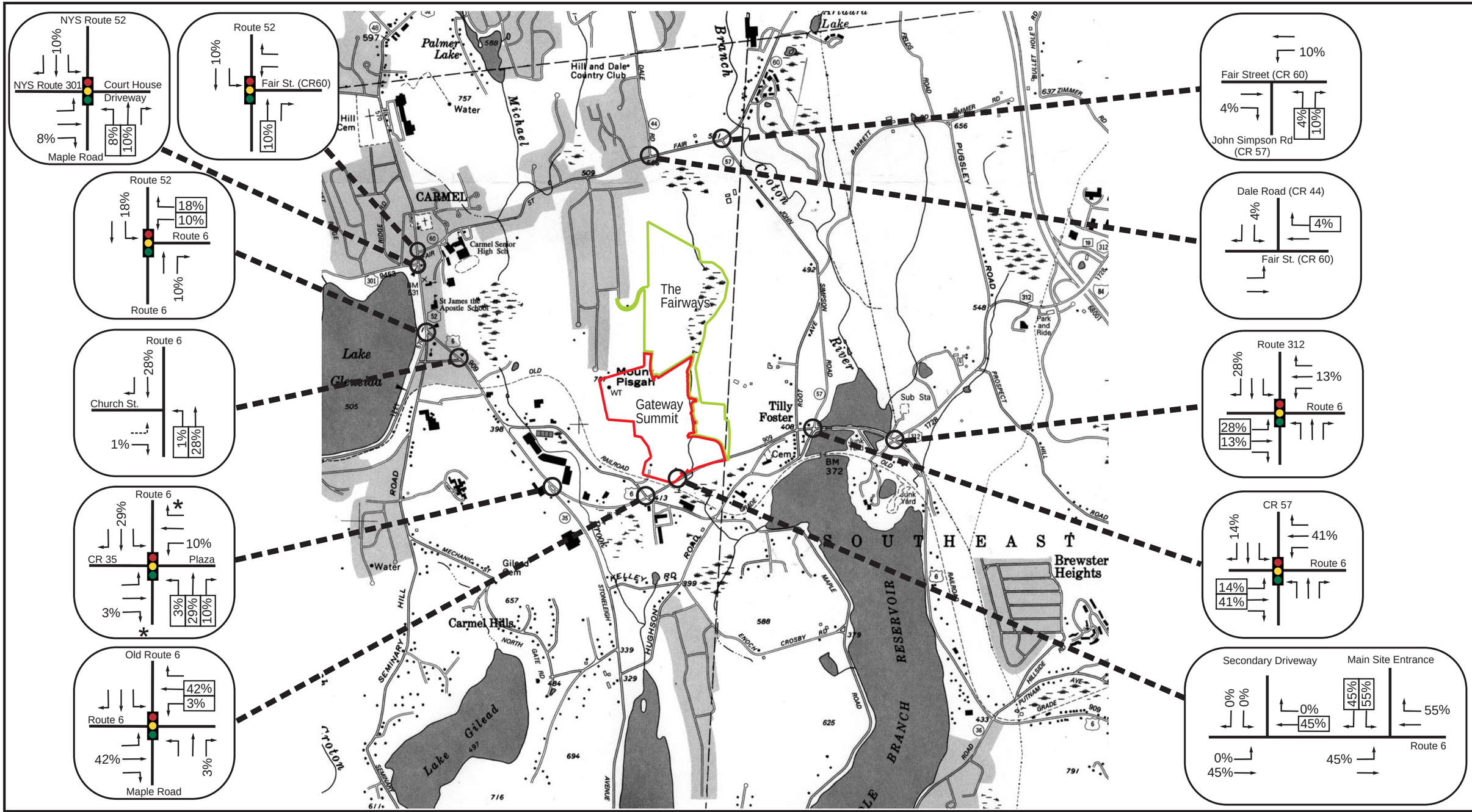
The storage tank requirements are calculated by ISO based on the flow – sustainable for the needed duration-from both suction storage tanks and gravity storage tanks, based on the capacity of the tanks at their average daily minimum levels. Based on discussions with the Carmel Water District #2 operator the tanks are normally kept within 6 to 10 feet of their maximum capacity. Based on this, the average daily minimum volume of water in the tanks is approximately 775,000 gallons to 900,000 gallons. AWWA Manual M31 references the NFPA Fire Protection Handbook for the duration of fire flows and ISO provides credits based on the fire flow durations. The needed duration for flow is based on a duration of 2 hours for needed fire flows of 2,500 GPM and less based on AWWA M31 and less than 3,000 GPM based on ISO. A duration of 3 hours for needed fire flows of 3,000 GPM to 3,500 GPM for both AWWA M31 and ISO. Based on a 3,500 GPM needed fire flow and a duration of 3 hours a volume of 630,000 gallons is calculated. Similarly a fire flow of 2,500 GPM would require 300,000 gallons. Based on the capacity of the tanks at their average daily minimum levels there is a volume of approximately 775,000 gallons to 900,000 gallons in the tanks which exceeds the ISO calculation. ISO typically only considers needed fire

flows up to 3,500 gpm when calculating durations and associated volumes. Based on this analysis as well as the analysis in Section 5.0 we believe there is sufficient storage in the water system.

In addition we believe the subject project will not effect the Town's ISO Public Protection Classification. This is based on the fact that the subject project will be protected by fire sprinklers, and ISO has already assigned the maximum credit for storage to the Town's grading. Based on review of the ISO's report to the Town of Carmel Board of Fire Commissioners dated December 5, 2001 it appears that in order for the Town to improve their Public Protection Classification distribution system improvements, not storage improvements, would be needed. These distribution system improvements would be needed in areas such as Gleneida Avenue at Fowler Avenue where the needed fire flow is 3,000 GPM and the available flow is 1,400 GPM. Note that at this available flow there would be several locations in the existing system where the system pressure would drop below 20 psi. ISO does not calculate a needed fire flow for buildings protected by an automatic sprinkler system meeting NFPA standards. The proposed project will not affect the ISO credits based on needed fire flows since ISO does not consider sprinklered buildings when grading water systems.

Appendix J

Traffic Volume Figures



N
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KEY

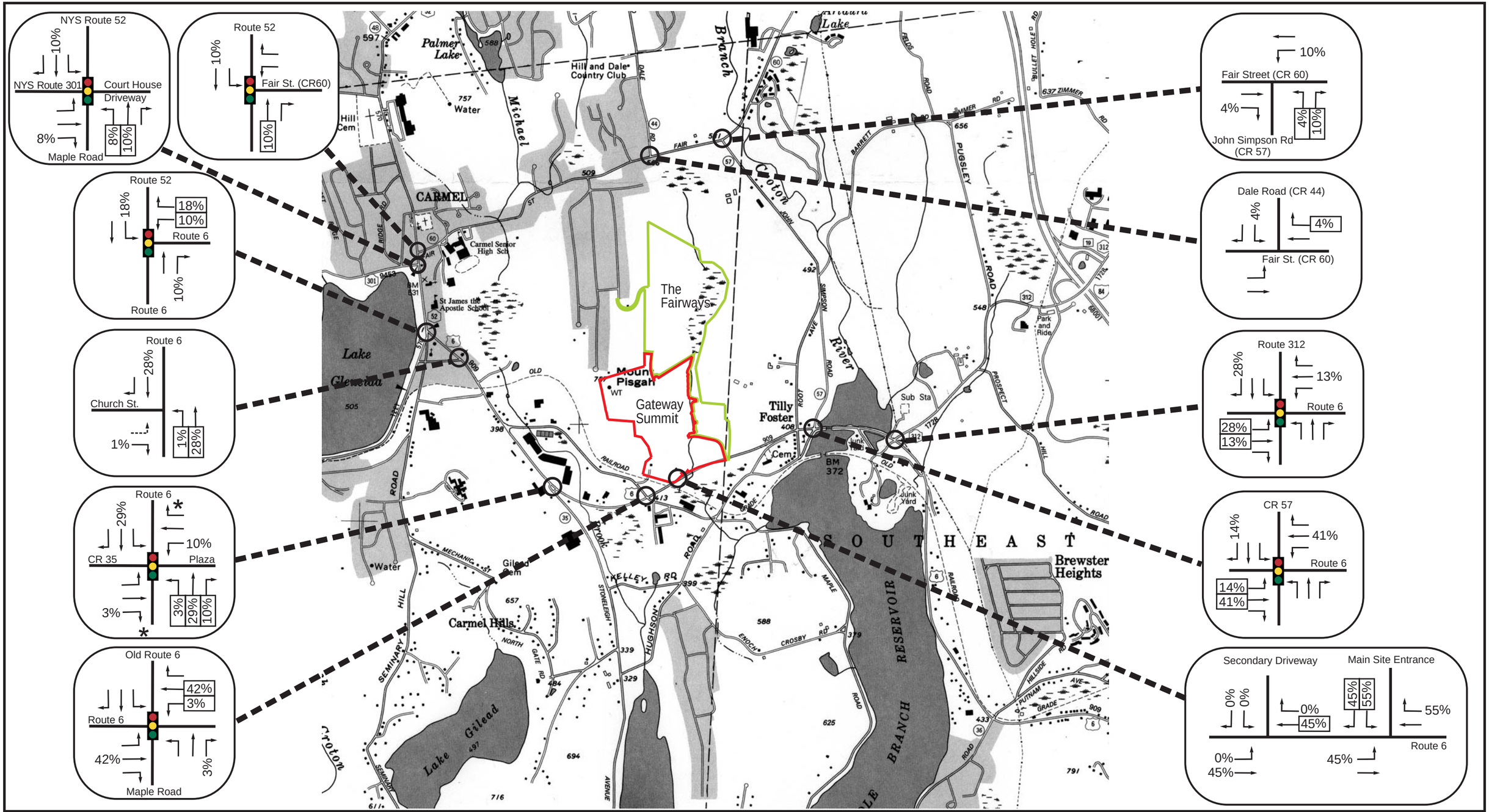
- Gateway Summit
- The Fairways
- Intersections Studied
- Traffic Signal Controlled
- * Stop or Yield Controlled Channel
- Illegal Left Turn

Residential External Trips
XX% Inbound
XX% Outbound

Note: Fairways Lot

File 02136 07/13/06
JS\02136\

Figure J-1: Fairways Residential Site Traffic Distribution
Peak Hour Traffic
Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'



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File 02136 7/13/06
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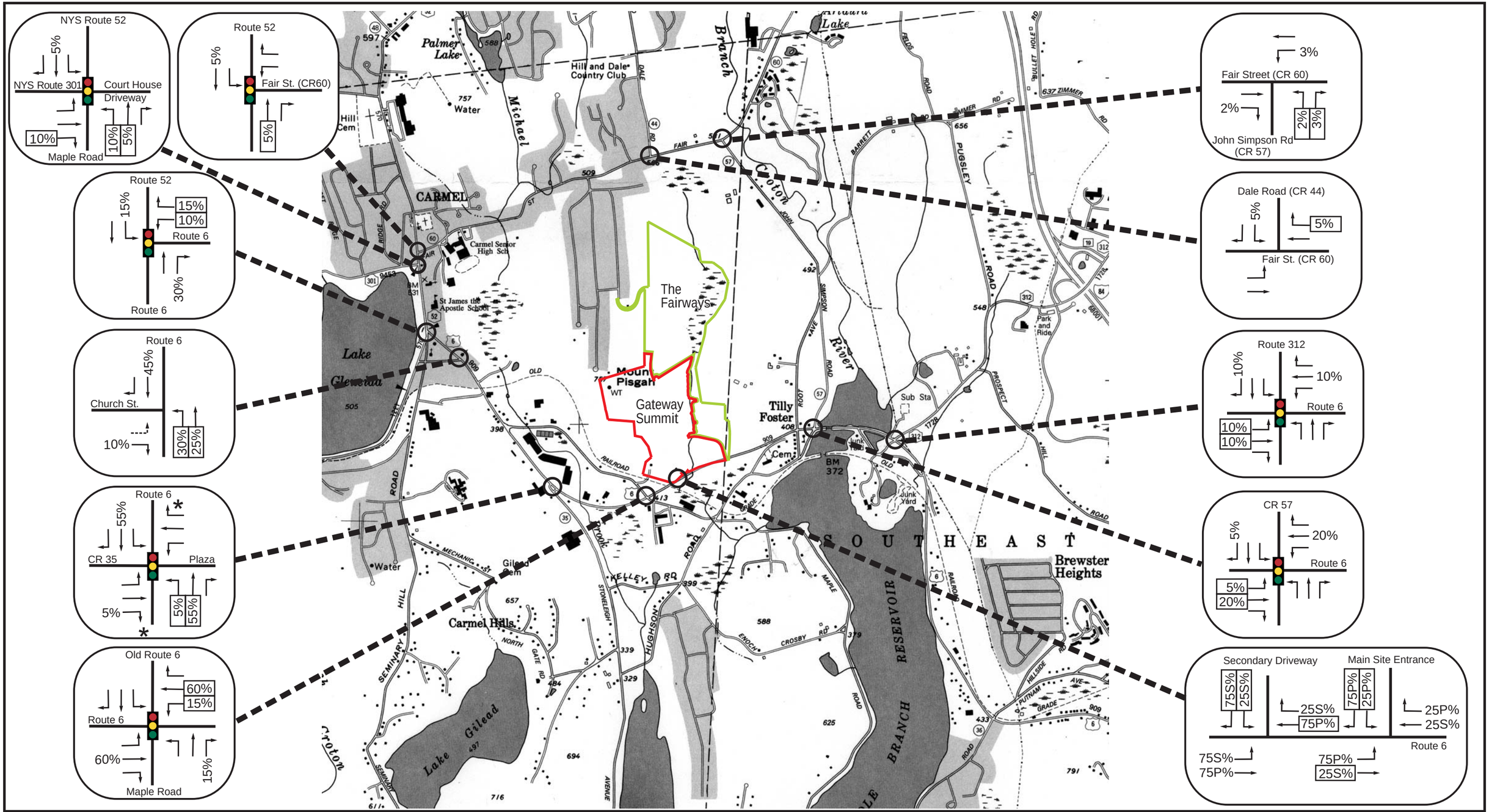
KEY

- Gateway Summit
- The Fairways
- Intersections Studied
- Traffic Signal Controlled
- * Stop or Yield Controlled Channel
- Illegal Left Turn

Residential External Trips
XX% Inbound
XX% Outbound

Note: Gateway Lot 7

Figure J-2: Gateway Residential Site Traffic Distribution
Peak Hour Traffic
Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'



N
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KEY

- Gateway Summit
- The Fairways
- Intersections Studied
- Traffic Signal Controlled
- * Stop or Yield Controlled Channel
- Illegal Left Turn

XX% Inbound
XX% Outbound
P Primary Only
S Secondary Only

Note: ** Passby traffic 55% eastbound / 45% westbound
Lots 2-6
* Excludes Hotel and Residential Components

Figure J-3: Commercial* Site Traffic Distribution
Peak Hour Traffic
Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'

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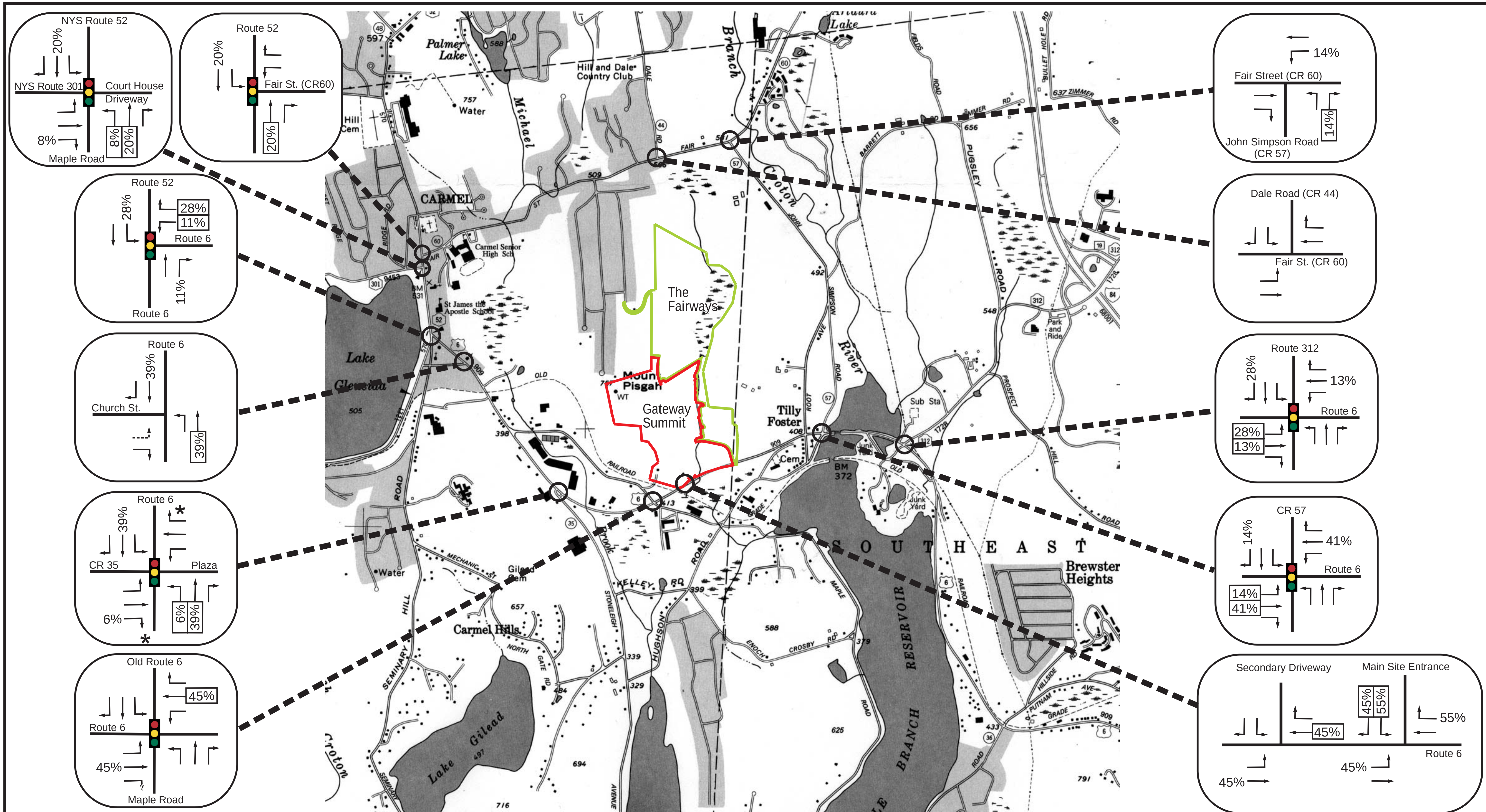

KEY

- Gateway Summit
- The Fairways
- Intersections Studied
- Traffic Signal Controlled
- * Stop or Yield Controlled Channel
- Illegal Left Turn

Hotel External Trips

XX% Inbound

XX% Outbound

File 02136 7/13/06
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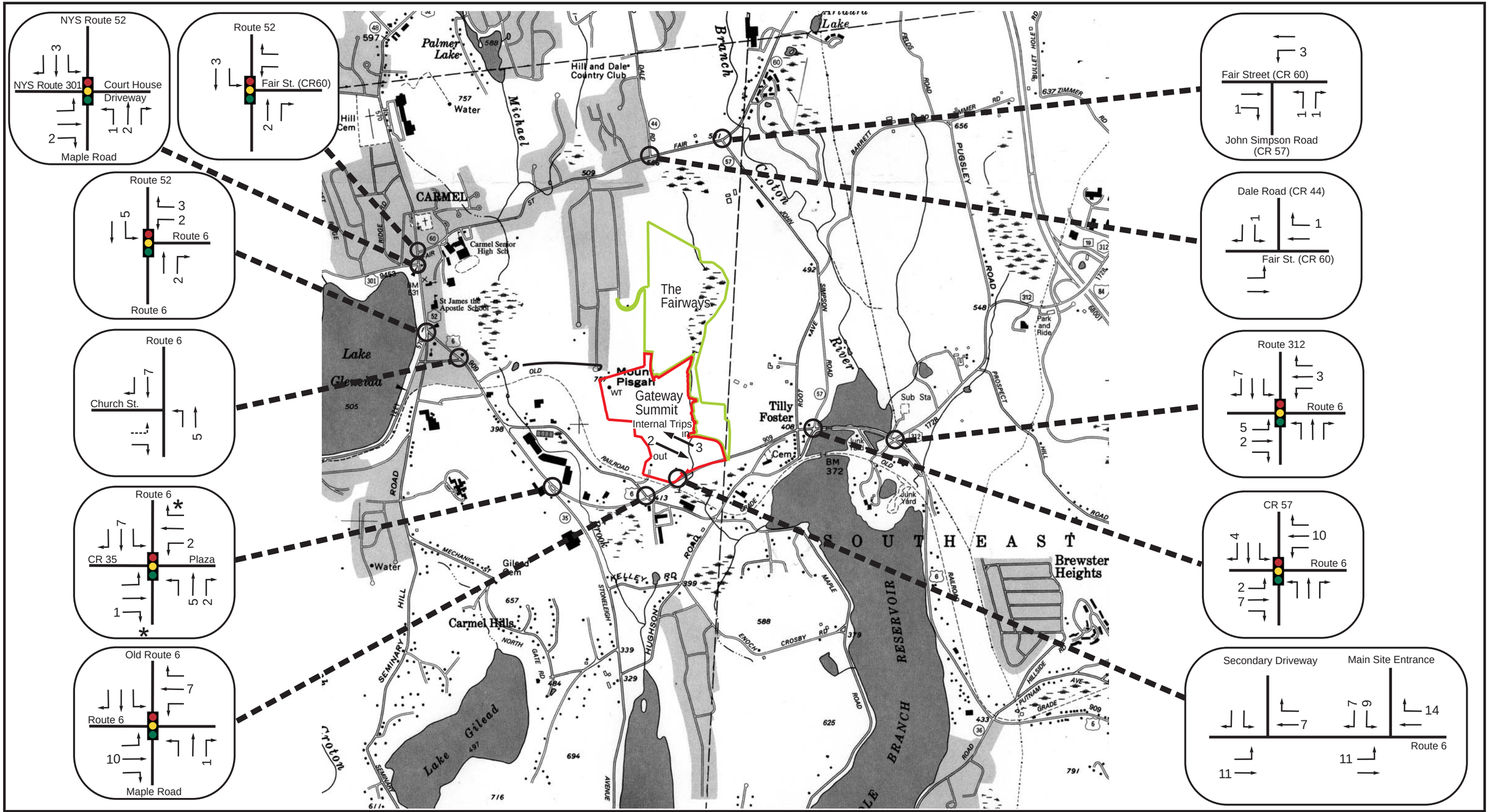
Figure J-4: Hotel Area Site Traffic Distribution

Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'



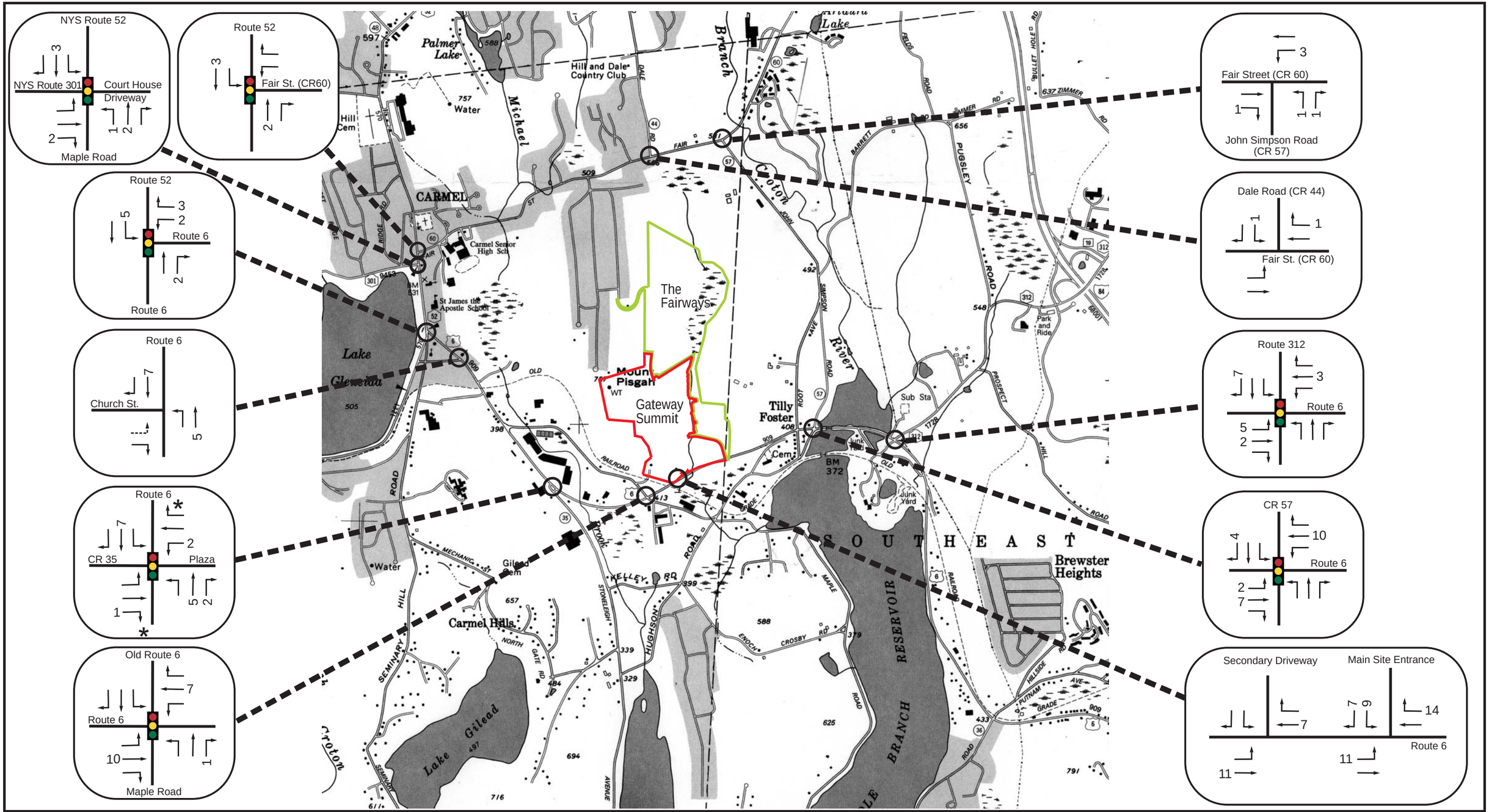
KEY

- Gateway Summit
- The Fairways
- Intersections Studied
- Traffic Signal Controlled
- * Stop or Yield Controlled Channel
- Illegal Left Turn

Note: Fairways Lot

File 02136 7/13/06
JS\02136\8-30-04 traffic

Figure J-5: PM Fairways Residential Site Generated Traffic
Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'



Note: Lot 7 traffic Gateway Summit residential

File 02136 7/13/06
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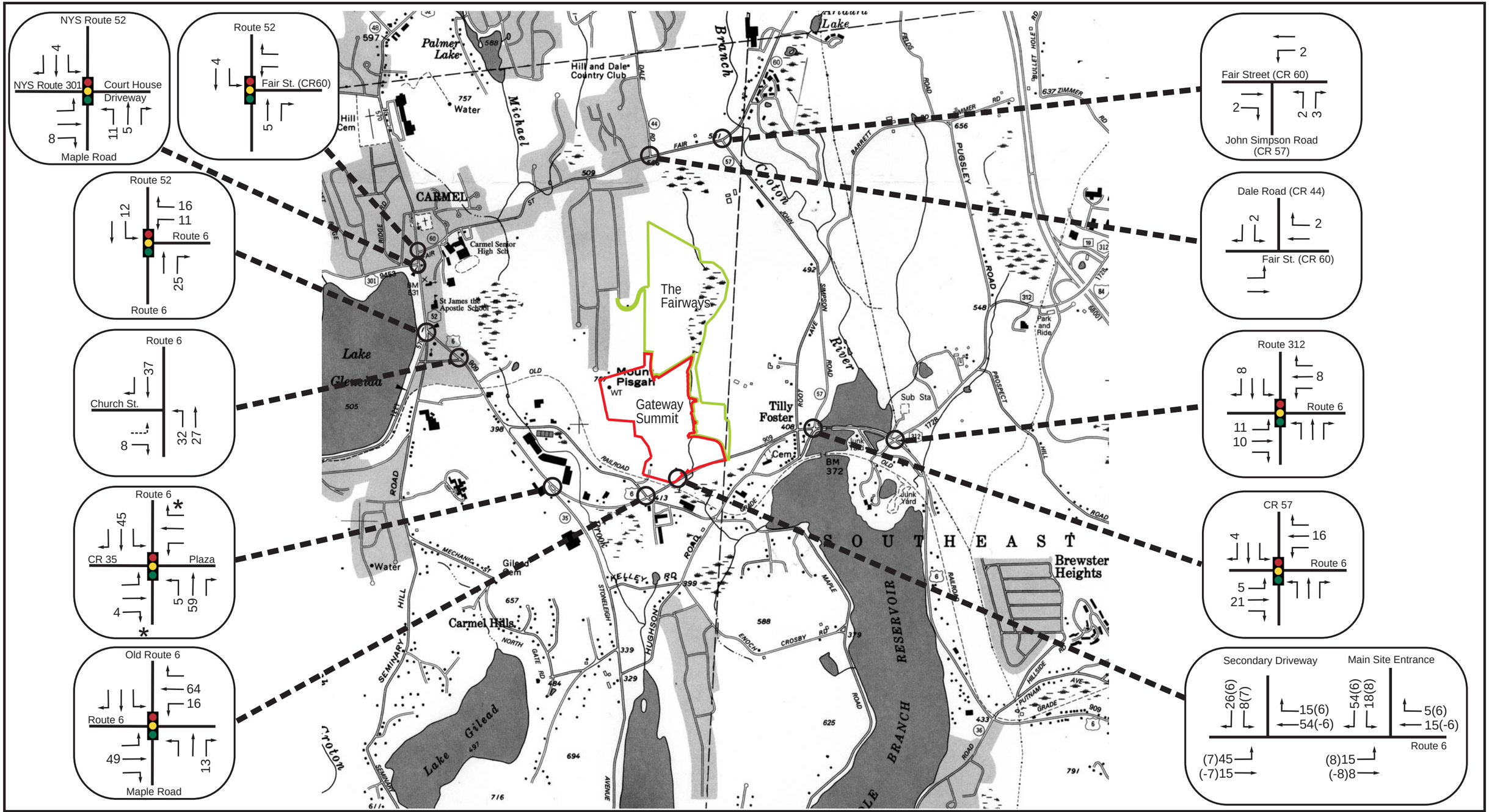
Figure J-6: PM Gateway Residential Site Generated Traffic
Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'



File 02136 7/13/06
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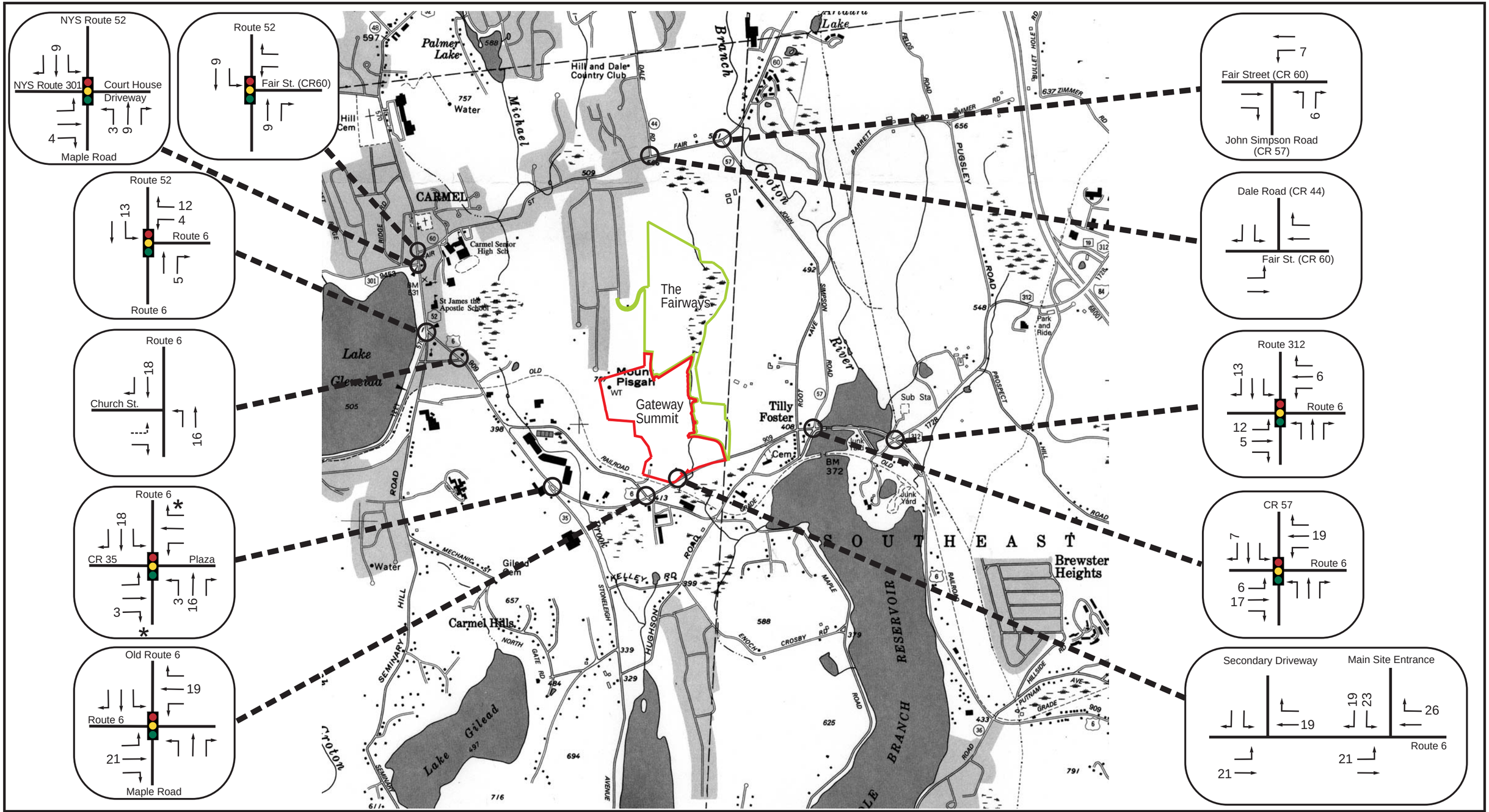
Note: Lots 2-6
* Excludes Hotel and Residential Components

Figure J-7: PM Commercial*
Site Generated Traffic
Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'



KEY

- Gateway Summit
- The Fairways
- Intersections Studied
- Traffic Signal Controlled
- * Stop or Yield Controlled Channel
- Illegal Left Turn

N W E S

File 02136 7/13/06
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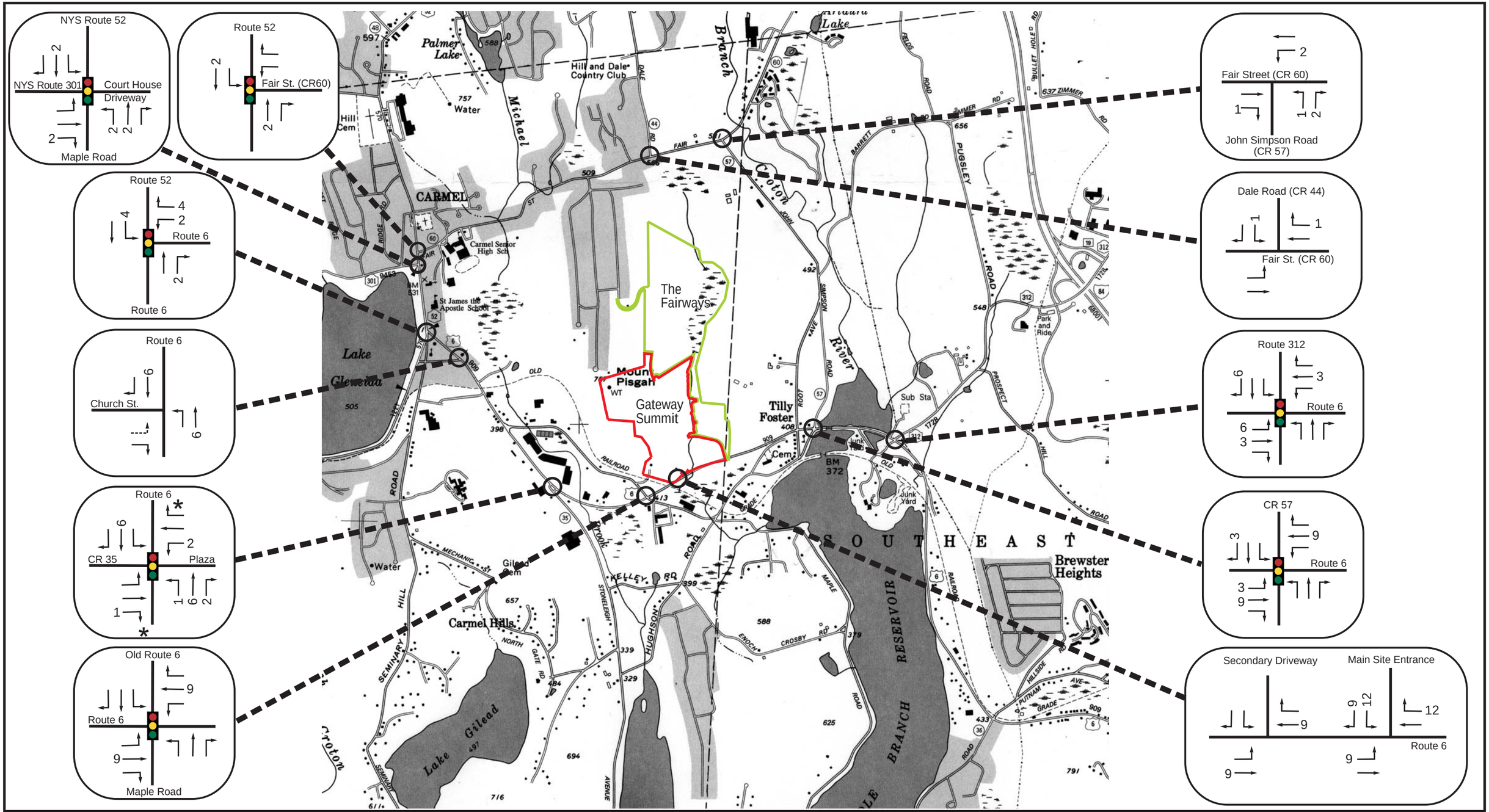
Note: Hotel Area Gateway Summit Lot 1

Figure J-8: PM Hotel Area
Site Generated Traffic
Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'



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KEY

- Gateway Summit
- The Fairways
- Intersections Studied
- Traffic Signal Controlled
- * Stop or Yield Controlled Channel
- Illegal Left Turn

Note: Fairways Lot

File 02136 7/13/06
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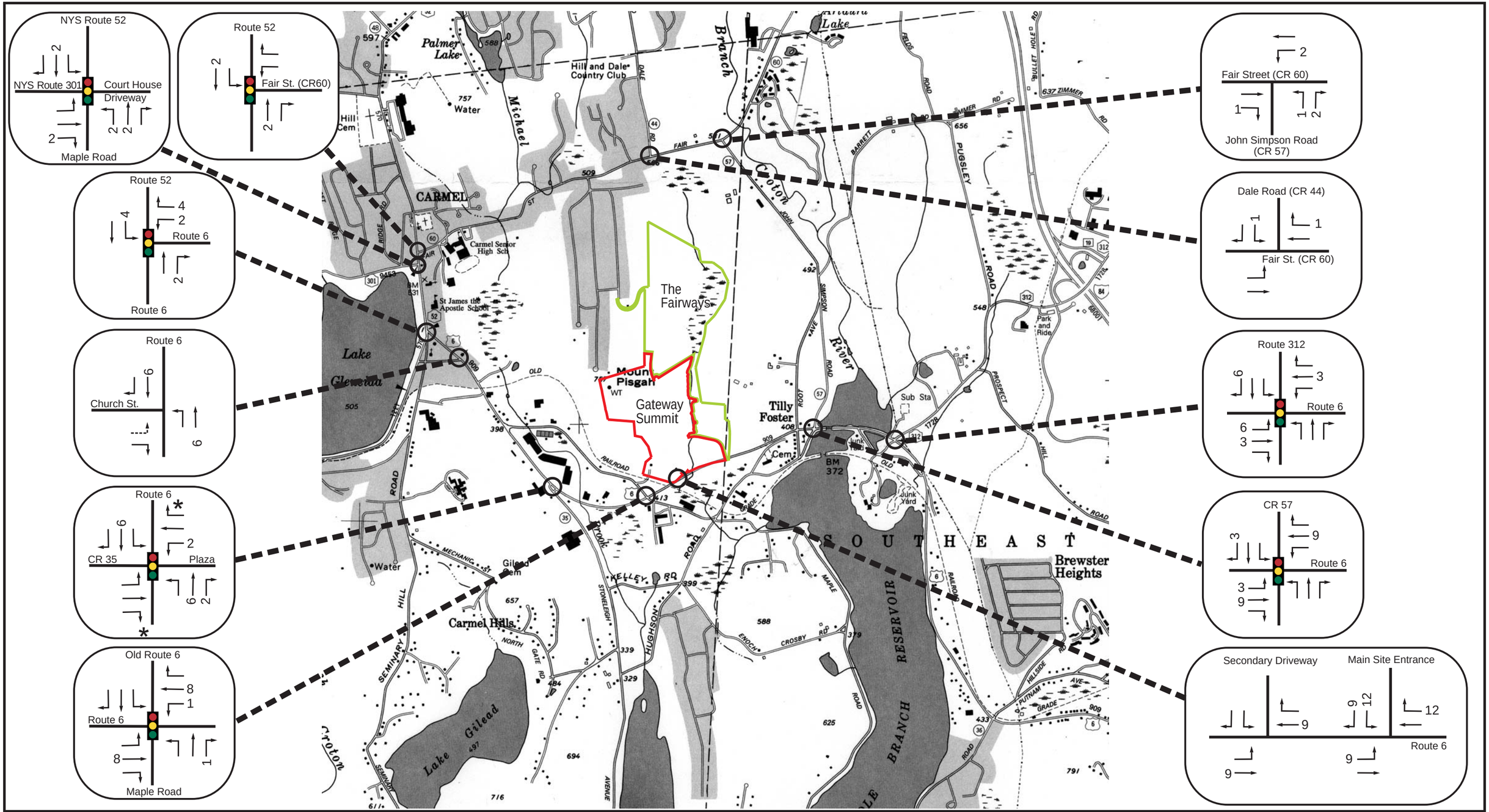
Figure J-9: Saturday Fairways Residential Site Generated Traffic
Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'



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KEY

- Gateway Summit
- The Fairways
- Intersections Studied
- Traffic Signal Controlled
- * Stop or Yield Controlled Channel
- Illegal Left Turn

File 02136 7/13/06
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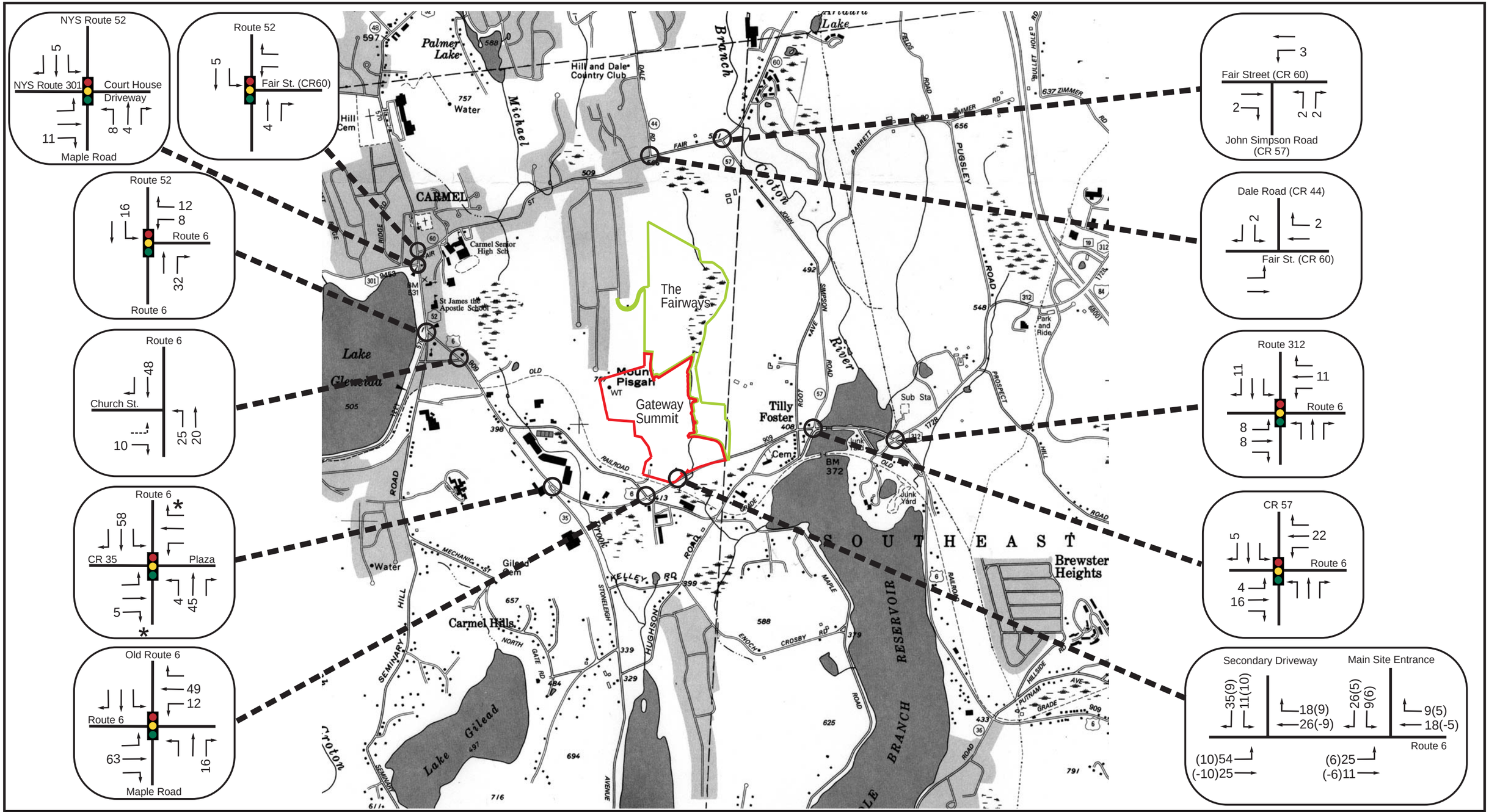
Note: Lot 7 traffic Gateway Summit residential

Figure J-10: Saturday Gateway Residential Site Generated Traffic
Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'



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KEY

Gateway Summit	XX Inbound Trips
The Fairways	(XX) Outbound Trips
Intersections Studied	
Traffic Signal Controlled	
* Stop or Yield Controlled Channel	
Illegal Left Turn	

Note: Lots 2-6
* Excludes Hotel and Residential Components

File 02136 07/13/06
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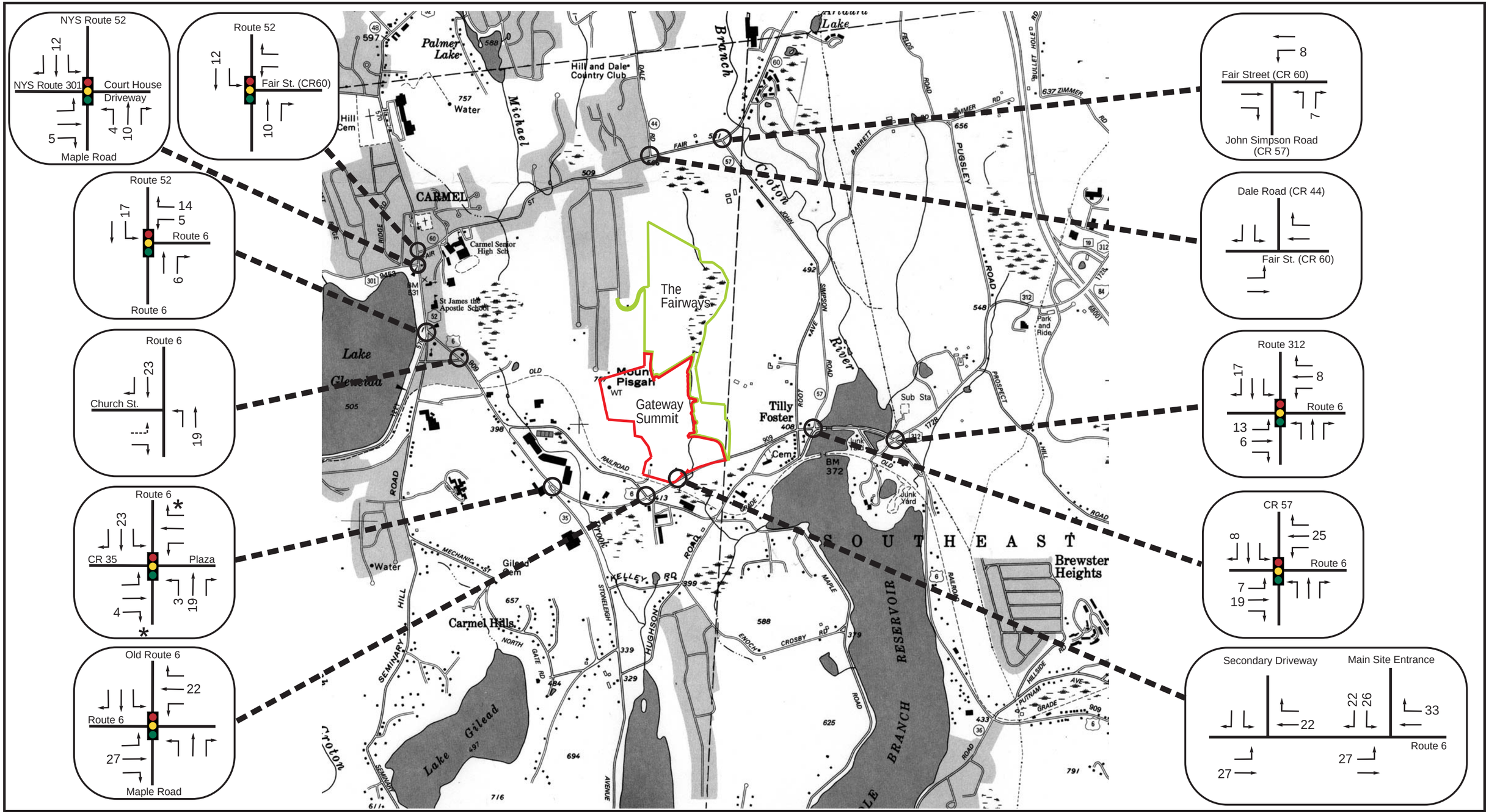
Figure J-11: Saturday Commercial* Site Generated Traffic
Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'



KEY

- Gateway Summit
- The Fairways
- Intersections Studied
- Traffic Signal Controlled
- * Stop or Yield Controlled Channel
- Illegal Left Turn

N W E S

File 02136 7/13/06
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Note: Hotel Area Gateway Summit Lot 1

Figure J-12: Saturday Hotel Area Site Generated Traffic
Gateway Summit and The Fairways FGEIS
Town of Carmel, Putnam County, New York
Base Map: NYSDOT Planimetric Map (Lake Carmel Quad)
Scale: 1" = 2000'

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Appendix K

Site Vehicular Trips

Table K-1
Gateway Summit and The Fairways Site Trip Generation Rate Summary

Lot #	Land Uses and Size {ITE Code}[1] Potential Land Uses	Trips Rates					
		A.M. Peak Hour		P.M. Peak Hour		Saturday Peak Hour	
		IN (Trips/ unit **)	OUT (Trips/ unit **)	IN (Trips/ unit **)	OUT (Trips/ unit **)	IN (Trips/ unit **)	OUT (Trips/ unit **)
Lot 1	Hotel 150 rooms, Conference Center, and Banquet Facility {310}	0.274	0.176	0.313*	0.277*	0.403	0.317
Lot 2	Quality Restaurant 7,600 square feet {931}	0.664*	0.146*	5.018*	2.472*	6.378	4.432
Lot 3	Quality Restaurant 6,300 square feet {931}	0.664*	0.146*	5.018*	2.472*	6.370	4.427
Lot 4	Office 10,000 square feet {710}	2.616	0.357	0.253*	1.237*	0.309	0.263
Lot 5	Office 6,000 square feet {710}	2.897	0.395	0.253*	1.237*	0.341	0.290
Lot 6	Recreational Community Center 68,000 square feet {495}	0.988	0.632	0.476*	1.164*	0.627*	0.653*
Lot 7	Elderly Residences, 150 dwelling units {252} ***	0.122	0.149	0.189	0.121	0.150*	0.150*
Fairways Lot 8	Elderly Residence, Retirement *** Community 150 dwelling units {252}	0.122	0.149	0.189	0.121	0.150*	0.150*

* Equations rates not available, based on average rates.

** units are based on:
dwelling units for residential
rooms for hotel
Park for athletic fields
1,000 square feet of gross floor area for retail, restaurant, and recreational community center.

*** Maximum rate for a.m. and p.m.

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.

Table K-2 (also 3.6-2)
Gateway Summit and The Fairways Site Trip Generation Summary

Land Uses and Size (Potential Uses)	Trips								
	A.M. Peak Hour			P.M. Peak Hour			Saturday Peak Hour		
	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)
Gateway Summit									
Hotel 150 rooms, Conference Center, and Banquet Facility	41	26	67	47	42	89	60	48	108
Quality Restaurant 7,600 square feet	5	1	6	38	19	57	48	34	82
Quality Restaurant 6,300 square feet	4	1	5	32	16	48	40	28	68
Office 10,000 square feet	26	4	30	3	12	15	3	3	6
Offices 6,000 square feet	17	2	19	2	7	9	2	2	4
Recreational Community Center 68,000 square feet	67	43	110	32	79	111	43	44	87
Elderly Residences, 150 dwelling units	18	22	40	28	18	46	23	23	46
The Fairways									
[1] Elderly Residences, 150 dwelling units	18	22	40	28	18	46	23	23	46
Total Build	**196**	**121**	**317**	**210**	**211**	**421**	**242**	**205**	**447**
Total from DGEIS	282	164	446	239	275	514	287	259	546
Percent Change	**-31%**	**-26%**	**-29%**	**-12%**	**-23%**	**-18%**	**-16%**	**-21%**	**-18%**

sf = gross leasable square feet.

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.

Table K-3
Project Site Trips By Use

Land Uses	Trips (From Table K-2)								
	A.M. Peak Hour			P.M. Peak Hour			Saturday Peak Hour		
	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)
Hotel	41	26	67	47	42	89	60	48	108
Office	43	6	49	5	19	24	5	5	10
Residential	36	44	80	56	36	92	46	46	92
Recreational	67	43	110	32	79	111	43	44	87
Restaurant	9	2	11	70	35	105	88	62	150
Total	**196**	**121**	**317**	**210**	**211**	**421**	**242**	**205**	**447**

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.

Table K-4
Retail Site Trips Internal and External

Retail and community recreational trips	Trips					
	A.M. Peak Hour		P.M. Peak Hour		Saturday Peak Hour	
	IN (Trips)	OUT (Trips)	IN (Trips)	OUT (Trips)	IN (Trips)	OUT (Trips)
Residential Total (From Table K-3)	36	44	56	36	46	46
minus Internal (10%)	-4	-4	-6	-4	-4*	-4*
External Residential	**32**	**40**	**50**	**32**	**42**	**42**

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.
*As Gateway Summit and The Fairways are two separate project with 23 trips in and out each, internal trips are rounded down to two internal trips in and out for each.

Table K-5
Pass By Trips

Gateway Summit	Trips								
	A.M. Peak Hour			P.M. Peak Hour			Saturday Peak Hour		
	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)	Total (Trips)	IN (Trips)	OUT (Trips)
Community Recreational Primary Access									
External Total From Tables K-3	**110**	**67**	**43**	**111**	**32**	**79**	**87**	**43**	**44**
minus passby (25%)	-28	-14	-14	-28	-14	-14	-22	-11	-11
External non passby	**82**	**53**	**29**	**83**	**18**	**65**	**65**	**32**	**33**
Restaurants* Secondary Access									
External Total From Tables K-3	**11**	**9**	**2**	**105**	**70**	**35**	**150**	**88**	**62**
minus passby (25%)	-0*	-0*	-0*	-26	-13	-13	-38	-19	-19
External non passby	**11**	**9**	**2**	**79**	**59**	**22**	**112**	**69**	**43**

* No Passby assumed in a.m. peak hour for use.

Trip Generation, Institute of Transportation Engineers, 7th edition, Washington D.C., 2003.

Appendix L

Level of Service Tables

Table L-1 New FGEIS Table 3.6-3 (See Section 3.6 Introduction and Response 3.6-18)
Level of Service Summary
US Route 6, Old Route 6, and Maple Road Signalized Intersection in the Town of Carmel

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service
U.S. Route 6/Old Route 6/ Maple Road Existing Condition							
U.S. Route 6	EB - L, T, R	0.66	9.4	A	0.68	8.7	A
U.S. Route 6	WB - L, T, R	0.46	6.5	A	0.55	6.6	A
Maple Road	NB - L, T, R	0.65	28.8	C	0.48	25.1	C
Old Route 6	SB - L, T, R	0.42	22.7	C	0.24	28.0	C
	Overall		11.4	B		9.3	A
U.S. Route 6/Old Route 6/ Maple Road No Build Condition							
U.S. Route 6	EB - L, T, R	0.88	18.1	B*	0.88	16.8	B
U.S. Route 6	WB - L, T, R	0.66	9.4	A	0.75	10.4	B
Maple Road	NB - L, T, R	0.77	36.8	D*	0.64	30.5	C
Old Route 6	SB - L, T, R	0.42	22.6	C	0.33	23.6	C
	Overall		11.4	B		15.1	B
U.S. Route 6/Old Route 6/ Maple Road Build Condition							
U.S. Route 6	EB - L, T, R	0.96	28.7	C*	0.97	29.0	C*
U.S. Route 6	WB - L, T, R	0.80	13.7	B*	0.87	15.9	B
Maple Road	NB - L, T, R	0.84	45.5	D	0.73	36.4	D*
Old Route 6	SB - L, T, R	0.42	22.8	C	0.34	23.7	C
	Overall		24.2	C*		23.8	C*

Level-of-Service (see DGEIS Table 3.6-4 for level-of-service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R= right, T, R = through and right, (e.g. WB - L = Westbound left).
* Reduction in level of service from the No Build Condition.

Table L-2 New FGEIS Table 3.6-4 (See Section 3.6 Introduction and Response 3.6-18)
NYS Route 52/ NYS Route 301 Level of Service Summary
Signalized Intersection in the Town of Carmel

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds/ vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds/ vehicle)	Level of Service
NYS Route 52/ NYS Route 301 Existing Condition							
NYS Route 301	EB - L	0.22	28.3	C	0.22	23.6	C
	EB - T, R	0.46	30.6	C	0.57	27.7	C
NYS Route 52	NB - L	0.36	6.2	A	0.36	7.3	A
	NB - T, R	0.78	12.7	B	0.68	10.9	B
NYS Route 52	SB - L, T, R	0.51	6.9	A	0.59	8.9	A
	Overall		12.0	B		12.3	B
NYS Route 52/ NYS Route 301 No Build Condition							
NYS Route 301	EB - L	0.26	28.7	C	0.26	23.9	C
	EB - T, R	0.59	33.5	C	0.72	33.0	C
NYS Route 52	NB - L	0.63	11.3	B*	0.60	11.9	B*
	NB - T, R	1.01	41.9	D*	0.89	21.2	C*
NYS Route 52	SB - L, T, R	0.69	9.7	A	0.76	12.5	B*
	Overall		26.8	C*		18.5	B
NYS Route 52/ NYS Route 301 Build Condition							
NYS Route 301	EB - L	0.26	28.7	C	0.26	23.9	C
	EB - T, R	0.66	35.8	D*	0.78	37.5	D*
NYS Route 52	NB - L	0.69	14.7	B	0.67	15.7	B
	NB - T, R	1.03	46.2	D	0.91	23.2	C
NYS Route 52	SB - L, T, R	0.71	10.1	B*	0.77	13.0	B
	Overall		29.3	C		20.3	C*

Level of Service (see DGEIS Table 3.6-4 for Level-of-service criteria).

NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound

L = Left, T = Through, R = Right, (e.g. WB - L = Westbound left).

* Decline in level of service from previous condition.

Table L-3 (See Response 3.6-19) 2003 No Build Condition Level of Service Summary										
Intersection Road	Lane Group Approach Direction - Movement	A.M. Weekday Peak Hour V/C	A.M. Delay (sec./ veh.)	A.M. LOS	P.M. Weekday Peak Hour V/C	P.M. Delay (sec./ veh.)	P.M. LOS	Saturday Peak Hour V/C	Saturday Delay (sec./ veh.)	Saturday LOS
US Route 6 and NYS Route 52										
US Route 6	WB-L	0.58	44	D	0.83	70	E*	0.80	50	D
	WB-R	0.56	17	B	0.99	51	D*	0.71	16	B
US Route 6	NB-T	0.44	21	C	0.92	47	D	0.74	27	C
	NB-R	0.09	18	B	0.16	20	C*	0.29	19	B
NYS Route 52	SB-L	0.63	11	B*	0.82	29	C	0.69	16	B
	SB-T	0.32	3	A	0.28	3	A	0.27	3	A
	Overall		13	B		37	D*		19	B
US Route 6 and Stoneleigh										
Stoneleigh Avenue	EB-LT	0.55	44	D	1.22	167	F	0.75	53	D
	EB-R	0.03	30	C	0.19	39	D	0.11	39	D
Putnam Plaza	WB-LT	0.25	44	D	0.97	92	F*	1.11	132	F
	WB-R	0.11	43	D	0.44	46	D	0.55	48	D
US Route 6	NB-L	0.12	20	C	0.17	22	C*	0.44	30	C
	NB-TR	0.49	20	C*	0.88	44	D*	0.94	53	D
US Route 6	SB-L	0.04	21	C	0.37	43	D*	0.62	54	D
	SB-T	0.57	28	C	0.62	29	C	0.82	38	D*
	SB-R	0.20	10	A	0.20	10	A	0.13	9	A
	Overall		29	C		72	E		59	E*
US Route 6 and John Simpson										
US Route 6	EB-L	0.13	35	D*	0.45	42	D*	0.42	41	D*
	EB-TR	0.50	17	B	1.11	104	F*	1.05	83	F*
US Route 6	WB-L	1.05	110	F*	0.33	42	D*	0.21	41	D*
	WB-T	0.98	62	E*	1.00	72	E*	1.00	70	E*
	WB-R	0.26	23	C	0.80	40	D*	0.39	27	C
John Simpson	NB-LTR	0.55	27	C	0.99	83	F*	0.35	33	C
John Simpson	SB-L	0.32	23	C	2.22	**	F	0.86	60	E*
	SB-TR	1.09	94	F*	0.25	32	C	0.31	32	C
	Overall		59	E*		122	F*		62	E*
US Route 6 and NYS Route 312										
US Route 6	EB-L	1.00	59	E*	1.52	**	F	1.37	**	F*
	EB-TR	0.30	9	A	0.43	10	A	0.32	6	A
US Route 6	WB-L	0.00	24	C	0.01	22	C	0.01	17	B
	WB-TR	0.69	33	C	1.08	93	F*	0.89	39	D*
NYS Route 312	NB-LTR	0.02	23	C	0.05	26	C	0.01	23	C
NYS Route 312	SB-TL	0.56	29	C	0.62	34	C	0.43	26	C
	SB-R	0.75	16	B	1.09	76	E*	0.91	31	C*
	Overall		39	D*		140	F*		105	F*
LOS is level of service, V/C is volume to capacity ratio. (Source: Carmel Corporate DGEIS)										

Table L-4 New FGEIS Table 3.6-5 (See Response 3.6-25)
Evaluation of Build Condition with Potential Improvements: Level of Service Summary
US Route 6, Church Street Signalized Intersection in the Town of Carmel

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service
U.S. Route 6/ Church Street With signal							
Church Street	EB - R	0.44	21.9	C	0.63	33.2	C
U.S. Route 6	NB - L, T	1.22	109.9	F	0.90	11.3	B
U.S. Route 6	SB - T, R	0.95	44.3	D	0.86	26.4	C
	Overall		77.6	E		20.7	C
U.S. Route 6/ Church Street With signal Full Diversion							
Church Street	EB - R	0.76	38.9	C	0.78	32.4	C
U.S. Route 6	NB - L, T	1.05	42.4	D	0.80	5.3	A
U.S. Route 6	SB - T, R	0.73	26.2	C	0.68	24.6	C
	Overall		35.7	D		17.6	B
U.S. Route 6/ Church Street With signal Coordination							
Church Street	EB - R	0.44	21.9	C	0.63	33.2	C
U.S. Route 6	NB - L, T	1.03	33.6	C	0.74	3.7	A
U.S. Route 6	SB - T, R	0.95	29.3	C	0.86	10.4	A
	Overall		30.7	C		10.8	B
U.S. Route 6/ Church Street With signal left turn lane							
Church Street	EB - R	0.58	31.8	C	0.63	31.2	C
U.S. Route 6	NB - L	0.37	7.2	A	0.24	5.8	A
	NB - T	0.62	1.9	A	0.47	1.1	A
U.S. Route 6	SB - T, R	0.78	21.9	C	0.86	26.4	C
	Overall		12.8	B		16.5	B

Level-of-Service (see DGEIS Table 3.6-4 for level-of-service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R= right, T, R = through and right, (e.g. WB -L = Westbound left).
* Reduction in level of service from the No Build Condition.

Table L-5 (revises DGEIS Table 3.6-16)
Build Condition Level of Service Summary
Unsignalized Intersections

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service
Fair Street/Hill and Dale Road							
Fair Street	*EB - L, T*	*0.15*	*10.2*	*B*	*0.09*	*8.7*	*A*
Hill and Dale Road	*SB - L*	*0.88*	*99.2*	*F*	*0.61*	*35.8*	*E**
	SB - R	*0.18*	*14.0*	*B*	*0.18*	*11.7*	*B*
Fair Street/Northern Site Access							
Access Removed from Plan							
Church Street/ U.S. Route 6							
U.S. Route 6	*NB - L, T*	*0.44*	*13.5*	*B*	*0.31*	*12.4*	*B*
Church Street (E)	*EB - R*	*0.99*	*83.0*	*F*	*1.21*	*159.1*	*F*
U.S. Route 6/Secondary Site Access							
U.S. Route 6	*EB - L, T*	*0.08*	*10.0*	*A*	*0.10*	*10.9*	*B**
Site Access West	*SB - L, R*	*0.36*	*47.1*	*E*	*0.67*	*94.4*	*F**

Level-of-Service (see DGEIS Table 3.6-3 for level-of-service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R= right, T, R = through and right, (e.g. WB - L = Westbound left).
[1] Volumes set at one vehicle per movement.
Unsignlaized intersections are in *italics*.
* Reduction in level of service from the No Build Condition.

Table L-6 (revises DGEIS Table 3.6-17)
Build Condition Level of Service Summary
Signalized Intersections in the Town of Carmel

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds/ vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service
Fair Street/ John Simpson Rd.							
Fair Street	EB - L	0.58	20.4	C	0.30	16.0	B
	EB - T	0.19	2.6	A	0.27	2.9	A
Fair Street	WB - T	0.51	19.7	B	0.47	14.3	B
	WB - R	0.39	10.6	B	0.19	8.7	A
John Simpson Rd.	NB - L	0.80	28.9	C	0.50	19.0	B
	NB - R	0.65	15.2	B	0.27	9.5	A
	Overall		17.4	B		11.7	B
Fair Street/ NYS Route 52							
Fair Street	WB - L	0.93	59.9	E	0.73	36.8	D
	WB - R	0.39	28.1	C	0.39	28.2	C
NYS Route 52	NB - T	0.81	15.8	B	0.70	11.5	B
	NB - R	0.40	7.4	A	0.29	6.7	A
NYS Route 52	SB - T	0.89	24.3	C*	0.92	27.0	C
	Overall		24.1	C		20.7	C*
U.S. Route 6/ NYS Route 52							
U.S. Route 6	WB - L	0.61	41.2	D	0.80	53.0	D
	WB - R	1.09	80.9	F*	1.09	83.1	F*
U.S. Route 6	NB - T	0.91	46.6	D	0.65	28.4	C
	NB - R	0.33	22.9	C	0.38	23.4	C
NYS Route 52	SB - L	1.09	87.6	F*	1.17	112.5	F
	SB - T	0.36	5.4	A	0.36	5.5	A
	Overall		57.3	E*		64.4	E*
U.S. Route 6 Primary Site Access							
U.S. Route 6	EB - L	0.19	4.1	A	0.26	4.5	A
	EB - T	0.82	12.1	B	0.76	9.4	A
U.S. Route 6	WB - T, R	0.66	7.3	A	0.80	10.8	B
Primary Access	SB - L	0.24	22.1	C	0.23	22.0	C
	SB - R	0.36	23.0	C	0.28	22.4	C
	Overall		10.8	B		10.7	B

Level-of-Service (see DGEIS Table 3.6-4 for level-of-service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R= right, T, R = through and right, (e.g. WB - L = Westbound left).
* Reduction in level of service from the No Build Condition.

Table L-7 (revises DGEIS Table 3.6-18)
Build Condition Level of Service Summary
Signalized Intersections in the Towns of Carmel and Southeast

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service
Stoneleigh/U.S. Route 6							
Stoneleigh Avenue	EB - L, T	1.15	127.4	F	1.10	125.0	F
Putnam Plaza	WB - L, T	1.15	132.8	F	1.17	135.1	F
U.S. Route 6	NB - L	0.39	40.1	D	0.30	36.2	D*
	NB - T	0.99	69.6	E*	0.72	29.7	C
	NB - R	0.30	27.3	C	0.15	6.5	A
U.S. Route 6	SB - L	0.89	71.8	E	0.75	45.6	D*
	SB - T	1.09	99.6	F*	0.88	41.4	D*
	SB - R	0.19	11.4	B	0.19	12.9	B
	Overall		91.7	F*		64.7	E
John Simpson/U.S. Route 6							
U.S. Route 6	EB - L	0.97	95.8	F	0.61	50.8	D
	EB - T, R	1.09	91.9	F*	0.89	36.4	D*
U.S. Route 6	WB - L	0.68	54.7	D	0.53	48.4	D
	WB - T	1.13	111.8	F	1.09	88.7	F*
	WB - R	0.68	31.3	C	0.37	18.7	B
John Simpson	NB - L, T, R	0.90	63.4	E	0.74	55.5	E
John Simpson	SB - L	0.94	83.4	F	0.82	64.3	E
	SB - T, R	0.36	27.5	C	0.36	34.1	C
	Overall		80.1	F*		55.8	E*
U.S. Route 6/NYS Route 312							
U.S. Route 6	EB - L	1.29	166.9	F	1.27	151.8	F
	EB - T, R	0.31	4.4	A	0.27	4.4	A
U.S. Route 6	WB - L	0.00	22.3	C	0.00	23.5	C
	WB - T	0.98	64.5	E*	0.80	38.8	D
	WB - R	0.45	26.5	C	0.30	26.0	C
NYS Route 312	NB - L, T, R	0.24	35.5	D	0.03	31.4	C
NYS Route 312	SB - L, T	0.82	61.8	E	0.61	39.4	D
	SB - R	1.12	87.6	F*	0.96	35.4	D*
	Overall		88.2	F*		70.5	E

Level-of-Service (see DGEIS Table 3.6-4 for level-of-service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R= right, T, R = through and right, (e.g. WB - L = Westbound left).
* Reduction in level of service from the No Build Condition.

Table L-8 (revises DGEIS Table 3.6-19)
Evaluation of Secondary Access with Left and Right Exiting Lane Potential Improvement: Level of Service Summary
Unsignalized Intersection

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service
Secondary Access/ U.S. Route 6							
U.S. Route 6	*EB - L, T*	*0.08*	*10.0*	*A*	*0.10*	*10.9*	*B**
Secondary Access	*SB - L*	*0.27*	*93.4*	*F**	*0.51*	*155.9*	*F**
	SB - R	*0.09*	*16.1*	*C***	*0.16*	*19.9*	*C***
	SB total		*40.2*	*E*		*63.9*	*F**

Level-of-Service (see DGEIS Table 3.6-3 for level-of-service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R= right, T, R = through and right, (e.g. WB - L = Westbound left).
Unsignalized intersections are in *italics.*
* Reduction in level of service from the No Build Condition.
** Improvement in level of service from the No Build Condition.

Table L-9 (revises DGEIS Table 3.6-20)
Evaluation of Potential Improvements: Level of Service Summary
Unsignalized Intersection

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service
Church Street/ U.S. Route 6 Traffic Diversion							
U.S. Route 6	*NB - L, T*	*0.49*	*15.1*	*C**	*0.38*	*15.0*	*B*
Church Street (E)	*EB - R*	*0.73*	*43.7*	*E***	*0.64*	*45.7*	*E***

Level-of-Service (see DGEIS Table 3.6-3 for level-of-service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R= right, T, R = through and right, (e.g. WB - L = Westbound left).
Unsignalized intersections are in *italics.*
* Reduction in level of service from the No Build Condition.
** Improvement in level of service from the No Build Condition.

Table L-10 (revises DGEIS Table 3.6-21)
Evaluation of Potential Improvements Level of Service Summary
US Route 6/ NYS Route 52

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds/ vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service
U.S. Route 6/ NYS Route 52 With diversion of Traffic to/from Church Street							
U.S. Route 6	WB - L	0.74	51.7	D	0.80	53.0	D
	WB - R	1.01	54.3	E	0.89	24.6	C**
U.S. Route 6	NB -T	1.02	75.6	E*	0.96	69.8	E*
	NB - R	0.55	28.6	C	0.58	19.6	D*
NYS Route 52	SB - L	0.97	53.4	D**	1.06	73.9	E**
	SB - T	0.34	4.4	A	0.36	5.5	A
	Overall		48.0	D		41.3	D

Level-of-Service (see DGEIS Table 3.6-4 for level-of-service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R= right, T, R = through and right, (e.g. WB - L = Westbound left).
* Worse than the No Build Condition.
** Improvement over the No Build Condition.

Table L-11 (revises DGEIS Table 3.6-22)
Evaluation of Potential Improvement Level of Service Summary
Fair Street/Hill and Dale Road

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds/ vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds/ vehicle)	Level of Service
Three-Way Signal Controlled Fair Street/Hill and Dale Road							
Fair Street	EB - L, T	0.62	9.0	A	0.41	5.9	A
Fair Street	WB - T, R	0.70	9.9	A	0.43	5.8	A
Hill and Dale Road	SB - L	0.47	23.8	C	0.58	25.9	C
	SB - R	0.32	22.7	C	0.42	23.5	C
	total		11.6	B		10.5	B

Level-of-Service (see DGEIS Tables 3.6-4 for level-of-service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R= right, T, R = through and right, (e.g. WB - L = Westbound left).

Table L-12 revises DGEIS Table 3.6-23 (See Response 3.6-27 and L-13)
Evaluation of Signal Timing Potential Improvements: Level of Service Summary
Signalized Intersections in the Town of Southeast

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service
John Simpson/ U.S. Route 6							
U.S. Route 6	EB - L	0.90	69.3	E**	0.71	46.3	D
	EB - T, R	1.01	58.3	E	0.84	23.7	C
U.S. Route 6	WB - L	0.64	43.2	D	0.62	41.3	D
	WB - T	1.05	73.6	E**	1.04	59.6	E
	WB - R	0.63	22.9	C	0.35	12.4	B
John Simpson	NB - L, T, R	1.18	147.6	F*	0.80	50.0	D**
John Simpson	SB - L	1.08	121.1	F	0.88	62.7	E
	SB - T, R	0.42	27.3	C	0.39	27.1	C
	Overall		70.7	E		40.9	D
U.S. Route 6/ NYS Route 312							
U.S. Route 6	EB - L	1.06	77.0	E**	1.07	75.0	E**
	EB - T, R	0.29	3.8	A	0.25	3.3	A
U.S. Route 6	WB - L	0.00	31.6	C	0.00	32.1	C
	WB - T	1.12	122.8	F*	0.94	69.3	E*
	WB - R	0.46	34.1	C	0.26	27.4	C
NYS Route 312	NB - L, T, R	1.02	177.5	F*	0.13	52.3	D*
NYS Route 312	SB - T, L	0.82	73.0	E	0.74	60.4	E*
	SB - R	1.01	51.7	D**	0.87	21.9	C
	Overall		66.3	E		45.9	D**

Level-of-Service (see DGEIS Table 3.6-4 for level-of-service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R= right, T, R = through and right, (e.g. WB - L = Westbound left).
* Decline in Level of service from the No Build Condition.
** Improvement in level of service over the No build Condition.

Table L-13 (See Response 3.6-27 and Table L-12)
Evaluation of No Build Signal Timing Improvements Level of Service Summary
Signalized Intersections in the Town of Southeast

Intersection Roads	Lane Group (Approach Direction -Movement)	P.M. Weekday Peak Hour			Saturday Peak Hour		
		Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service	Volume to Capacity Ratio	Delay (seconds /vehicle)	Level of Service
John Simpson/ U.S. Route 6							
U.S. Route 6	EB - L	0.85	59.3	E*	0.63	40.4	D*
	EB - T, R	0.95	43.9	D*	0.79	20.9	C
U.S. Route 6	WB - L	0.64	43.2	D	0.62	39.8	D*
	WB - T	0.98	53.6	D	0.95	38.3	D*
	WB - R	0.63	22.9	C	0.35	12.4	B
John Simpson	NB - L, T, R	1.18	147.6	F*	0.79	49.3	D
John Simpson	SB - L	1.08	121.1	F*	0.88	62.7	E*
	SB - T, R	0.38	26.7	C	0.34	26.6	C
	Overall		61.9	E*		33.1	C
U.S. Route 6/ NYS Route 312							
U.S. Route 6	EB - L	1.02	64.8	E*	1.02	58.6	E*
	EB - T, R	0.29	3.8	A	0.23	3.3	A
U.S. Route 6	WB - L	0.00	31.6	C	0.00	32.1	C
	WB - T	1.08	105.7	F*	0.87	57.6	E*
	WB - R	0.46	34.1	C	0.31	32.2	C
NYS Route 312	NB - L, T, R	1.02	177.5	F*	0.13	51.4	D*
NYS Route 312	SB - T, L	0.82	73.0	E*	0.65	52.9	D*
	SB - R	0.97	41.7	D	0.83	18.6	B
	Overall		56.9	E*		37.7	D*

Level-of-Service (see DGEIS Table 3.6-4 for level-of-service criteria).
NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound
L = left, R= right, T, R = through and right, (e.g. WB - L = Westbound left).
* Decline in Level of service from the Existing Condition.

Appendix M

Level of Service Calculations

TRAFFIC CAPACITY CALCULATIONS

APPENDIX M

BUILD CONDITION

IMPROVEMENTS ANALYZED

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US 6/Old Rt 6/Maple Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/8/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Existing Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	0	0	1	0	0	1	0	0	1	0
Lane group		LTR			LTR			LTR			LTR	
Volume, V (vph)	21	621	71	17	450	28	78	10	29	43	4	43
% Heavy vehicles, %HV	6	2	7	4	0	6	3	0	3	3	0	0
Peak-hour factor, PHF	0.93	0.93	0.93	0.91	0.91	0.91	0.71	0.71	0.71	0.76	0.76	0.76
Pretimed (P) or actuated (A)	P	P	P	P	P	P	A	A	A	A	A	A
Start-up lost time, l_1		2.0			2.0			2.0			2.0	
Extension of effective green, e		2.0			2.0			2.0			2.0	
Arrival type, AT		3			3			3			3	
Unit extension, UE		3.0			3.0			3.0			3.0	
Filtering/metering, I		1.000			1.000			1.000			1.000	
Initial unmet demand, Q_b		0.0			0.0			0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width		12.0			12.0			12.0			15.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B		0			0			0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 39.0	G =	G =	G =	G = 11.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		767			545			165			119	
Lane group capacity, c		1163			1182			252			283	
v/c ratio, X		0.66			0.46			0.65			0.42	
Total green ratio, g/C		0.65			0.65			0.18			0.18	
Uniform delay, d_1		6.4			5.2			22.7			21.7	
Progression factor, PF		1.000			1.000			1.000			1.000	
Delay calibration, k		0.50			0.50			0.23			0.11	
Incremental delay, d_2		2.9			1.3			6.0			1.0	
Initial queue delay, d_3												
Control delay		9.4			6.5			28.8			22.7	
Lane group LOS		A			A			C			C	
Approach delay	9.4			6.5			28.8			22.7		
Approach LOS	A			A			C			C		
Intersection delay	11.4			X_c = 0.66			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US 6/Old Rt 6/Maple Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/8/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	No Build Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	0	0	1	0	0	1	0	0	1	0
Lane group		LTR			LTR			LTR			LTR	
Volume, V (vph)	24	838	85	21	655	35	87	12	38	55	5	20
% Heavy vehicles, %HV	6	2	7	4	0	6	3	0	3	3	0	0
Peak-hour factor, PHF	0.93	0.93	0.93	0.91	0.91	0.91	0.71	0.71	0.71	0.76	0.76	0.76
Pretimed (P) or actuated (A)	P	P	P	P	P	P	A	A	A	A	A	A
Start-up lost time, l_1		2.0			2.0			2.0			2.0	
Extension of effective green, e		2.0			2.0			2.0			2.0	
Arrival type, AT		3			3			3			3	
Unit extension, UE		3.0			3.0			3.0			3.0	
Filtering/metering, I		1.000			1.000			1.000			1.000	
Initial unmet demand, Q_b		0.0			0.0			0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width		12.0			12.0			12.0			15.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B		0			0			0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 39.0	G =	G =	G =	G = 11.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		1018			781			194			105	
Lane group capacity, c		1159			1175			252			261	
v/c ratio, X		0.88			0.66			0.77			0.40	
Total green ratio, g/C		0.65			0.65			0.18			0.18	
Uniform delay, d_1		8.6			6.5			23.3			21.6	
Progression factor, PF		1.000			1.000			1.000			1.000	
Delay calibration, k		0.50			0.50			0.32			0.11	
Incremental delay, d_2		9.5			3.0			13.5			1.0	
Initial queue delay, d_3												
Control delay		18.1			9.4			36.8			22.6	
Lane group LOS		B			A			D			C	
Approach delay	18.1			9.4			36.8			22.6		
Approach LOS	B			A			D			C		
Intersection delay	16.8			X_c = 0.85			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US 6/Old Rt 6/Maple Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/8/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	0	0	1	0	0	1	0	0	1	0
Lane group		LTR			LTR			LTR			LTR	
Volume, V (vph)	24	928	85	37	752	35	87	12	53	55	5	20
% Heavy vehicles, %HV	6	2	7	4	0	6	3	0	3	3	0	0
Peak-hour factor, PHF	0.93	0.93	0.93	0.91	0.91	0.91	0.71	0.71	0.71	0.76	0.76	0.76
Pretimed (P) or actuated (A)	P	P	P	P	P	P	A	A	A	A	A	A
Start-up lost time, l_1		2.0			2.0			2.0			2.0	
Extension of effective green, e		2.0			2.0			2.0			2.0	
Arrival type, AT		3			3			3			3	
Unit extension, UE		3.0			3.0			3.0			3.0	
Filtering/metering, I		1.000			1.000			1.000			1.000	
Initial unmet demand, Q_b		0.0			0.0			0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width		12.0			12.0			12.0			15.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B		0			0			0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 39.0	G =	G =	G =	G = 11.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		1115			905			215			105	
Lane group capacity, c		1158			1128			255			251	
v/c ratio, X		0.96			0.80			0.84			0.42	
Total green ratio, g/C		0.65			0.65			0.18			0.18	
Uniform delay, d_1		9.8			7.7			23.7			21.7	
Progression factor, PF		1.000			1.000			1.000			1.000	
Delay calibration, k		0.50			0.50			0.38			0.11	
Incremental delay, d_2		18.9			6.1			21.9			1.1	
Initial queue delay, d_3												
Control delay		28.7			13.7			45.5			22.8	
Lane group LOS		C			B			D			C	
Approach delay	28.7			13.7			45.5			22.8		
Approach LOS	C			B			D			C		
Intersection delay	24.2			X_c = 0.94			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US 6/Old Rt 6/Maple Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/8/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Existing Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	0	0	1	0	0	1	0	0	1	0
Lane group		LTR			LTR			LTR			LTR	
Volume, V (vph)	24	671	71	10	572	42	54	7	16	26	5	15
% Heavy vehicles, %HV	4	2	0	0	2	2	2	0	0	0	0	2
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.77	0.77	0.77	0.82	0.82	0.82
Pretimed (P) or actuated (A)	P	P	P	P	P	P	A	A	A	A	A	A
Start-up lost time, l_1		2.0			2.0			2.0			2.0	
Extension of effective green, e		2.0			2.0			2.0			2.0	
Arrival type, AT		3			3			3			3	
Unit extension, UE		3.0			3.0			3.0			3.0	
Filtering/metering, I		1.000			1.000			1.000			1.000	
Initial unmet demand, Q_b		0.0			0.0			0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width		12.0			12.0			12.0			15.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B		0			0			0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 41.0	G =	G =	G =	G = 9.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =

Duration of Analysis, T = 0.25 — Cycle Length, C = 60.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		832			686			100			56	
Lane group capacity, c		1225			1246			207			237	
v/c ratio, X		0.68			0.55			0.48			0.24	
Total green ratio, g/C		0.68			0.68			0.15			0.15	
Uniform delay, d_1		5.6			4.8			23.4			22.5	
Progression factor, PF		1.000			1.000			1.000			1.000	
Delay calibration, k		0.50			0.50			0.11			0.11	
Incremental delay, d_2		3.0			1.8			1.8			0.5	
Initial queue delay, d_3												
Control delay		8.7			6.6			25.1			23.0	
Lane group LOS		A			A			C			C	
Approach delay	8.7			6.6			25.1			23.0		
Approach LOS	A			A			C			C		
Intersection delay	9.3			X_c = 0.64			Intersection LOS			A		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US 6/Old Rt 6/Maple Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/8/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	No Build Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	0	0	1	0	0	1	0	0	1	0
Lane group		LTR			LTR			LTR			LTR	
Volume, V (vph)	26	873	85	14	770	61	68	10	23	39	7	17
% Heavy vehicles, %HV	4	2	0	0	2	2	2	0	0	0	0	2
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.77	0.77	0.77	0.82	0.82	0.82
Pretimed (P) or actuated (A)	P	P	P	P	P	P	A	A	A	A	A	A
Start-up lost time, l_1		2.0			2.0			2.0			2.0	
Extension of effective green, e		2.0			2.0			2.0			2.0	
Arrival type, AT		3			3			3			3	
Unit extension, UE		3.0			3.0			3.0			3.0	
Filtering/metering, I		1.000			1.000			1.000			1.000	
Initial unmet demand, Q_b		0.0			0.0			0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width		12.0			12.0			12.0			15.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B		0			0			0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 41.0	G =	G =	G =	G = 9.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		1069			928			131			78	
Lane group capacity, c		1218			1236			205			238	
v/c ratio, X		0.88			0.75			0.64			0.33	
Total green ratio, g/C		0.68			0.68			0.15			0.15	
Uniform delay, d_1		7.5			6.2			24.0			22.8	
Progression factor, PF		1.000			1.000			1.000			1.000	
Delay calibration, k		0.50			0.50			0.22			0.11	
Incremental delay, d_2		9.1			4.2			6.5			0.8	
Initial queue delay, d_3												
Control delay		16.6			10.4			30.5			23.6	
Lane group LOS		B			B			C			C	
Approach delay	16.6			10.4			30.5			23.6		
Approach LOS	B			B			C			C		
Intersection delay	15.1			X_c = 0.83			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US 6/Old Rt 6/Maple Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/8/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	0	0	1	0	0	1	0	0	1	0
Lane group		LTR			LTR			LTR			LTR	
Volume, V (vph)	26	980	85	27	858	61	68	10	40	39	7	17
% Heavy vehicles, %HV	4	2	0	0	2	2	2	0	0	0	0	2
Peak-hour factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91	0.77	0.77	0.77	0.82	0.82	0.82
Pretimed (P) or actuated (A)	P	P	P	P	P	P	A	A	A	A	A	A
Start-up lost time, l_1		2.0			2.0			2.0			2.0	
Extension of effective green, e		2.0			2.0			2.0			2.0	
Arrival type, AT		3			3			3			3	
Unit extension, UE		3.0			3.0			3.0			3.0	
Filtering/metering, I		1.000			1.000			1.000			1.000	
Initial unmet demand, Q_b		0.0			0.0			0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width		12.0			12.0			12.0			15.0	
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B		0			0			0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	NS Perm	06	07	08
Timing	G = 41.0	G =	G =	G =	G = 9.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		1185			1040			153			78	
Lane group capacity, c		1218			1200			210			229	
v/c ratio, X		0.97			0.87			0.73			0.34	
Total green ratio, g/C		0.68			0.68			0.15			0.15	
Uniform delay, d_1		9.0			7.4			24.3			22.8	
Progression factor, PF		1.000			1.000			1.000			1.000	
Delay calibration, k		0.50			0.50			0.29			0.11	
Incremental delay, d_2		20.1			8.5			12.1			0.9	
Initial queue delay, d_3												
Control delay		29.0			15.9			36.4			23.7	
Lane group LOS		C			B			D			C	
Approach delay	29.0			15.9			36.4			23.7		
Approach LOS	C			B			D			C		
Intersection delay	23.8			X_c = 0.93			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	NYS Route 52/ NYS Route 301
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Existing Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	0	0	0	1	1	0	0	1	0
Lane group	L	TR					L	TR			LTR	
Volume, V (vph)	65	4	123				143	862	13	2	584	61
% Heavy vehicles, %HV	2	2	2				2	2	2	3	3	3
Peak-hour factor, PHF	0.90	0.90	0.90				0.94	0.94	0.94	0.93	0.93	0.93
Pretimed (P) or actuated (A)	A	A	A				A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0					2.0	2.0			2.0	
Extension of effective green, e	2.0	2.0					2.0	2.0			2.0	
Arrival type, AT	3	3					3	3			3	
Unit extension, UE	3.0	3.0					3.0	3.0			3.0	
Filtering/metering, I	1.000	1.000					1.000	1.000			1.000	
Initial unmet demand, Q_b	0.0	0.0					0.0	0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0			0		0	0		0
Lane width	11.0	12.0					8.0	10.0			16.0	
Parking / Grade / Parking	N	10	N	N		N	N	-2	N	N	3	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0					0	0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	02	03	04	NS Perm	06	07	08
Timing	G = 17.0	G =	G =	G =	G = 57.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 84.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	72	141					152	931			696	
Lane group capacity, c	329	306					425	1189			1377	
v/c ratio, X	0.22	0.46					0.36	0.78			0.51	
Total green ratio, g/C	0.20	0.20					0.68	0.68			0.68	
Uniform delay, d_1	28.0	29.5					5.7	9.3			6.6	
Progression factor, PF	1.000	1.000					1.000	1.000			1.000	
Delay calibration, k	0.11	0.11					0.11	0.33			0.11	
Incremental delay, d_2	0.3	1.1					0.5	3.5			0.3	
Initial queue delay, d_3												
Control delay	28.3	30.6					6.2	12.7			6.9	
Lane group LOS	C	C					A	B			A	
Approach delay	29.8						11.8			6.9		
Approach LOS	C						B			A		
Intersection delay	12.0			X_c = 0.71			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	NYS Route 52/ NYS Route 301
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	No Build Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	0	0	0	1	1	0	0	1	0
Lane group	L	TR					L	TR			LTR	
Volume, V (vph)	78	4	160				188	1115	14	2	813	76
% Heavy vehicles, %HV	2	2	2				2	2	2	3	3	3
Peak-hour factor, PHF	0.90	0.90	0.90				0.94	0.94	0.94	0.93	0.93	0.93
Pretimed (P) or actuated (A)	A	A	A				A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0					2.0	2.0			2.0	
Extension of effective green, e	2.0	2.0					2.0	2.0			2.0	
Arrival type, AT	3	3					3	3			3	
Unit extension, UE	3.0	3.0					3.0	3.0			3.0	
Filtering/metering, I	1.000	1.000					1.000	1.000			1.000	
Initial unmet demand, Q_b	0.0	0.0					0.0	0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0			0		0	0		0
Lane width	11.0	12.0					8.0	10.0			16.0	
Parking / Grade / Parking	N	10	N	N		N	N	-2	N	N	3	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0					0	0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	02	03	04	NS Perm	06	07	08
Timing	G = 17.0	G =	G =	G =	G = 57.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 84.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	87	182					200	1201			958	
Lane group capacity, c	329	306					320	1190			1380	
v/c ratio, X	0.26	0.59					0.63	1.01			0.69	
Total green ratio, g/C	0.20	0.20					0.68	0.68			0.68	
Uniform delay, d_1	28.2	30.4					7.5	13.5			8.2	
Progression factor, PF	1.000	1.000					1.000	1.000			1.000	
Delay calibration, k	0.11	0.18					0.21	0.50			0.26	
Incremental delay, d_2	0.4	3.1					3.8	28.4			1.5	
Initial queue delay, d_3												
Control delay	28.7	33.5					11.3	41.9			9.7	
Lane group LOS	C	C					B	D			A	
Approach delay	31.9						37.5			9.7		
Approach LOS	C						D			A		
Intersection delay	26.8			X_c = 0.91			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	NYS Route 52/ NYS Route 301
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	0	0	0	1	1	0	0	1	0
Lane group	L	TR					L	TR			LTR	
Volume, V (vph)	78	4	176				204	1133	14	2	832	76
% Heavy vehicles, %HV	2	2	2				2	2	2	3	3	3
Peak-hour factor, PHF	0.90	0.90	0.90				0.94	0.94	0.94	0.93	0.93	0.93
Pretimed (P) or actuated (A)	A	A	A				A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0					2.0	2.0			2.0	
Extension of effective green, e	2.0	2.0					2.0	2.0			2.0	
Arrival type, AT	3	3					3	3			3	
Unit extension, UE	3.0	3.0					3.0	3.0			3.0	
Filtering/metering, I	1.000	1.000					1.000	1.000			1.000	
Initial unmet demand, Q_b	0.0	0.0					0.0	0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0			0		0	0		0
Lane width	11.0	12.0					8.0	10.0			16.0	
Parking / Grade / Parking	N	10	N	N		N	N	-2	N	N	3	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0					0	0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	02	03	04	NS Perm	06	07	08
Timing	G = 17.0	G =	G =	G =	G = 57.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 84.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	87	200					217	1220			979	
Lane group capacity, c	329	305					313	1190			1380	
v/c ratio, X	0.26	0.66					0.69	1.03			0.71	
Total green ratio, g/C	0.20	0.20					0.68	0.68			0.68	
Uniform delay, d_1	28.2	30.8					8.2	13.5			8.4	
Progression factor, PF	1.000	1.000					1.000	1.000			1.000	
Delay calibration, k	0.11	0.23					0.26	0.50			0.27	
Incremental delay, d_2	0.4	5.0					6.5	32.7			1.7	
Initial queue delay, d_3												
Control delay	28.7	35.8					14.7	46.2			10.1	
Lane group LOS	C	D					B	D			B	
Approach delay	33.7						41.4			10.1		
Approach LOS	C						D			B		
Intersection delay	29.3			X_c = 0.94			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	NYS Route 52/ NYS Route 301
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Existing Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	0	0	0	1	1	0	0	1	0
Lane group	L	TR					L	TR			LTR	
Volume, V (vph)	73	3	162				116	703	3	1	712	44
% Heavy vehicles, %HV	1	0	1				2	2	0	1	1	1
Peak-hour factor, PHF	0.77	0.33	0.77				0.94	0.94	0.94	0.25	0.97	0.97
Pretimed (P) or actuated (A)	A	A	A				A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0					2.0	2.0			2.0	
Extension of effective green, e	2.0	2.0					2.0	2.0			2.0	
Arrival type, AT	3	3					3	3			3	
Unit extension, UE	3.0	3.0					3.0	3.0			3.0	
Filtering/metering, I	1.000	1.000					1.000	1.000			1.000	
Initial unmet demand, Q_b	0.0	0.0					0.0	0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0			0		0	0		0
Lane width	12.0	12.0					8.0	10.0			16.0	
Parking / Grade / Parking	N	0	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0					0	0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	02	03	04	NS Perm	06	07	08
Timing	G = 18.0	G =	G =	G =	G = 48.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 76.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	95	219					123	751			783	
Lane group capacity, c	423	382					345	1098			1333	
v/c ratio, X	0.22	0.57					0.36	0.68			0.59	
Total green ratio, g/C	0.24	0.24					0.63	0.63			0.63	
Uniform delay, d_1	23.4	25.6					6.7	9.1			8.2	
Progression factor, PF	1.000	1.000					1.000	1.000			1.000	
Delay calibration, k	0.11	0.17					0.11	0.25			0.18	
Incremental delay, d_2	0.3	2.1					0.6	1.8			0.7	
Initial queue delay, d_3												
Control delay	23.6	27.7					7.3	10.9			8.9	
Lane group LOS	C	C					A	B			A	
Approach delay	26.5						10.4			8.9		
Approach LOS	C						B			A		
Intersection delay	12.3			X_c = 0.65			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	NYS Route 52/ NYS Route 301
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	No Build Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	0	0	0	1	1	0	0	1	0
Lane group	L	TR					L	TR			LTR	
Volume, V (vph)	84	3	203				149	917	3	1	922	54
% Heavy vehicles, %HV	1	0	1				2	2	0	1	1	1
Peak-hour factor, PHF	0.77	0.33	0.77				0.94	0.94	0.94	0.25	0.97	0.97
Pretimed (P) or actuated (A)	A	A	A				A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0					2.0	2.0			2.0	
Extension of effective green, e	2.0	2.0					2.0	2.0			2.0	
Arrival type, AT	3	3					3	3			3	
Unit extension, UE	3.0	3.0					3.0	3.0			3.0	
Filtering/metering, I	1.000	1.000					1.000	1.000			1.000	
Initial unmet demand, Q_b	0.0	0.0					0.0	0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0			0		0	0		0
Lane width	12.0	12.0					8.0	10.0			16.0	
Parking / Grade / Parking	N	0	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0					0	0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	02	03	04	NS Perm	06	07	08
Timing	G = 18.0	G =	G =	G =	G = 48.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 76.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	109	273					159	979			1011	
Lane group capacity, c	423	381					267	1098			1333	
v/c ratio, X	0.26	0.72					0.60	0.89			0.76	
Total green ratio, g/C	0.24	0.24					0.63	0.63			0.63	
Uniform delay, d_1	23.6	26.7					8.3	11.8			9.9	
Progression factor, PF	1.000	1.000					1.000	1.000			1.000	
Delay calibration, k	0.11	0.28					0.18	0.42			0.31	
Incremental delay, d_2	0.3	6.3					3.6	9.4			2.6	
Initial queue delay, d_3												
Control delay	23.9	33.0					11.9	21.2			12.5	
Lane group LOS	C	C					B	C			B	
Approach delay	30.4						19.9			12.5		
Approach LOS	C						B			B		
Intersection delay	18.5			X_c = 0.84			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	NYS Route 52/ NYS Route 301
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	0	0	0	1	1	0	0	1	0
Lane group	L	TR					L	TR			LTR	
Volume, V (vph)	84	3	223				165	935	3	1	943	54
% Heavy vehicles, %HV	1	0	1				2	2	0	1	1	1
Peak-hour factor, PHF	0.77	0.33	0.77				0.94	0.94	0.94	0.25	0.97	0.97
Pretimed (P) or actuated (A)	A	A	A				A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0					2.0	2.0			2.0	
Extension of effective green, e	2.0	2.0					2.0	2.0			2.0	
Arrival type, AT	3	3					3	3			3	
Unit extension, UE	3.0	3.0					3.0	3.0			3.0	
Filtering/metering, I	1.000	1.000					1.000	1.000			1.000	
Initial unmet demand, Q_b	0.0	0.0					0.0	0.0			0.0	
Ped / Bike / RTOR volumes	0		0	0			0		0	0		0
Lane width	12.0	12.0					8.0	10.0			16.0	
Parking / Grade / Parking	N	0	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0					0	0			0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	02	03	04	NS Perm	06	07	08
Timing	G = 18.0	G =	G =	G =	G = 48.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 76.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	109	299					176	998			1032	
Lane group capacity, c	423	381					261	1098			1333	
v/c ratio, X	0.26	0.78					0.67	0.91			0.77	
Total green ratio, g/C	0.24	0.24					0.63	0.63			0.63	
Uniform delay, d_1	23.6	27.2					9.0	12.1			10.1	
Progression factor, PF	1.000	1.000					1.000	1.000			1.000	
Delay calibration, k	0.11	0.33					0.25	0.43			0.32	
Incremental delay, d_2	0.3	10.3					6.7	11.1			2.9	
Initial queue delay, d_3												
Control delay	23.9	37.5					15.7	23.2			13.0	
Lane group LOS	C	D					B	C			B	
Approach delay	33.9						22.0			13.0		
Approach LOS	C						C			B		
Intersection delay	20.3			X_c = 0.88			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Church and US Route 6
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Build Condition with signal
		Project ID	Gateway - Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	1	0	0	0	0	1	0	0	1	0
Lane group			R					LT			TR	
Volume, V (vph)			272				314	1108			822	7
% Heavy vehicles, %HV			1				2	2			0	0
Peak-hour factor, PHF			0.80				0.94	0.94			0.92	0.92
Pretimed (P) or actuated (A)							P	P			P	P
Start-up lost time, l_1			2.0					2.0			2.0	
Extension of effective green, e			2.0					2.0			2.0	
Arrival type, AT			3					3			3	
Unit extension, UE			3.0					3.0			3.0	
Filtering/metering, I		1.000	1.000					1.000			1.000	
Initial unmet demand, Q_b			0.0					0.0			0.0	
Ped / Bike / RTOR volumes	0		0							0		0
Lane width			14.0					14.0			14.0	
Parking / Grade / Parking	N	-6	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B			0					0			0	
Min. time for pedestrians, G_p	3.2									3.2		

Phasing	01	02	03	04	NS Perm	NB Only	07	08
Timing	G =	G =	G =	G =	G = 47.0	G = 43.0	G =	G =
	Y =	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =

Duration of Analysis, T = 0.25 | Cycle Length, C = 100.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v			340					1513			901	
Lane group capacity, c			769					1238			951	
v/c ratio, X			0.44					1.22			0.95	
Total green ratio, g/C			0.43					0.95			0.47	
Uniform delay, d_1			20.1					2.5			25.3	
Progression factor, PF			1.000					1.000			1.000	
Delay calibration, k			0.50					0.50			0.50	
Incremental delay, d_2			1.8					107.4			18.9	
Initial queue delay, d_3												
Control delay			21.9					109.9			44.3	
Lane group LOS			C					F			D	
Approach delay	21.9						109.9			44.3		
Approach LOS	C						F			D		
Intersection delay	77.6			X_c = 1.15			Intersection LOS			E		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Church and US Route 6
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Build with signal diversion
		Project ID	Gateway - Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	1	0	0	0	0	1	0	0	1	0
Lane group			R					LT			TR	
Volume, V (vph)			466				314	1008			628	7
% Heavy vehicles, %HV			1				2	2			0	0
Peak-hour factor, PHF			0.80				0.94	0.94			0.92	0.92
Pretimed (P) or actuated (A)							P	P			P	P
Start-up lost time, l_1			2.0					2.0			2.0	
Extension of effective green, e			2.0					2.0			2.0	
Arrival type, AT			3					3			3	
Unit extension, UE			3.0					3.0			3.0	
Filtering/metering, I		1.000	1.000					1.000			1.000	
Initial unmet demand, Q_b			0.0					0.0			0.0	
Ped / Bike / RTOR volumes	0		0							0		0
Lane width			14.0					14.0			14.0	
Parking / Grade / Parking	N	-6	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B			0					0			0	
Min. time for pedestrians, G_p	3.2									3.2		

Phasing	01	02	03	04	NS Perm	NB Only	07	08
Timing	G =	G =	G =	G =	G = 47.0	G = 43.0	G =	G =
	Y =	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =

Duration of Analysis, T = 0.25 | Cycle Length, C = 100.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v			582					1406			691	
Lane group capacity, c			769					1335			951	
v/c ratio, X			0.76					1.05			0.73	
Total green ratio, g/C			0.43					0.95			0.47	
Uniform delay, d_1			24.1					2.5			21.3	
Progression factor, PF			1.000					1.000			1.000	
Delay calibration, k			0.50					0.50			0.50	
Incremental delay, d_2			6.9					39.9			4.8	
Initial queue delay, d_3												
Control delay			30.9					42.4			26.2	
Lane group LOS			C					D			C	
Approach delay	30.9						42.4			26.2		
Approach LOS	C						D			C		
Intersection delay	35.7			X_c = 1.04			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Church and US Route 6
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Build with signal coordination
		Project ID	Gateway - Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	1	0	0	0	0	1	0	0	1	0
Lane group			R					LT			TR	
Volume, V (vph)			272				314	1108			822	7
% Heavy vehicles, %HV			1				2	2			0	0
Peak-hour factor, PHF			0.80				0.94	0.94			0.92	0.92
Pretimed (P) or actuated (A)							P	P			P	P
Start-up lost time, l_1			2.0					2.0			2.0	
Extension of effective green, e			2.0					2.0			2.0	
Arrival type, AT			3					3			5	
Unit extension, UE			3.0					3.0			3.0	
Filtering/metering, I		1.000	1.000					1.000			1.000	
Initial unmet demand, Q_b			0.0					0.0			0.0	
Ped / Bike / RTOR volumes	0		0							0		0
Lane width			14.0					14.0			14.0	
Parking / Grade / Parking	N	-6	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B			0					0			0	
Min. time for pedestrians, G_p		3.2									3.2	

Phasing	01	02	03	04	NS Perm	NB Only	07	08
Timing	G =	G =	G =	G =	G = 47.0	G = 43.0	G =	G =
	Y =	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v			340					1513			901	
Lane group capacity, c			769					1471			951	
v/c ratio, X			0.44					1.03			0.95	
Total green ratio, g/C			0.43					0.95			0.47	
Uniform delay, d_1			20.1					2.5			25.3	
Progression factor, PF			1.000					1.000			0.409	
Delay calibration, k			0.50					0.50			0.50	
Incremental delay, d_2			1.8					31.1			18.9	
Initial queue delay, d_3												
Control delay			21.9					33.6			29.3	
Lane group LOS			C					C			C	
Approach delay	21.9						33.6			29.3		
Approach LOS	C						C			C		
Intersection delay	30.7			X_c = 1.02			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		***Site Information***	
Analyst	*JAG*	Intersection	*Church and US Route 6*
Agency or Co.	*TMA*	Area Type	*All other areas*
Date Performed	*12/7/05*	Jurisdiction	*Town of Carmel*
Time Period	*PM Peak Hour*	Analysis Year	*Build Condition with signal*
		Project ID	*Gateway - Fairways GFEIS*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*0*	*0*	*1*	*0*	*0*	*0*	*1*	*1*	*0*	*0*	*1*	*0*
Lane group			*R*				*L*	*T*			*TR*	
Volume, V (vph)			*272*				*314*	*1108*			*822*	*7*
% Heavy vehicles, %HV			*1*				*2*	*2*			*0*	*0*
Peak-hour factor, PHF			*0.80*				*0.94*	*0.94*			*0.92*	*0.92*
Pretimed (P) or actuated (A)							*P*	*P*			*P*	*P*
Start-up lost time, l_1			*2.0*				*2.0*	*2.0*			*2.0*	
Extension of effective green, e			*2.0*				*2.0*	*2.0*			*2.0*	
Arrival type, AT			*3*				*3*	*3*			*3*	
Unit extension, UE			*3.0*				*3.0*	*3.0*			*3.0*	
Filtering/metering, I		*1.000*	*1.000*				*1.000*	*1.000*			*1.000*	
Initial unmet demand, Q_b			*0.0*				*0.0*	*0.0*			*0.0*	
Ped / Bike / RTOR volumes	*0*		*0*							*0*		*0*
Lane width			*14.0*				*12.0*	*14.0*			*14.0*	
Parking / Grade / Parking	*N*	*-6*	*N*	*N*		*N*	*N*	*0*	*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B			*0*				*0*	*0*			*0*	
Min. time for pedestrians, G_p	*3.2*									*3.2*		

Phasing	01	02	03	04	NS Perm	NB Only	07	08
Timing	G =	G =	G =	G =	G = *57.0*	G = *33.0*	G =	G =
	Y =	Y =	Y =	Y =	Y = *5*	Y = *5*	Y =	Y =

Duration of Analysis, T = *0.25* | Cycle Length, C = *100.0*

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v			*340*				*334*	*1179*			*901*	
Lane group capacity, c			*590*				*910*	*1888*			*1154*	
v/c ratio, X			*0.58*				*0.37*	*0.62*			*0.78*	
Total green ratio, g/C			*0.33*				*0.95*	*0.95*			*0.57*	
Uniform delay, d_1			*27.7*				*6.0*	*0.3*			*16.7*	
Progression factor, PF			*1.000*				*1.000*	*1.000*			*1.000*	
Delay calibration, k			*0.50*				*0.50*	*0.50*			*0.50*	
Incremental delay, d_2			*4.1*				*1.1*	*1.6*			*5.3*	
Initial queue delay, d_3												
Control delay			*31.8*				*7.2*	*1.9*			*21.9*	
Lane group LOS			*C*				*A*	*A*			*C*	
Approach delay	*31.8*						*3.0*			*21.9*		
Approach LOS	*C*						*A*			*C*		
Intersection delay	*12.8*			X_c = *0.00*			Intersection LOS			*B*		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Church and US Route 6
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build Condition with signal
		Project ID	Gateway - Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	1	0	0	0	0	1	0	0	1	0
Lane group			R					LT			TR	
Volume, V (vph)			343				210	857			912	7
% Heavy vehicles, %HV			1				2	2			0	0
Peak-hour factor, PHF			0.93				0.97	0.97			0.93	0.93
Pretimed (P) or actuated (A)							P	P			P	P
Start-up lost time, l_1			2.0					2.0			2.0	
Extension of effective green, e			2.0					2.0			2.0	
Arrival type, AT			3					3			3	
Unit extension, UE			3.0					3.0			3.0	
Filtering/metering, I		1.000	1.000					1.000			1.000	
Initial unmet demand, Q_b			0.0					0.0			0.0	
Ped / Bike / RTOR volumes	0		0							0		0
Lane width			14.0					14.0			14.0	
Parking / Grade / Parking	N	-6	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B			0					0			0	
Min. time for pedestrians, G_p	3.2									3.2		

Phasing	01	02	03	04	NS Perm	NB Only	07	08
Timing	G =	G =	G =	G =	G = 57.0	G = 33.0	G =	G =
	Y =	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =

Duration of Analysis, T = 0.25 — Cycle Length, C = 100.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v			369					1100			989	
Lane group capacity, c			590					1226			1154	
v/c ratio, X			0.63					0.90			0.86	
Total green ratio, g/C			0.33					0.95			0.57	
Uniform delay, d_1			28.3					0.8			18.1	
Progression factor, PF			1.000					1.000			1.000	
Delay calibration, k			0.50					0.50			0.50	
Incremental delay, d_2			4.9					10.5			8.3	
Initial queue delay, d_3												
Control delay			33.2					11.3			26.4	
Lane group LOS			C					B			C	
Approach delay	33.2						11.3			26.4		
Approach LOS	C						B			C		
Intersection delay	20.7			X_c = 0.93			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Church and US Route 6
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build with signal diversion
		Project ID	Gateway - Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	1	0	0	0	0	1	0	0	1	0
Lane group			R					LT			TR	
Volume, V (vph)			561				210	857			594	7
% Heavy vehicles, %HV			1				2	2			0	0
Peak-hour factor, PHF			0.93				0.97	0.97			0.93	0.93
Pretimed (P) or actuated (A)							P	P			P	P
Start-up lost time, l_1			2.0					2.0			2.0	
Extension of effective green, e			2.0					2.0			2.0	
Arrival type, AT			3					3			3	
Unit extension, UE			3.0					3.0			3.0	
Filtering/metering, I		1.000	1.000					1.000			1.000	
Initial unmet demand, Q_b			0.0					0.0			0.0	
Ped / Bike / RTOR volumes	0		0							0		0
Lane width			14.0					14.0			14.0	
Parking / Grade / Parking	N	-6	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B			0					0			0	
Min. time for pedestrians, G_p	3.2									3.2		

Phasing	01	02	03	04	NS Perm	NB Only	07	08
Timing	G =	G =	G =	G =	G = 47.0	G = 43.0	G =	G =
	Y =	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =

Duration of Analysis, T = 0.25 | Cycle Length, C = 100.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v			603					1100			647	
Lane group capacity, c			769					1383			951	
v/c ratio, X			0.78					0.80			0.68	
Total green ratio, g/C			0.43					0.95			0.47	
Uniform delay, d_1			24.5					0.5			20.6	
Progression factor, PF			1.000					1.000			1.000	
Delay calibration, k			0.50					0.50			0.50	
Incremental delay, d_2			7.9					4.8			3.9	
Initial queue delay, d_3												
Control delay			32.4					5.3			24.6	
Lane group LOS			C					A			C	
Approach delay	32.4						5.3			24.6		
Approach LOS	C						A			C		
Intersection delay	17.6			X_c = 0.85			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Church and US Route 6
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build with signal Coordination
		Project ID	Gateway - Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	1	0	0	0	0	1	0	0	1	0
Lane group			R					LT			TR	
Volume, V (vph)			343				210	857			912	7
% Heavy vehicles, %HV			1				2	2			0	0
Peak-hour factor, PHF			0.93				0.97	0.97			0.93	0.93
Pretimed (P) or actuated (A)							P	P			P	P
Start-up lost time, l_1			2.0					2.0			2.0	
Extension of effective green, e			2.0					2.0			2.0	
Arrival type, AT			3					3			5	
Unit extension, UE			3.0					3.0			3.0	
Filtering/metering, I		1.000	1.000					1.000			1.000	
Initial unmet demand, Q_b			0.0					0.0			0.0	
Ped / Bike / RTOR volumes	0		0							0		0
Lane width			14.0					14.0			14.0	
Parking / Grade / Parking	N	-6	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B			0					0			0	
Min. time for pedestrians, G_p	3.2									3.2		

Phasing	01	02	03	04	NS Perm	NB Only	07	08
Timing	G =	G =	G =	G =	G = 57.0	G = 33.0	G =	G =
	Y =	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =

Duration of Analysis, T = 0.25 | Cycle Length, C = 100.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v			369					1100			989	
Lane group capacity, c			590					1489			1154	
v/c ratio, X			0.63					0.74			0.86	
Total green ratio, g/C			0.33					0.95			0.57	
Uniform delay, d_1			28.3					0.4			18.1	
Progression factor, PF			1.000					1.000			0.116	
Delay calibration, k			0.50					0.50			0.50	
Incremental delay, d_2			4.9					3.3			8.3	
Initial queue delay, d_3												
Control delay			33.2					3.7			10.4	
Lane group LOS			C					A			B	
Approach delay	33.2						3.7			10.4		
Approach LOS	C						A			B		
Intersection delay	10.8			X_c = 0.82			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Church and US Route 6
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/7/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build with signal with left
		Project ID	Gateway - Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	1	0	0	0	1	1	0	0	1	0
Lane group			R				L	T			TR	
Volume, V (vph)			343				210	857			912	7
% Heavy vehicles, %HV			1				2	2			0	0
Peak-hour factor, PHF			0.93				0.97	0.97			0.93	0.93
Pretimed (P) or actuated (A)							P	P			P	P
Start-up lost time, l_1			2.0				2.0	2.0			2.0	
Extension of effective green, e			2.0				2.0	2.0			2.0	
Arrival type, AT			3				3	3			3	
Unit extension, UE			3.0				3.0	3.0			3.0	
Filtering/metering, I		1.000	1.000				1.000	1.000			1.000	
Initial unmet demand, Q_b			0.0				0.0	0.0			0.0	
Ped / Bike / RTOR volumes	0		0							0		0
Lane width			14.0				12.0	14.0			14.0	
Parking / Grade / Parking	N	-6	N	N		N	N	0	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B			0				0	0			0	
Min. time for pedestrians, G_p	3.2									3.2		

Phasing	01	02	03	04	NS Perm	NB Only	07	08
Timing	G =	G =	G =	G =	G = 57.0	G = 33.0	G =	G =
	Y =	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v			369				216	884			989	
Lane group capacity, c			590				882	1888			1154	
v/c ratio, X			0.63				0.24	0.47			0.86	
Total green ratio, g/C			0.33				0.95	0.95			0.57	
Uniform delay, d_1			28.3				5.1	0.2			18.1	
Progression factor, PF			1.000				1.000	1.000			1.000	
Delay calibration, k			0.50				0.50	0.50			0.50	
Incremental delay, d_2			4.9				0.7	0.8			8.3	
Initial queue delay, d_3												
Control delay			33.2				5.8	1.1			26.4	
Lane group LOS			C				A	A			C	
Approach delay	33.2						2.0			26.4		
Approach LOS	C						A			C		
Intersection delay	16.5			X_c = 0.00			Intersection LOS			B		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JAG*	Intersection	*Fair Street/ Dale Road*
Agency/Co.	*TMA*	Jurisdiction	*Town of Carmel*
Date Performed	*12/2/05*	Analysis Year	*Build Condition*
Analysis Time Period	*PM Peak Hour*		

Project Description *Gateway Summit-The Fairways FGEIS*

East/West Street: *Fair Street*	North/South Street: *Dale Road*
Intersection Orientation: *East-West*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*112*	*355*	*0*	*0*	*367*	*305*
Peak-hour factor, PHF	*0.90*	*0.90*	*1.00*	*1.00*	*0.83*	*0.83*
Hourly Flow Rate (veh/h)	*124*	*394*	*0*	*0*	*442*	*367*
Proportion of heavy vehicles, P_{HV}	*1*	--	--	*0*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*0*	*122*	*0*	*77*
Peak-hour factor, PHF	*1.00*	*1.00*	*1.00*	*0.87*	*1.00*	*0.87*
Hourly Flow Rate (veh/h)	*0*	*0*	*0*	*140*	*0*	*88*
Proportion of heavy vehicles, P_{HV}	*0*	*0*	*0*	*1*	*0*	*1*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*					*L*		*R*
Volume, v (vph)	*124*					*140*		*88*
Capacity, c_m (vph)	*821*					*159*		*486*
v/c ratio	*0.15*					*0.88*		*0.18*
Queue length (95%)	*0.53*					*6.15*		*0.65*
Control Delay (s/veh)	*10.2*					*99.2*		*14.0*
LOS	*B*					*F*		*B*
Approach delay (s/veh)	--	--				*66.3*		
Approach LOS	--	--				*F*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JAG*	Intersection	*Church Street and US Route 6*
Agency/Co.	*TMA*	Jurisdiction	*Town of Carmel*
Date Performed	*12/2/05*	Analysis Year	*Build Condition*
Analysis Time Period	*PM Peak Hour*		

Project Description *Gateway Summit-The Fairways FGEIS*

East/West Street: *Church Street* | North/South Street: *US Route 6*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*314*	*1008*	*0*	*0*	*822*	*7*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*1.00*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*334*	*1072*	*0*	*0*	*893*	*7*
Percent Heavy Vehicles	*2*	–	–	*0*	–	–
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*0*	*0*	*272*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*0.80*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*0*	*0*	*339*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*1*
Percent Grade (%)		*0*			*-6*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*							*R*
v (vph)	*334*							*339*
C (m) (vph)	*755*							*341*
v/c	*0.44*							*0.99*
95% queue length	*2.28*							*11.15*
Control Delay	*13.5*							*83.0*
LOS	*B*							*F*
Approach Delay	–	--				*83.0*		
Approach LOS	–	--				*F*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JAG*	Intersection	*US Route 6/Site (west)*
Agency/Co.	*TMA*	Jurisdiction	*Town of Carmel*
Date Performed	*12/2/05*	Analysis Year	*Build Condition*
Analysis Time Period	*PM Peak Hour*		

Project Description *Gateway Summit- The Fairways FGEIS*

East/West Street: *US Route 6* | North/South Street: *Site*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*54*	*982*	*0*	*0*	*792*	*21*
Peak-hour factor, PHF	*0.90*	*0.90*	*1.00*	*1.00*	*0.93*	*0.93*
Hourly Flow Rate (veh/h)	*60*	*1091*	*0*	*0*	*851*	*22*
Proportion of heavy vehicles, P_{HV}	*0*	--	--	*0*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*0*	*15*	*0*	*32*
Peak-hour factor, PHF	*1.00*	*1.00*	*1.00*	*0.95*	*1.00*	*0.95*
Hourly Flow Rate (veh/h)	*0*	*0*	*0*	*15*	*0*	*33*
Proportion of heavy vehicles, P_{HV}	*0*	*0*	*0*	*0*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
Volume, v (vph)	*60*						*48*	
Capacity, c_m (vph)	*781*						*132*	
v/c ratio	*0.08*						*0.36*	
Queue length (95%)	*0.25*						*1.50*	
Control Delay (s/veh)	*10.0*						*47.1*	
LOS	*A*						*E*	
Approach delay (s/veh)	--	--					*47.1*	
Approach LOS	--	--					*E*	

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Fair St./John Simpson Rd.
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	1	1	1	0	1	0	1	0	0	0
Lane group		T	R	L	T		L		R			
Volume, V (vph)		306	196	211	299		419		458			
% Heavy vehicles, %HV		0	0	2	2		1		1			
Peak-hour factor, PHF		0.83	0.83	0.82	0.82		0.88		0.88			
Pretimed (P) or actuated (A)		P	P	P	P		P		P			
Start-up lost time, l_1		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of effective green, e		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival type, AT		3	3	3	3		3		3			
Unit extension, UE		3.0	3.0	3.0	3.0		3.0		3.0			
Filtering/metering, I		1.000	1.000	1.000	1.000		1.000	1.000	1.000			
Initial unmet demand, Q_b		0.0	0.0	0.0	0.0		0.0		0.0			
Ped / Bike / RTOR volumes	0		0				0		0	0		
Lane width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N		N
Parking maneuvers, N_m												
Buses stopping, N_B		0	0	0	0		0		0			
Min. time for pedestrians, G_p	3.2						3.2			3.2		

Phasing	EW Perm	WB Only	03	04	NB Only	06	07	08
Timing	G = 20.0	G = 5.0	G =	G =	G = 20.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		369	236	257	365		476		520			
Lane group capacity, c		633	1211	500	932		596		800			
v/c ratio, X		0.58	0.19	0.51	0.39		0.80		0.65			
Total green ratio, g/C		0.33	0.75	0.50	0.50		0.33		0.50			
Uniform delay, d_1		16.5	2.2	16.0	9.3		18.2		11.1			
Progression factor, PF		1.000	1.000	1.000	1.000		1.000		1.000			
Delay calibration, k		0.50	0.50	0.50	0.50		0.50		0.50			
Incremental delay, d_2		3.9	0.4	3.7	1.2		10.7		4.1			
Initial queue delay, d_3												
Control delay		20.4	2.6	19.7	10.6		28.9		15.2			
Lane group LOS		C	A	B	B		C		B			
Approach delay	13.5			14.4			21.7					
Approach LOS	B			B			C					
Intersection delay	17.4			X_c = 0.00			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	NYS Route 52/Fair Street
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway Summit - The Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	0	1	0	1	0	1	1	0	1	0
Lane group				L		R		T	R		LT	
Volume, V (vph)				337		117		865	346	75	573	
% Heavy vehicles, %HV				1		1		3	3	3	3	
Peak-hour factor, PHF				0.89		0.89		0.92	0.92	0.92	0.92	
Pretimed (P) or actuated (A)				A		A		A	A	A	A	
Start-up lost time, l_1				2.0		2.0		2.0	2.0		2.0	
Extension of effective green, e				2.0		2.0		2.0	2.0		2.0	
Arrival type, AT				3		3		3	3		3	
Unit extension, UE				3.0		3.0		3.0	3.0		3.0	
Filtering/metering, I				1.000	1.000	1.000		1.000	1.000		1.000	
Initial unmet demand, Q_b				0.0		0.0		0.0	0.0		0.0	
Ped / Bike / RTOR volumes	0			0		0	0		0			
Lane width				11.0		9.0		11.0	10.0		14.0	
Parking / Grade / Parking	N		N	N	0	N	N	0	N	N	0	Y
Parking maneuvers, N_m												20
Buses stopping, N_B				0		0		0	0		0	
Min. time for pedestrians, G_p	3.2			3.2			3.2					

Phasing	WB Only	02	03	04	NS Perm	06	07	08
Timing	G = 20.0	G =	G =	G =	G = 55.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 85.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				379		131		940	376		705	
Lane group capacity, c				407		339		1154	947		795	
v/c ratio, X				0.93		0.39		0.81	0.40		0.89	
Total green ratio, g/C				0.24		0.24		0.65	0.65		0.65	
Uniform delay, d_1				31.8		27.3		11.2	7.1		12.4	
Progression factor, PF				1.000		1.000		1.000	1.000		1.000	
Delay calibration, k				0.45		0.11		0.36	0.11		0.41	
Incremental delay, d_2				28.0		0.7		4.6	0.3		11.8	
Initial queue delay, d_3												
Control delay				59.9		28.1		15.8	7.4		24.3	
Lane group LOS				E		C		B	A		C	
Approach delay				51.7			13.4			24.3		
Approach LOS				D			B			C		
Intersection delay	24.1			X_c = 0.90			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/ NYS Route 52
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway Summit - The Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	0	1	0	1	0	1	1	1	1	0
Lane group				L		R		T	R	L	T	
Volume, V (vph)				167		788		563	194	592	411	
% Heavy vehicles, %HV				2		2		3	3	4	4	
Peak-hour factor, PHF				0.90		0.90		0.91	0.91	0.87	0.87	
Pretimed (P) or actuated (A)				A		A		A	A	A	A	
Start-up lost time, l_1				2.0		2.0		2.0	2.0	2.0	2.0	
Extension of effective green, e				2.0		2.0		2.0	2.0	2.0	2.0	
Arrival type, AT				3		3		3	3	3	3	
Unit extension, UE				3.0		3.0		3.0	3.0	3.0	3.0	
Filtering/metering, I				1.000	1.000	1.000		1.000	1.000	1.000	1.000	
Initial unmet demand, Q_b				0.0		0.0		0.0	0.0	0.0	0.0	
Ped / Bike / RTOR volumes	0			0		0	0		0			
Lane width				11.0		11.0		12.0	16.0	11.0	12.0	
Parking / Grade / Parking	N		N	N	1	N	N	1	N	N	-1	N
Parking maneuvers, N_m												
Buses stopping, N_B				0		0		0	0	0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2					

Phasing	WB Only	02	03	04	SB Only	NS Perm	07	08
Timing	G = 18.0	G =	G =	G =	G = 30.0	G = 37.0	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				186		876		619	213	680	472	
Lane group capacity, c				306		807		679	654	625	1322	
v/c ratio, X				0.61		1.09		0.91	0.33	1.09	0.36	
Total green ratio, g/C				0.18		0.53		0.37	0.37	0.72	0.72	
Uniform delay, d_1				37.8		23.5		29.9	22.6	25.4	5.3	
Progression factor, PF				1.000		1.000		1.000	1.000	1.000	1.000	
Delay calibration, k				0.19		0.50		0.43	0.11	0.50	0.11	
Incremental delay, d_2				3.5		57.4		16.6	0.3	62.3	0.2	
Initial queue delay, d_3												
Control delay				41.2		80.9		46.6	22.9	87.6	5.4	
Lane group LOS				D		F		D	C	F	A	
Approach delay				74.0			40.5			53.9		
Approach LOS				E			D			D		
Intersection delay	57.3			X_c = 1.25			Intersection LOS			E		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	*JAG*	Intersection	*US Route 6/Main Access*
Agency or Co.	*TMA*	Area Type	*All other areas*
Date Performed	*12/2/05*	Jurisdiction	*Town of Carmel*
Time Period	*PM Peak Hour*	Analysis Year	*Build Condition*
		Project ID	*Gateway -Fairways FGEIS*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*1*	*1*	*0*	*0*	*1*	*0*	*0*	*0*	*0*	*1*	*0*	*1*
Lane group	*L*	*T*			*TR*					*L*		*R*
Volume, V (vph)	*66*	*932*			*720*	*65*				*67*		*93*
% Heavy vehicles, %HV	*3*	*3*			*2*	*2*				*0*		*0*
Peak-hour factor, PHF	*0.92*	*0.92*			*0.97*	*0.97*				*0.95*		*0.95*
Pretimed (P) or actuated (A)	*A*	*A*			*A*	*A*				*A*		*A*
Start-up lost time, l_1	*2.0*	*2.0*			*2.0*					*2.0*		*2.0*
Extension of effective green, e	*2.0*	*2.0*			*2.0*					*2.0*		*2.0*
Arrival type, AT	*3*	*3*			*3*					*3*		*3*
Unit extension, UE	*3.0*	*3.0*			*3.0*					*3.0*		*3.0*
Filtering/metering, I	*1.000*	*1.000*			*1.000*					*1.000*	*1.000*	*1.000*
Initial unmet demand, Q_b	*0.0*	*0.0*			*0.0*					*0.0*		*0.0*
Ped / Bike / RTOR volumes				*0*		*0*	*0*			*0*		*0*
Lane width	*12.0*	*12.0*			*12.0*					*12.0*		*12.0*
Parking / Grade / Parking	*N*	*0*	*N*	*N*	*0*	*N*	*N*		*N*	*N*	*0*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B	*0*	*0*			*0*					*0*		*0*
Min. time for pedestrians, G_p				*3.2*			*3.2*			*3.2*		

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = *40.0*	G =	G =	G =	G = *10.0*	G =	G =	G =
	Y = *5*	Y =	Y =	Y =	Y = *5*	Y =	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *60.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	*72*	*1013*			*809*					*71*		*98*
Lane group capacity, c	*375*	*1230*			*1228*					*301*		*269*
v/c ratio, X	*0.19*	*0.82*			*0.66*					*0.24*		*0.36*
Total green ratio, g/C	*0.67*	*0.67*			*0.67*					*0.17*		*0.17*
Uniform delay, d_1	*3.8*	*7.4*			*5.9*					*21.7*		*22.2*
Progression factor, PF	*1.000*	*1.000*			*1.000*					*1.000*		*1.000*
Delay calibration, k	*0.11*	*0.36*			*0.23*					*0.11*		*0.11*
Incremental delay, d_2	*0.3*	*4.7*			*1.3*					*0.4*		*0.8*
Initial queue delay, d_3												
Control delay	*4.1*	*12.1*			*7.3*					*22.1*		*23.0*
Lane group LOS	*A*	*B*			*A*					*C*		*C*
Approach delay	*11.5*			*7.3*						*22.6*		
Approach LOS	*B*			*A*						*C*		
Intersection delay	*10.8*			X_c = *0.73*			Intersection LOS			*B*		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/Stoneleigh Ave.
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway Summit - The Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	0	0	1	0	1	1	1	1	1	1
Lane group		LT			LT		L	T	R	L	T	R
Volume, V (vph)	382	127		311	104		80	517	175	208	544	203
% Heavy vehicles, %HV	3	3		2	2		2	2	2	1	1	1
Peak-hour factor, PHF	0.88	0.88		0.88	0.88		0.88	0.88	0.88	0.88	0.88	0.88
Pretimed (P) or actuated (A)	A	A		A	A		A	A	A	A	A	A
Start-up lost time, l_1		2.0			2.0		2.0	2.0	2.0	2.0	2.0	2.0
Extension of effective green, e		2.0			2.0		2.0	2.0	2.0	2.0	2.0	2.0
Arrival type, AT		3			3		3	3	3	3	3	3
Unit extension, UE		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Filtering/metering, I		1.000			1.000		1.000	1.000	1.000	1.000	1.000	1.000
Initial unmet demand, Q_b		0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Ped / Bike / RTOR volumes	0			0			0		50	0		58
Lane width		16.0			16.0		10.0	14.0	12.0	13.0	12.0	12.0
Parking / Grade / Parking	N	1	N	N	-1	N	N	1	N	N	-1	N
Parking maneuvers, N_m												
Buses stopping, N_B		0			0		0	0	0	0	0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	WB Only	03	04	NS Perm	Excl. Left	07	08
Timing	G = 25.0	G = 20.0	G =	G =	G = 30.0	G = 5.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		578			471		91	588	142	236	618	165
Lane group capacity, c		501			409		236	593	473	264	567	884
v/c ratio, X		1.15			1.15		0.39	0.99	0.30	0.89	1.09	0.19
Total green ratio, g/C		0.25			0.20		0.40	0.30	0.30	0.40	0.30	0.55
Uniform delay, d_1		37.5			40.0		39.0	34.9	26.9	42.2	35.0	11.3
Progression factor, PF		1.000			1.000		1.000	1.000	1.000	1.000	1.000	1.000
Delay calibration, k		0.50			0.50		0.11	0.49	0.11	0.42	0.50	0.11
Incremental delay, d_2		89.9			92.8		1.0	34.7	0.4	29.6	64.6	0.1
Initial queue delay, d_3												
Control delay		127.4			132.8		40.1	69.6	27.3	71.8	99.6	11.4
Lane group LOS		F			F		D	E	C	E	F	B
Approach delay	127.4			132.8			59.0			78.9		
Approach LOS	F			F			E			E		
Intersection delay	91.7			X_c = 0.00			Intersection LOS			F		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Rt 6/John Simpson Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Southeast
Time Period	PM Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway Summit - The Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	1	1	0
Lane group	L	TR		L	T	R		LTR		L	TR	
Volume, V (vph)	244	870	6	172	800	405	8	166	179	240	70	114
% Heavy vehicles, %HV	2	2	2	4	4	4	3	3	3	4	4	4
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95	0.89	0.89	0.89	0.85	0.85	0.85
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Arrival type, AT	3	3		3	3	3		3		3	3	
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	16.0		11.0	12.0	12.0		11.0		11.0	11.0	
Parking / Grade / Parking	N	-6	N	N	5	N	N	6	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	SB Only	07	08
Timing	G = 50.0	G = 10.0	G =	G =	G = 33.0	G = 7.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	274	985		181	842	426		397		282	216	
Lane group capacity, c	282	905		265	742	631		440		301	601	
v/c ratio, X	0.97	1.09		0.68	1.13	0.68		0.90		0.94	0.36	
Total green ratio, g/C	0.54	0.42		0.54	0.42	0.42		0.28		0.38	0.38	
Uniform delay, d_1	50.2	35.0		47.6	35.0	28.4		41.9		47.8	27.1	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Delay calibration, k	0.48	0.50		0.25	0.50	0.25		0.42		0.45	0.11	
Incremental delay, d_2	45.7	56.9		7.1	76.8	2.9		21.5		35.5	0.4	
Initial queue delay, d_3												
Control delay	95.8	91.9		54.7	111.8	31.3		63.4		83.4	27.5	
Lane group LOS	F	F		D	F	C		E		F	C	
Approach delay	92.8			81.0			63.4			59.1		
Approach LOS	F			F			E			E		
Intersection delay	80.1			X_c = 0.00			Intersection LOS			F		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/ NYS Route 312
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Southeast
Time Period	PM Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway Summit - The Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	0	1	1
Lane group	L	TR		L	T	R		LTR			LT	R
Volume, V (vph)	873	399	8	1	449	186	2	20	2	150	2	946
% Heavy vehicles, %HV	3	3	3	6	6	6	14	14	14	2	2	2
Peak-hour factor, PHF	0.97	0.97	0.97	0.81	0.81	0.81	0.39	0.39	0.39	0.91	0.91	0.91
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Arrival type, AT	3	3		3	3	3		3			3	3
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	12.0		11.0	12.0	14.0		14.0			11.0	12.0
Parking / Grade / Parking	N	1	N	N	0	N	N	1	N	N	-3	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0			0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = 35.0	G = 30.0	G =	G =	G = 15.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 95.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	900	419		1	554	230		61			167	1040
Lane group capacity, c	697	1348		283	566	513		252			203	930
v/c ratio, X	1.29	0.31		0.00	0.98	0.45		0.24			0.82	1.12
Total green ratio, g/C	0.74	0.74		0.32	0.32	0.32		0.16			0.16	0.58
Uniform delay, d_1	25.1	4.3		22.3	32.2	25.9		35.0			38.7	20.0
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Delay calibration, k	0.50	0.11		0.11	0.48	0.11		0.11			0.36	0.50
Incremental delay, d_2	141.7	0.1		0.0	32.3	0.6		0.5			23.1	67.6
Initial queue delay, d_3												
Control delay	166.8	4.4		22.3	64.5	26.5		35.5			61.8	87.6
Lane group LOS	F	A		C	E	C		D			E	F
Approach delay	115.2			53.3			35.5			84.1		
Approach LOS	F			D			D			F		
Intersection delay	88.2			X_c = 2.13			Intersection LOS			F		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JAG*
Agency/Co.	*TMA*
Date Performed	*12/2/05*
Analysis Time Period	*Saturday Peak Hour*

Site Information

Intersection	*Fair Street/ Dale Road*
Jurisdiction	*Town of Carmel*
Analysis Year	*Build Condition Proposed*

Project Description *Gateway Summit-The Fairways FGEIS*

East/West Street: *Fair Street* | North/South Street: *Dale Road*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*80*	*247*	*0*	*0*	*253*	*150*
Peak-hour factor, PHF	*0.81*	*0.81*	*1.00*	*1.00*	*0.82*	*0.82*
Hourly Flow Rate (veh/h)	*98*	*304*	*0*	*0*	*308*	*182*
Proportion of heavy vehicles, P_{HV}	*0*	--	--	*0*	--	--
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*0*	*144*	*0*	*96*
Peak-hour factor, PHF	*1.00*	*1.00*	*1.00*	*0.83*	*1.00*	*0.83*
Hourly Flow Rate (veh/h)	*0*	*0*	*0*	*173*	*0*	*115*
Proportion of heavy vehicles, P_{HV}	*0*	*0*	*0*	*1*	*0*	*1*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*					*L*		*R*
Volume, v (vph)	*98*					*173*		*115*
Capacity, c_m (vph)	*1084*					*283*		*653*
v/c ratio	*0.09*					*0.61*		*0.18*
Queue length (95%)	*0.30*					*3.71*		*0.64*
Control Delay (s/veh)	*8.7*					*35.8*		*11.7*
LOS	*A*					*E*		*B*
Approach delay (s/veh)	--	--				*26.2*		
Approach LOS	--	--				*D*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JAG*	Intersection	*Church Street and US Route 6*
Agency/Co.	*TMA*	Jurisdiction	*Town of Carmel*
Date Performed	*12/2/05*	Analysis Year	*Build Condition*
Analysis Time Period	*Saturday Peak Hour*		

Project Description *Gateway Summit-The Fairways FGEIS*

East/West Street: *Church Street* | North/South Street: *US Route 6*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*210*	*857*	*0*	*0*	*912*	*7*
Peak-Hour Factor, PHF	*0.97*	*0.97*	*1.00*	*1.00*	*0.93*	*0.93*
Hourly Flow Rate, HFR	*216*	*883*	*0*	*0*	*980*	*7*
Percent Heavy Vehicles	*2*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*0*	*0*	*343*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*0.93*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*0*	*0*	*368*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*1*
Percent Grade (%)		*0*			*-6*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*							*R*
v (vph)	*216*							*368*
C (m) (vph)	*700*							*303*
v/c	*0.31*							*1.21*
95% queue length	*1.31*							*16.49*
Control Delay	*12.4*							*159.1*
LOS	*B*							*F*
Approach Delay	--	--				*159.1*		
Approach LOS	--	--				*F*		

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*UAG*
Agency/Co.	*TMA*
Date Performed	*12/2/05*
Analysis Time Period	*Saturday Peak Hour*

Site Information

Intersection	*US Route 6/Site (west)*
Jurisdiction	*Town of Carmel*
Analysis Year	*Build Condition*

Project Description *Gateway Summit- The Fairways FGEIS*

East/West Street: *US Route 6* | North/South Street: *Site*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*64*	*995*	*0*	*0*	*902*	*27*
Peak-hour factor, PHF	*0.93*	*0.93*	*1.00*	*1.00*	*0.89*	*0.89*
Hourly Flow Rate (veh/h)	*68*	*1069*	*0*	*0*	*1013*	*30*
Proportion of heavy vehicles, P_{HV}	*0*	–	–	*0*	–	–
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*0*	*21*	*0*	*44*
Peak-hour factor, PHF	*1.00*	*1.00*	*1.00*	*0.95*	*1.00*	*0.95*
Hourly Flow Rate (veh/h)	*0*	*0*	*0*	*22*	*0*	*46*
Proportion of heavy vehicles, P_{HV}	*0*	*0*	*0*	*0*	*0*	*0*
Percent grade (%)	*0*			*0*		
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*0*
Configuration					*LR*	

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*						*LR*	
Volume, v (vph)	*68*						*68*	
Capacity, c_m (vph)	*675*						*101*	
v/c ratio	*0.10*						*0.67*	
Queue length (95%)	*0.33*						*3.39*	
Control Delay (s/veh)	*10.9*						*94.4*	
LOS	*B*						*F*	
Approach delay (s/veh)	–	--				*94.4*		
Approach LOS	–	--				*F*		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Fair St./John Simpson Rd.
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway Summit - The Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	1	1	1	0	1	0	1	0	0	0
Lane group		T	R	L	T		L		R			
Volume, V (vph)		151	260	232	131		265		191			
% Heavy vehicles, %HV		4	4	4	4		2		2			
Peak-hour factor, PHF		0.84	0.84	0.77	0.77		0.90		0.90			
Pretimed (P) or actuated (A)		P	P	P	P		P		P			
Start-up lost time, l_1		2.0	2.0	2.0	2.0		2.0		2.0			
Extension of effective green, e		2.0	2.0	2.0	2.0		2.0		2.0			
Arrival type, AT		3	3	3	3		3		3			
Unit extension, UE		3.0	3.0	3.0	3.0		3.0		3.0			
Filtering/metering, I		1.000	1.000	1.000	1.000		1.000	1.000	1.000			
Initial unmet demand, Q_b		0.0	0.0	0.0	0.0		0.0		0.0			
Ped / Bike / RTOR volumes	0		0				0		0	0		
Lane width		12.0	12.0	12.0	12.0		12.0		12.0			
Parking / Grade / Parking	N	0	N	N	0	N	N	0	N	N		N
Parking maneuvers, N_m												
Buses stopping, N_B		0	0	0	0		0		0			
Min. time for pedestrians, G_p	3.2						3.2			3.2		

Phasing	EW Perm	WB Only	03	04	NB Only	06	07	08
Timing	G = 20.0	G = 5.0	G =	G =	G = 20.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		180	310	301	170		294		212			
Lane group capacity, c		609	1165	634	914		590		792			
v/c ratio, X		0.30	0.27	0.47	0.19		0.50		0.27			
Total green ratio, g/C		0.33	0.75	0.50	0.50		0.33		0.50			
Uniform delay, d_1		14.8	2.3	11.8	8.3		16.0		8.7			
Progression factor, PF		1.000	1.000	1.000	1.000		1.000		1.000			
Delay calibration, k		0.50	0.50	0.50	0.50		0.50		0.50			
Incremental delay, d_2		1.2	0.6	2.5	0.4		3.0		0.8			
Initial queue delay, d_3												
Control delay		16.0	2.9	14.3	8.7		19.0		9.5			
Lane group LOS		B	A	B	A		B		A			
Approach delay	7.7			12.3			15.0					
Approach LOS	A			B			B					
Intersection delay	11.7			X_c = 0.00			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	NYS Route 52/Fair Street
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway Summit - The Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	0	1	0	1	0	1	1	0	1	0
Lane group				L		R		T	R		LT	
Volume, V (vph)				260		116		758	261	72	738	
% Heavy vehicles, %HV				0		0		3	3	3	3	
Peak-hour factor, PHF				0.86		0.86		0.94	0.94	0.93	0.93	
Pretimed (P) or actuated (A)				A		A		A	A	A	A	
Start-up lost time, l_1				2.0		2.0		2.0	2.0		2.0	
Extension of effective green, e				2.0		2.0		2.0	2.0		2.0	
Arrival type, AT				3		3		3	3		3	
Unit extension, UE				3.0		3.0		3.0	3.0		3.0	
Filtering/metering, I				1.000	1.000	1.000		1.000	1.000		1.000	
Initial unmet demand, Q_b				0.0		0.0		0.0	0.0		0.0	
Ped / Bike / RTOR volumes	0			0		0	0		0			
Lane width				11.0		9.0		11.0	10.0		16.0	
Parking / Grade / Parking	N		N	N	0	N	N	0	N	N	0	Y
Parking maneuvers, N_m												20
Buses stopping, N_B				0		0		0	0		0	
Min. time for pedestrians, G_p	3.2			3.2			3.2					

Phasing	WB Only	02	03	04	NS Perm	06	07	08
Timing	G = 20.0	G =	G =	G =	G = 55.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 85.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				302		135		806	278		871	
Lane group capacity, c				411		342		1154	947		946	
v/c ratio, X				0.73		0.39		0.70	0.29		0.92	
Total green ratio, g/C				0.24		0.24		0.65	0.65		0.65	
Uniform delay, d_1				30.0		27.4		9.7	6.5		13.1	
Progression factor, PF				1.000		1.000		1.000	1.000		1.000	
Delay calibration, k				0.29		0.11		0.26	0.11		0.44	
Incremental delay, d_2				6.7		0.8		1.9	0.2		13.9	
Initial queue delay, d_3												
Control delay				36.8		28.2		11.5	6.7		27.0	
Lane group LOS				D		C		B	A		C	
Approach delay				34.1			10.3			27.0		
Approach LOS				C			B			C		
Intersection delay	20.7			X_c = 0.87			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/ NYS Route 52
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	0	1	0	1	0	1	1	1	1	0
Lane group				L		R		T	R	L	T	
Volume, V (vph)				198		714		390	218	759	441	
% Heavy vehicles, %HV				2		2		5	5	2	2	
Peak-hour factor, PHF				0.81		0.81		0.90	0.90	0.90	0.90	
Pretimed (P) or actuated (A)				A		A		A	A	A	A	
Start-up lost time, l_1				2.0		2.0		2.0	2.0	2.0	2.0	
Extension of effective green, e				2.0		2.0		2.0	2.0	2.0	2.0	
Arrival type, AT				3		3		3	3	3	3	
Unit extension, UE				3.0		3.0		3.0	3.0	3.0	3.0	
Filtering/metering, I				1.000	1.000	1.000		1.000	1.000	1.000	1.000	
Initial unmet demand, Q_b				0.0		0.0		0.0	0.0	0.0	0.0	
Ped / Bike / RTOR volumes	0			0		0	0		0			
Lane width				11.0		11.0		12.0	16.0	11.0	12.0	
Parking / Grade / Parking	N		N	N	1	N	N	1	N	N	-1	N
Parking maneuvers, N_m												
Buses stopping, N_B				0		0		0	0	0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2					

Phasing	WB Only	02	03	04	SB Only	NS Perm	07	08
Timing	G = 18.0	G =	G =	G =	G = 30.0	G = 37.0	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				244		881		433	242	843	490	
Lane group capacity, c				306		807		666	642	718	1348	
v/c ratio, X				0.80		1.09		0.65	0.38	1.17	0.36	
Total green ratio, g/C				0.18		0.53		0.37	0.37	0.72	0.72	
Uniform delay, d_1				39.3		23.5		26.1	23.1	19.8	5.3	
Progression factor, PF				1.000		1.000		1.000	1.000	1.000	1.000	
Delay calibration, k				0.34		0.50		0.23	0.11	0.50	0.11	
Incremental delay, d_2				13.8		59.6		2.2	0.4	92.6	0.2	
Initial queue delay, d_3												
Control delay				53.0		83.1		28.4	23.4	112.5	5.5	
Lane group LOS				D		F		C	C	F	A	
Approach delay				76.6			26.6			73.1		
Approach LOS				E			C			E		
Intersection delay	64.4			X_c = 1.32			Intersection LOS			E		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/Main Access
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway -Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	0	1	0	0	0	0	1	0	1
Lane group	L	T			TR					L		R
Volume, V (vph)	76	940			858	71				65		71
% Heavy vehicles, %HV	0	0			1	1				0		0
Peak-hour factor, PHF	0.98	0.98			0.94	0.94				0.95		0.95
Pretimed (P) or actuated (A)	A	A			A	A				A		A
Start-up lost time, l_1	2.0	2.0			2.0					2.0		2.0
Extension of effective green, e	2.0	2.0			2.0					2.0		2.0
Arrival type, AT	3	3			3					3		3
Unit extension, UE	3.0	3.0			3.0					3.0		3.0
Filtering/metering, I	1.000	1.000			1.000					1.000	1.000	1.000
Initial unmet demand, Q_b	0.0	0.0			0.0					0.0		0.0
Ped / Bike / RTOR volumes				0		0	0			0		0
Lane width	11.0	12.0			12.0					12.0		12.0
Parking / Grade / Parking	N	0	N	N	0	N	N		N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0			0					0		0
Min. time for pedestrians, G_p				3.2			3.2			3.2		

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 40.0	G =	G =	G =	G = 10.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25					Cycle Length, C = 60.0			

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	78	959			989					68		75
Lane group capacity, c	298	1267			1241					301		269
v/c ratio, X	0.26	0.76			0.80					0.23		0.28
Total green ratio, g/C	0.67	0.67			0.67					0.17		0.17
Uniform delay, d_1	4.0	6.7			7.1					21.6		21.8
Progression factor, PF	1.000	1.000			1.000					1.000		1.000
Delay calibration, k	0.11	0.31			0.34					0.11		0.11
Incremental delay, d_2	0.5	2.7			3.7					0.4		0.6
Initial queue delay, d_3												
Control delay	4.5	9.4			10.8					22.0		22.4
Lane group LOS	A	A			B					C		C
Approach delay	9.0			10.8						22.2		
Approach LOS	A			B						C		
Intersection delay	10.7			X_c = 0.69			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		***Site Information***	
Analyst	*JAG*	Intersection	*US Route 6/Stoneleigh Ave.*
Agency or Co.	*TMA*	Area Type	*All other areas*
Date Performed	*12/2/05*	Jurisdiction	*Town of Carmel*
Time Period	*Saturday Peak Hour*	Analysis Year	*Build Condition*
		Project ID	*Gateway Summit - The Fairways GFEIS*

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	*0*	*1*	*0*	*0*	*1*	*0*	*1*	*1*	*1*	*1*	*1*	*1*
Lane group		*LT*			*LT*		*L*	*T*	*R*	*L*	*T*	*R*
Volume, V (vph)	*175*	*117*		*399*	*106*		*67*	*517*	*211*	*216*	*552*	*200*
% Heavy vehicles, %HV	*2*	*2*		*1*	*1*		*1*	*1*	*1*	*2*	*2*	*2*
Peak-hour factor, PHF	*0.93*	*0.93*		*0.91*	*0.91*		*0.95*	*0.95*	*0.95*	*0.88*	*0.88*	*0.88*
Pretimed (P) or actuated (A)	*A*	*A*		*A*	*A*		*A*	*A*	*A*	*A*	*A*	*A*
Start-up lost time, l_1		*2.0*			*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Extension of effective green, e		*2.0*			*2.0*		*2.0*	*2.0*	*2.0*	*2.0*	*2.0*	*2.0*
Arrival type, AT		*3*			*3*		*3*	*3*	*3*	*3*	*3*	*3*
Unit extension, UE		*3.0*			*3.0*		*3.0*	*3.0*	*3.0*	*3.0*	*3.0*	*3.0*
Filtering/metering, I		*1.000*			*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Initial unmet demand, Q_b		*0.0*			*0.0*		*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Ped / Bike / RTOR volumes	*0*			*0*			*0*		*60*	*0*		*60*
Lane width		*16.0*			*16.0*		*10.0*	*14.0*	*12.0*	*13.0*	*12.0*	*12.0*
Parking / Grade / Parking	*N*	*1*	*N*	*N*	*-1*	*N*	*N*	*1*	*N*	*N*	*-1*	*N*
Parking maneuvers, N_m												
Buses stopping, N_B		*0*			*0*		*0*	*0*	*0*	*0*	*0*	*0*
Min. time for pedestrians, G_p		*3.2*			*3.2*			*3.2*			*3.2*	

Phasing	EB Only	WB Only	03	04	NS Perm	Excl. Left	07	08
Timing	G = *14.0*	G = *23.0*	G =	G =	G = *38.0*	G = *5.0*	G =	G =
	Y = *5*	Y = *5*	Y =	Y =	Y = *5*	Y = *5*	Y =	Y =
Duration of Analysis, T = *0.25*						Cycle Length, C = *100.0*		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		*314*			*554*		*71*	*544*	*159*	*245*	*627*	*159*
Lane group capacity, c		*286*			*474*		*240*	*759*	*1050*	*328*	*711*	*827*
v/c ratio, X		*1.10*			*1.17*		*0.30*	*0.72*	*0.15*	*0.75*	*0.88*	*0.19*
Total green ratio, g/C		*0.14*			*0.23*		*0.48*	*0.38*	*0.66*	*0.48*	*0.38*	*0.52*
Uniform delay, d_1		*43.0*			*38.5*		*35.5*	*26.4*	*6.4*	*36.5*	*28.9*	*12.8*
Progression factor, PF		*1.000*			*1.000*		*1.000*	*1.000*	*1.000*	*1.000*	*1.000*	*1.000*
Delay calibration, k		*0.50*			*0.50*		*0.11*	*0.28*	*0.11*	*0.30*	*0.41*	*0.11*
Incremental delay, d_2		*82.0*			*96.6*		*0.7*	*3.3*	*0.1*	*9.1*	*12.5*	*0.1*
Initial queue delay, d_3												
Control delay		*125.0*			*135.1*		*36.2*	*29.7*	*6.5*	*45.6*	*41.4*	*12.9*
Lane group LOS		*F*			*F*		*D*	*C*	*A*	*D*	*D*	*B*
Approach delay	*125.0*			*135.1*			*25.5*			*38.0*		
Approach LOS	*F*			*F*			*C*			*D*		
Intersection delay	*64.7*			X_c = *0.00*			Intersection LOS			*E*		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Rt 6/John Simpson Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Southeast
Time Period	Saturday Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway Summit - The Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	1	1	0
Lane group	L	TR		L	T	R		LTR		L	TR	
Volume, V (vph)	155	858	12	116	804	229	12	56	114	237	44	116
% Heavy vehicles, %HV	2	2	2	2	2	2	2	2	2	1	1	2
Peak-hour factor, PHF	0.90	0.90	0.90	0.81	0.81	0.81	0.82	0.82	0.82	0.95	0.95	0.95
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Arrival type, AT	3	3		3	3	3		3		3	3	
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	16.0		11.0	12.0	12.0		11.0		11.0	11.0	
Parking / Grade / Parking	N	-6	N	N	5	N	N	6	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	SB Only	07	08
Timing	G = 60.0	G = 10.0	G =	G =	G = 23.0	G = 7.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	172	966		143	993	283		222		249	168	
Lane group capacity, c	282	1085		269	908	772		298		302	469	
v/c ratio, X	0.61	0.89		0.53	1.09	0.37		0.74		0.82	0.36	
Total green ratio, g/C	0.63	0.50		0.63	0.50	0.50		0.19		0.29	0.29	
Uniform delay, d_1	46.9	27.0		46.3	30.0	18.4		45.7		47.5	33.6	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Delay calibration, k	0.20	0.41		0.13	0.50	0.11		0.30		0.36	0.11	
Incremental delay, d_2	3.8	9.4		2.0	58.7	0.3		9.8		16.8	0.5	
Initial queue delay, d_3												
Control delay	50.8	36.4		48.4	88.7	18.7		55.5		64.3	34.1	
Lane group LOS	D	D		D	F	B		E		E	C	
Approach delay	38.6			70.7			55.5			52.1		
Approach LOS	D			E			E			D		
Intersection delay	55.8			X_c = 0.00			Intersection LOS			E		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/ NYS Route 312
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Southeast
Time Period	Saturday Peak Hour	Analysis Year	Build Condition
		Project ID	Gateway Summit - The Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	0	1	1
Lane group	L	TR		L	T	R		LTR			LT	R
Volume, V (vph)	885	324	0	1	348	120	3	2	0	111	4	798
% Heavy vehicles, %HV	1	1	1	3	3	3	0	0	0	2	2	2
Peak-hour factor, PHF	0.89	0.89	0.89	0.85	0.85	0.85	0.63	0.63	0.63	0.85	0.85	0.85
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Arrival type, AT	3	3		3	3	3		3			3	3
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	12.0		11.0	12.0	14.0		14.0			11.0	12.0
Parking / Grade / Parking	N	1	N	N	0	N	N	1	N	N	-3	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0			0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	EW Perm	03	04	NS Perm	06	07	08
Timing	G = 35.0	G = 25.0	G =	G =	G = 15.0	G =	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 90.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	994	364		1	409	141		8			136	939
Lane group capacity, c	783	1352		269	513	464		287			222	982
v/c ratio, X	1.27	0.27		0.00	0.80	0.30		0.03			0.61	0.96
Total green ratio, g/C	0.72	0.72		0.28	0.28	0.28		0.17			0.17	0.61
Uniform delay, d_1	20.5	4.3		23.5	30.1	25.6		31.4			34.8	16.4
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Delay calibration, k	0.50	0.11		0.11	0.34	0.11		0.11			0.20	0.47
Incremental delay, d_2	131.3	0.1		0.0	8.6	0.4		0.0			4.9	19.0
Initial queue delay, d_3												
Control delay	151.8	4.4		23.5	38.8	26.0		31.4			39.7	35.4
Lane group LOS	F	A		C	D	C		C			D	D
Approach delay	112.3			35.5			31.4			35.9		
Approach LOS	F			D			C			D		
Intersection delay	70.5			X_c = 1.62			Intersection LOS			E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*UAG*	Intersection	*US Route 6/Site (west)*
Agency/Co.	*TMA*	Jurisdiction	*Town of Carmel*
Date Performed	*12/2/05*	Analysis Year	*Build Condition 2 Lanes Exit*
Analysis Time Period	*PM Peak Hour*		

Project Description *Gateway Summit- The Fairways FGEIS*

East/West Street: *US Route 6* | North/South Street: *Site*

Intersection Orientation: *East-West* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	*54*	*982*	*0*	*0*	*792*	*21*
Peak-hour factor, PHF	*0.90*	*0.90*	*1.00*	*1.00*	*0.93*	*0.93*
Hourly Flow Rate (veh/h)	*60*	*1091*	*0*	*0*	*851*	*22*
Proportion of heavy vehicles, P_{HV}	*0*	–	–	*0*	–	–
Median type	*Undivided*					
RT Channelized?			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	*0*	*0*	*0*	*15*	*0*	*32*
Peak-hour factor, PHF	*1.00*	*1.00*	*1.00*	*0.95*	*1.00*	*0.95*
Hourly Flow Rate (veh/h)	*0*	*0*	*0*	*15*	*0*	*33*
Proportion of heavy vehicles, P_{HV}	*0*	*0*	*0*	*0*	*0*	*0*
Percent grade (%)		*0*			*0*	
Flared approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized?			*0*			*0*
Lanes	*0*	*0*	*0*	*1*	*0*	*1*
Configuration				*L*		*R*

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*					*L*		*R*
Volume, v (vph)	*60*					*15*		*33*
Capacity, c_m (vph)	*781*					*55*		*358*
v/c ratio	*0.08*					*0.27*		*0.09*
Queue length (95%)	*0.25*					*0.95*		*0.30*
Control Delay (s/veh)	*10.0*					*93.4*		*16.1*
LOS	*A*					*F*		*C*
Approach delay (s/veh)	–	–				*40.2*		
Approach LOS	–	–				*E*		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JAG*	Intersection	*Church Street and US Route 6*
Agency/Co.	*TMA*	Jurisdiction	*Town of Carmel*
Date Performed	*12/2/05*	Analysis Year	*Build Condition diversion*
Analysis Time Period	*PM Peak Hour*		

Project Description	*Gateway Summit-The Fairways FGEIS*
East/West Street: *Church Street*	North/South Street: *US Route 6*
Intersection Orientation: *North-South*	Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*314*	*1008*	*0*	*0*	*922*	*7*
Peak-Hour Factor, PHF	*0.94*	*0.94*	*1.00*	*1.00*	*0.92*	*0.92*
Hourly Flow Rate, HFR	*334*	*1072*	*0*	*0*	*1002*	*7*
Percent Heavy Vehicles	*2*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*0*	*0*	*172*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*0.80*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*0*	*0*	*214*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*1*
Percent Grade (%)		*0*			*-6*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*							*R*
v (vph)	*334*							*214*
C (m) (vph)	*687*							*295*
v/c	*0.49*							*0.73*
95% queue length	*2.68*							*5.23*
Control Delay	*15.1*							*43.7*
LOS	*C*							*E*
Approach Delay	--	--				*43.7*		
Approach LOS	--	--				*E*		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/ NYS Route 52
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/6/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Build diverted trips
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	0	1	0	1	0	1	1	1	1	0
Lane group				L		R		T	R	L	T	
Volume, V (vph)				170		788		563	294	592	411	
% Heavy vehicles, %HV				2		2		3	3	4	4	
Peak-hour factor, PHF				0.90		0.90		0.91	0.91	0.87	0.87	
Pretimed (P) or actuated (A)				A		A		A	A	A	A	
Start-up lost time, l_1				2.0		2.0		2.0	2.0	2.0	2.0	
Extension of effective green, e				2.0		2.0		2.0	2.0	2.0	2.0	
Arrival type, AT				3		3		3	3	3	3	
Unit extension, UE				3.0		3.0		3.0	3.0	3.0	3.0	
Filtering/metering, I				1.000	1.000	1.000		1.000	1.000	1.000	1.000	
Initial unmet demand, Q_b				0.0		0.0		0.0	0.0	0.0	0.0	
Ped / Bike / RTOR volumes	0			0		0	0		0			
Lane width				11.0		11.0		12.0	16.0	11.0	12.0	
Parking / Grade / Parking	N		N	N	1	N	N	1	N	N	-1	N
Parking maneuvers, N_m												
Buses stopping, N_B				0		0		0	0	0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2					

Phasing	WB Only	02	03	04	SB Only	NS Perm	07	08
Timing	G = 15.0	G =	G =	G =	G = 37.0	G = 33.0	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				189		876		619	323	680	472	
Lane group capacity, c				255		868		606	583	698	1377	
v/c ratio, X				0.74		1.01		1.02	0.55	0.97	0.34	
Total green ratio, g/C				0.15		0.57		0.33	0.33	0.75	0.75	
Uniform delay, d_1				40.6		21.5		33.5	27.5	25.7	4.2	
Progression factor, PF				1.000		1.000		1.000	1.000	1.000	1.000	
Delay calibration, k				0.30		0.50		0.50	0.15	0.48	0.11	
Incremental delay, d_2				11.0		32.8		42.1	1.2	27.6	0.1	
Initial queue delay, d_3												
Control delay				51.7		54.3		75.6	28.6	53.4	4.4	
Lane group LOS				D		D		E	C	D	A	
Approach delay				53.9			59.5			33.3		
Approach LOS				D			E			C		
Intersection delay	48.0			X_c = 1.01			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Fair Street/ Hill and Dale Rd.
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Carmel
Time Period	PM Peak Hour	Analysis Year	Build with Signal
		Project ID	Gateway - Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	0	0	1	0	0	0	0	1	0	1
Lane group		LT			TR					L		R
Volume, V (vph)	112	355			367	305				122		77
% Heavy vehicles, %HV	1	1			0	0				1		1
Peak-hour factor, PHF	0.90	0.90			0.83	0.83				0.87		0.87
Pretimed (P) or actuated (A)	P	P			P	P				A		A
Start-up lost time, l_1		2.0			2.0					2.0		2.0
Extension of effective green, e		2.0			2.0					2.0		2.0
Arrival type, AT		3			3					3		3
Unit extension, UE		3.0			3.0					3.0		3.0
Filtering/metering, I		1.000			1.000					1.000	1.000	1.000
Initial unmet demand, Q_b		0.0			0.0					0.0		0.0
Ped / Bike / RTOR volumes				0		0	0			0		0
Lane width		11.0			11.0					12.0		13.0
Parking / Grade / Parking	N	0	N	N	0	N	N		N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B		0			0					0		0
Min. time for pedestrians, G_p					3.2			3.2			3.2	

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 40.0	G =	G =	G =	G = 10.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		518			809					140		89
Lane group capacity, c		841			1149					298		275
v/c ratio, X		0.62			0.70					0.47		0.32
Total green ratio, g/C		0.67			0.67					0.17		0.17
Uniform delay, d_1		5.7			6.3					22.6		22.0
Progression factor, PF		1.000			1.000					1.000		1.000
Delay calibration, k		0.50			0.50					0.11		0.11
Incremental delay, d_2		3.4			3.6					1.2		0.7
Initial queue delay, d_3												
Control delay		9.0			9.9					23.8		22.7
Lane group LOS		A			A					C		C
Approach delay	9.0			9.9						23.4		
Approach LOS	A			A						C		
Intersection delay	11.6			X_c = 0.66			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Rt 6/John Simpson Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Southeast
Time Period	PM Peak Hour	Analysis Year	Build Condition retiming
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	1	1	0
Lane group	L	TR		L	T	R		LTR		L	TR	
Volume, V (vph)	244	870	6	172	800	405	8	166	179	240	70	114
% Heavy vehicles, %HV	2	2	2	4	4	4	3	3	3	4	4	4
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95	0.89	0.89	0.89	0.85	0.85	0.85
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Arrival type, AT	3	3		3	3	3		3		3	3	
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	16.0		11.0	12.0	12.0		11.0		11.0	11.0	
Parking / Grade / Parking	N	-6	N	N	5	N	N	6	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	SB Only	07	08
Timing	G = 45.0	G = 8.0	G =	G =	G = 21.0	G = 6.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	274	985		181	842	426		397		282	216	
Lane group capacity, c	303	977		285	801	681		336		261	513	
v/c ratio, X	0.90	1.01		0.64	1.05	0.63		1.18		1.08	0.42	
Total green ratio, g/C	0.58	0.45		0.58	0.45	0.45		0.21		0.32	0.32	
Uniform delay, d_1	40.6	27.5		38.6	27.5	21.1		39.5		42.3	26.7	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Delay calibration, k	0.43	0.50		0.22	0.50	0.21		0.50		0.50	0.11	
Incremental delay, d_2	28.7	30.8		4.6	46.1	1.8		108.1		78.8	0.6	
Initial queue delay, d_3												
Control delay	69.3	58.3		43.2	73.6	22.9		147.6		121.1	27.3	
Lane group LOS	E	E		D	E	C		F		F	C	
Approach delay	60.7			54.9			147.6			80.4		
Approach LOS	E			D			F			F		
Intersection delay	70.7			X_c = 0.00			Intersection LOS			E		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/ NYS Route 312
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Southeast
Time Period	PM Peak Hour	Analysis Year	Build Condition retiming
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	0	1	1
Lane group	L	TR		L	T	R		LTR			LT	R
Volume, V (vph)	873	399	8	1	449	186	2	20	2	150	2	946
% Heavy vehicles, %HV	3	3	3	6	6	6	14	14	14	2	2	2
Peak-hour factor, PHF	0.97	0.97	0.97	0.81	0.81	0.81	0.39	0.39	0.39	0.91	0.91	0.91
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Arrival type, AT	3	3		3	3	3		3			3	3
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	12.0		11.0	12.0	14.0		14.0			11.0	12.0
Parking / Grade / Parking	N	1	N	N	0	N	N	1	N	N	-3	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0			0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	EW Perm	03	04	NS Perm	SB Only	07	08
Timing	G = 56.0	G = 33.0	G =	G =	G = 7.0	G = 4.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 120.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	900	419		1	554	230		61			167	1040
Lane group capacity, c	847	1434		246	493	501		60			204	1031
v/c ratio, X	1.06	0.29		0.00	1.12	0.46		1.02			0.82	1.01
Total green ratio, g/C	0.78	0.78		0.28	0.28	0.31		0.06			0.13	0.64
Uniform delay, d_1	28.1	3.7		31.6	43.5	33.4		56.5			50.6	21.5
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Delay calibration, k	0.50	0.11		0.11	0.50	0.11		0.50			0.36	0.50
Incremental delay, d_2	48.9	0.1		0.0	79.0	0.7		121.0			22.4	30.2
Initial queue delay, d_3												
Control delay	77.0	3.8		31.6	122.5	34.1		177.5			73.0	51.7
Lane group LOS	E	A		C	F	C		F			E	D
Approach delay	53.8			96.5			177.5			54.6		
Approach LOS	D			F			F			D		
Intersection delay	66.3			X_c = 1.31			Intersection LOS			E		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/Site (west)
Agency/Co.	TMA	Jurisdiction	Town of Carmel
Date Performed	12/2/05	Analysis Year	Build Condition 2 Lanes Exit
Analysis Time Period	Saturday Peak Hour		

Project Description	Gateway Summit- The Fairways FGEIS
East/West Street: US Route 6	North/South Street: Site
Intersection Orientation: East-West	Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)	64	995	0	0	902	27
Peak-hour factor, PHF	0.93	0.93	1.00	1.00	0.89	0.89
Hourly Flow Rate (veh/h)	68	1069	0	0	1013	30
Proportion of heavy vehicles, P_{HV}	0	--	--	0	--	--
Median type	Undivided					
RT Channelized?			0			0
Lanes	0	1	0	0	1	0
Configuration	LT					TR
Upstream Signal		0			0	

Minor Street	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)	0	0	0	21	0	44
Peak-hour factor, PHF	1.00	1.00	1.00	0.95	1.00	0.95
Hourly Flow Rate (veh/h)	0	0	0	22	0	46
Proportion of heavy vehicles, P_{HV}	0	0	0	0	0	0
Percent grade (%)	0			0		
Flared approach		N			N	
Storage		0			0	
RT Channelized?			0			0
Lanes	0	0	0	1	0	1
Configuration				L		R

Control Delay, Queue Length, Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LT					L		R
Volume, v (vph)	68					22		46
Capacity, c_m (vph)	675					43		287
v/c ratio	0.10					0.51		0.16
Queue length (95%)	0.33					1.85		0.56
Control Delay (s/veh)	10.9					155.9		19.9
LOS	B					F		C
Approach delay (s/veh)	--	--				63.9		
Approach LOS	--	--				F		

TWO-WAY STOP CONTROL SUMMARY

General Information		Site Information	
Analyst	*JAG*	Intersection	*Church Street and US Route 6*
Agency/Co.	*TMA*	Jurisdiction	*Town of Carmel*
Date Performed	*12/2/05*	Analysis Year	*Build Condition diversion*
Analysis Time Period	*Saturday Peak Hour*		

Project Description *Gateway Summit-The Fairways FGEIS*

East/West Street: *Church Street* | North/South Street: *US Route 6*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	*210*	*857*	*0*	*0*	*1122*	*7*
Peak-Hour Factor, PHF	*0.97*	*0.97*	*1.00*	*1.00*	*0.93*	*0.93*
Hourly Flow Rate, HFR	*216*	*883*	*0*	*0*	*1206*	*7*
Percent Heavy Vehicles	*2*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*1*	*0*	*0*	*1*	*0*
Configuration	*LT*					*TR*
Upstream Signal		*0*			*0*	

Minor Street	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	*0*	*0*	*0*	*0*	*0*	*133*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*0.93*
Hourly Flow Rate, HFR	*0*	*0*	*0*	*0*	*0*	*143*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*1*
Percent Grade (%)		*0*			*-6*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	*LT*							*R*
v (vph)	*216*							*143*
C (m) (vph)	*575*							*224*
v/c	*0.38*							*0.64*
95% queue length	*1.74*							*3.84*
Control Delay	*15.0*							*45.7*
LOS	*B*							*E*
Approach Delay	--	--				*45.7*		
Approach LOS	--	--				*E*		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/ NYS Route 52
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/0%	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build Condition diversion
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	0	0	1	0	1	0	1	1	1	1	0
Lane group				L		R		T	R	L	T	
Volume, V (vph)				198		714		390	428	759	441	
% Heavy vehicles, %HV				2		2		5	5	2	2	
Peak-hour factor, PHF				0.81		0.81		0.90	0.90	0.90	0.90	
Pretimed (P) or actuated (A)				A		A		A	A	A	A	
Start-up lost time, l_1				2.0		2.0		2.0	2.0	2.0	2.0	
Extension of effective green, e				2.0		2.0		2.0	2.0	2.0	2.0	
Arrival type, AT				3		3		3	3	3	3	
Unit extension, UE				3.0		3.0		3.0	3.0	3.0	3.0	
Filtering/metering, I				1.000	1.000	1.000		1.000	1.000	1.000	1.000	
Initial unmet demand, Q_b				0.0		0.0		0.0	0.0	0.0	0.0	
Ped / Bike / RTOR volumes	0			0		0	0		0			
Lane width				11.0		11.0		12.0	16.0	11.0	12.0	
Parking / Grade / Parking	N		N	N	1	N	N	1	N	N	-1	N
Parking maneuvers, N_m												
Buses stopping, N_B				0		0		0	0	0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2					

Phasing	WB Only	02	03	04	SB Only	NS Perm	07	08
Timing	G = 18.0	G =	G =	G =	G = 42.0	G = 25.0	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v				244		881		433	476	843	490	
Lane group capacity, c				306		990		450	832	794	1348	
v/c ratio, X				0.80		0.89		0.96	0.57	1.06	0.36	
Total green ratio, g/C				0.18		0.65		0.25	0.48	0.72	0.72	
Uniform delay, d_1				39.3		14.5		37.0	18.6	24.3	5.3	
Progression factor, PF				1.000		1.000		1.000	1.000	1.000	1.000	
Delay calibration, k				0.34		0.41		0.47	0.17	0.50	0.11	
Incremental delay, d_2				13.8		10.1		32.8	1.0	49.6	0.2	
Initial queue delay, d_3												
Control delay				53.0		24.6		69.8	19.6	73.9	5.5	
Lane group LOS				D		C		E	B	E	A	
Approach delay				30.8			43.5			48.7		
Approach LOS				C			D			D		
Intersection delay	41.3			X_c = 1.14			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Fair Street/ Hill and Dale Rd.
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Carmel
Time Period	Saturday Peak Hour	Analysis Year	Build with Signal
		Project ID	Gateway - Fairways GFEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	0	1	0	0	1	0	0	0	0	1	0	1
Lane group		LT			TR					L		R
Volume, V (vph)	80	247			253	150				144		96
% Heavy vehicles, %HV	0	0			1	1				1		1
Peak-hour factor, PHF	0.81	0.81			0.82	0.82				0.83		0.83
Pretimed (P) or actuated (A)	P	P			P	P				A		A
Start-up lost time, l_1		2.0			2.0					2.0		2.0
Extension of effective green, e		2.0			2.0					2.0		2.0
Arrival type, AT		3			3					3		3
Unit extension, UE		3.0			3.0					3.0		3.0
Filtering/metering, I		1.000			1.000					1.000	1.000	1.000
Initial unmet demand, Q_b		0.0			0.0					0.0		0.0
Ped / Bike / RTOR volumes				0		0	0			0		0
Lane width		11.0			11.0					12.0		13.0
Parking / Grade / Parking	N	0	N	N	0	N	N		N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B		0			0					0		0
Min. time for pedestrians, G_p					3.2			3.2			3.2	

Phasing	EW Perm	02	03	04	SB Only	06	07	08
Timing	G = 40.0	G =	G =	G =	G = 10.0	G =	G =	G =
	Y = 5	Y =	Y =	Y =	Y = 5	Y =	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 60.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v		404			492					173		116
Lane group capacity, c		985			1151					298		275
v/c ratio, X		0.41			0.43					0.58		0.42
Total green ratio, g/C		0.67			0.67					0.17		0.17
Uniform delay, d_1		4.6			4.7					23.1		22.4
Progression factor, PF		1.000			1.000					1.000		1.000
Delay calibration, k		0.50			0.50					0.17		0.11
Incremental delay, d_2		1.3			1.2					2.8		1.0
Initial queue delay, d_3												
Control delay		5.9			5.8					25.9		23.5
Lane group LOS		A			A					C		C
Approach delay	5.9			5.8						24.9		
Approach LOS	A			A						C		
Intersection delay	10.5			X_c = 0.46			Intersection LOS			B		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Rt 6/John Simpson Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Southeast
Time Period	Saturday Peak Hour	Analysis Year	Build Condition retiming
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	1	1	0
Lane group	L	TR		L	T	R		LTR		L	TR	
Volume, V (vph)	155	858	12	116	804	229	12	56	114	237	44	116
% Heavy vehicles, %HV	2	2	2	2	2	2	2	2	2	1	1	2
Peak-hour factor, PHF	0.90	0.90	0.90	0.81	0.81	0.81	0.82	0.82	0.82	0.95	0.95	0.95
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Arrival type, AT	3	3		3	3	3		3		3	3	
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	16.0		11.0	12.0	12.0		11.0		11.0	11.0	
Parking / Grade / Parking	N	-6	N	N	5	N	N	6	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	SB Only	07	08
Timing	G = 47.0	G = 3.0	G =	G =	G = 16.0	G = 3.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 89.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	172	966		143	993	283		222		249	168	
Lane group capacity, c	241	1146		231	959	815		278		282	434	
v/c ratio, X	0.71	0.84		0.62	1.04	0.35		0.80		0.88	0.39	
Total green ratio, g/C	0.62	0.53		0.62	0.53	0.53		0.18		0.27	0.27	
Uniform delay, d_1	36.8	17.9		36.3	21.0	12.1		35.0		36.5	26.5	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Delay calibration, k	0.28	0.38		0.20	0.50	0.11		0.34		0.41	0.11	
Incremental delay, d_2	9.6	5.9		5.0	38.6	0.3		15.1		26.3	0.6	
Initial queue delay, d_3												
Control delay	46.3	23.7		41.3	59.6	12.4		50.0		62.7	27.1	
Lane group LOS	D	C		D	E	B		D		E	C	
Approach delay	27.2			48.3			50.0			48.4		
Approach LOS	C			D			D			D		
Intersection delay	40.9			X_c = 0.00			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/ NYS Route 312
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Southeast
Time Period	Saturday Peak Hour	Analysis Year	Build Condition with retiming
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	0	1	1
Lane group	L	TR		L	T	R		LTR			LT	R
Volume, V (vph)	885	324	0	1	348	120	3	2	0	111	4	798
% Heavy vehicles, %HV	1	1	1	3	3	3	0	0	0	2	2	2
Peak-hour factor, PHF	0.89	0.89	0.89	0.85	0.85	0.85	0.63	0.63	0.63	0.85	0.85	0.85
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Arrival type, AT	3	3		3	3	3		3			3	3
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	12.0		11.0	12.0	14.0		14.0			11.0	12.0
Parking / Grade / Parking	N	1	N	N	0	N	N	1	N	N	-3	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0			0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	EW Perm	03	04	SB Only	NS Perm	07	08
Timing	G = 55.0	G = 26.0	G =	G =	G = 5.0	G = 4.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 110.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	994	364		1	409	141		8			136	939
Lane group capacity, c	926	1464		229	436	547		60			185	1081
v/c ratio, X	1.07	0.25		0.00	0.94	0.26		0.13			0.74	0.87
Total green ratio, g/C	0.78	0.78		0.24	0.24	0.33		0.04			0.13	0.67
Uniform delay, d_1	23.6	3.2		32.1	41.2	27.2		51.3			46.2	14.2
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Delay calibration, k	0.50	0.11		0.11	0.45	0.11		0.11			0.29	0.40
Incremental delay, d_2	51.3	0.1		0.0	28.1	0.3		1.0			14.2	7.7
Initial queue delay, d_3												
Control delay	75.0	3.3		32.1	69.3	27.4		52.3			60.4	21.9
Lane group LOS	E	A		C	E	C		D			E	C
Approach delay	55.8			58.5			52.3			26.8		
Approach LOS	E			E			D			C		
Intersection delay	45.9			X_c = 1.28			Intersection LOS			D		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Rt 6/John Simpson Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/1/05	Jurisdiction	Town of Southeast
Time Period	PM Peak Hour	Analysis Year	No Build Condition
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	1	1	0
Lane group	L	TR		L	T	R		LTR		L	TR	
Volume, V (vph)	229	818	6	172	745	405	8	166	179	240	70	95
% Heavy vehicles, %HV	2	2	2	4	4	4	3	3	3	4	4	4
Peak-hour factor, PHF	0.89	0.89	0.89	0.95	0.95	0.95	0.89	0.89	0.89	0.85	0.85	0.85
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Arrival type, AT	3	3		3	3	3		3		3	3	
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	16.0		11.0	12.0	12.0		11.0		11.0	11.0	
Parking / Grade / Parking	N	-6	N	N	5	N	N	6	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	SB Only	07	08
Timing	G = 45.0	G = 8.0	G =	G =	G = 21.0	G = 6.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 100.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	257	926		181	784	426		397		282	194	
Lane group capacity, c	303	977		285	801	681		336		261	516	
v/c ratio, X	0.85	0.95		0.64	0.98	0.63		1.18		1.08	0.38	
Total green ratio, g/C	0.58	0.45		0.58	0.45	0.45		0.21		0.32	0.32	
Uniform delay, d_1	39.6	26.4		38.6	27.0	21.1		39.5		42.3	26.3	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Delay calibration, k	0.38	0.46		0.22	0.48	0.21		0.50		0.50	0.11	
Incremental delay, d_2	19.7	17.6		4.6	26.5	1.8		108.1		78.8	0.5	
Initial queue delay, d_3												
Control delay	59.3	43.9		43.2	53.6	22.9		147.6		121.1	26.7	
Lane group LOS	E	D		D	D	C		F		F	C	
Approach delay	47.3			42.8			147.6			82.6		
Approach LOS	D			D			F			F		
Intersection delay	61.9			X_c = 0.00			Intersection LOS			E		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/ NYS Route 312
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/5/05	Jurisdiction	Town of Southeast
Time Period	PM Peak Hour	Analysis Year	No Build Condition retiming
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	0	1	1
Lane group	L	TR		L	T	R		LTR			LT	R
Volume, V (vph)	840	400	8	1	429	186	2	20	2	150	2	911
% Heavy vehicles, %HV	3	3	3	6	6	6	14	14	14	2	2	2
Peak-hour factor, PHF	0.97	0.97	0.97	0.81	0.81	0.81	0.39	0.39	0.39	0.91	0.91	0.91
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Arrival type, AT	3	3		3	3	3		3			3	3
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	12.0		11.0	12.0	14.0		14.0			11.0	12.0
Parking / Grade / Parking	N	1	N	N	0	N	N	1	N	N	-3	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0			0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	EW Perm	03	04	NS Perm	SB Only	07	08
Timing	G = 56.0	G = 33.0	G =	G =	G = 7.0	G = 4.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =

Duration of Analysis, T = 0.25 | Cycle Length, C = 120.0

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	866	420		1	530	230		61			167	1001
Lane group capacity, c	847	1434		246	493	501		60			204	1031
v/c ratio, X	1.02	0.29		0.00	1.08	0.46		1.02			0.82	0.97
Total green ratio, g/C	0.78	0.78		0.28	0.28	0.31		0.06			0.13	0.64
Uniform delay, d_1	28.1	3.7		31.6	43.5	33.4		56.5			50.6	20.4
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Delay calibration, k	0.50	0.11		0.11	0.50	0.11		0.50			0.36	0.48
Incremental delay, d_2	36.7	0.1		0.0	62.2	0.7		121.0			22.4	21.2
Initial queue delay, d_3												
Control delay	64.8	3.8		31.6	105.7	34.1		177.5			73.0	41.7
Lane group LOS	E	A		C	F	C		F			E	D
Approach delay	44.9			84.0			177.5			46.1		
Approach LOS	D			F			F			D		
Intersection delay	56.9			X_c = 1.09			Intersection LOS			E		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	Rt 6/John Simpson Road
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/2/05	Jurisdiction	Town of Southeast
Time Period	Saturday Peak Hour	Analysis Year	No Build Condition
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	1	1	0
Lane group	L	TR		L	T	R		LTR		L	TR	
Volume, V (vph)	138	805	12	116	739	229	12	56	114	237	44	97
% Heavy vehicles, %HV	2	2	2	2	2	2	2	2	2	1	1	2
Peak-hour factor, PHF	0.90	0.90	0.90	0.81	0.81	0.81	0.82	0.82	0.82	0.95	0.95	0.95
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0		2.0	2.0	
Arrival type, AT	3	3		3	3	3		3		3	3	
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0		3.0	3.0	
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0		0.0	0.0	
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	16.0		11.0	12.0	12.0		11.0		11.0	11.0	
Parking / Grade / Parking	N	-6	N	N	5	N	N	6	N	N	0	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0		0	0	
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EW Perm	Excl. Left	03	04	NS Perm	SB Only	07	08
Timing	G = 47.0	G = 3.0	G =	G =	G = 16.0	G = 3.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 89.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	153	907		143	912	283		222		249	148	
Lane group capacity, c	241	1146		231	959	815		280		282	437	
v/c ratio, X	0.63	0.79		0.62	0.95	0.35		0.79		0.88	0.34	
Total green ratio, g/C	0.62	0.53		0.62	0.53	0.53		0.18		0.27	0.27	
Uniform delay, d_1	35.0	17.0		34.8	19.9	12.1		34.9		36.5	26.1	
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000		1.000	1.000	
Delay calibration, k	0.22	0.34		0.20	0.46	0.11		0.34		0.41	0.11	
Incremental delay, d_2	5.4	3.9		5.0	18.4	0.3		14.4		26.3	0.5	
Initial queue delay, d_3												
Control delay	40.4	20.9		39.8	38.3	12.4		49.3		62.7	26.6	
Lane group LOS	D	C		D	D	B		D		E	C	
Approach delay	23.7			33.0			49.3			49.2		
Approach LOS	C			C			D			D		
Intersection delay	33.1			X_c = 0.00			Intersection LOS			C		

HCS2000™ DETAILED REPORT

General Information		Site Information	
Analyst	JAG	Intersection	US Route 6/ NYS Route 312
Agency or Co.	TMA	Area Type	All other areas
Date Performed	12/5/05	Jurisdiction	Town of Southeast
Time Period	Saturday Peak Hour	Analysis Year	No Build Condition retiming
		Project ID	Gateway Summit - The Fairways FGEIS

Volume and Timing Input

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of lanes, N_1	1	1	0	1	1	1	0	1	0	0	1	1
Lane group	L	TR		L	T	R		LTR			LT	R
Volume, V (vph)	852	304	0	1	323	120	3	2	0	111	4	758
% Heavy vehicles, %HV	1	1	1	3	3	3	0	0	0	2	2	2
Peak-hour factor, PHF	0.89	0.89	0.89	0.85	0.85	0.85	0.63	0.63	0.63	0.85	0.85	0.85
Pretimed (P) or actuated (A)	A	A	A	A	A	A	A	A	A	A	A	A
Start-up lost time, l_1	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Extension of effective green, e	2.0	2.0		2.0	2.0	2.0		2.0			2.0	2.0
Arrival type, AT	3	3		3	3	3		3			3	3
Unit extension, UE	3.0	3.0		3.0	3.0	3.0		3.0			3.0	3.0
Filtering/metering, I	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Initial unmet demand, Q_b	0.0	0.0		0.0	0.0	0.0		0.0			0.0	0.0
Ped / Bike / RTOR volumes	0		0	0		0	0		0	0		0
Lane width	11.0	12.0		11.0	12.0	14.0		14.0			11.0	12.0
Parking / Grade / Parking	N	1	N	N	0	N	N	1	N	N	-3	N
Parking maneuvers, N_m												
Buses stopping, N_B	0	0		0	0	0		0			0	0
Min. time for pedestrians, G_p	3.2			3.2			3.2			3.2		

Phasing	EB Only	EW Perm	03	04	NS Perm	SB Only	07	08
Timing	G = 55.0	G = 26.0	G =	G =	G = 5.0	G = 4.0	G =	G =
	Y = 5	Y = 5	Y =	Y =	Y = 5	Y = 5	Y =	Y =
Duration of Analysis, T = 0.25						Cycle Length, C = 110.0		

Lane Group Capacity, Control Delay, and LOS Determination

	EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted flow rate, v	957	342		1	380	141		8			136	892
Lane group capacity, c	935	1464		234	436	456		60			208	1081
v/c ratio, X	1.02	0.23		0.00	0.87	0.31		0.13			0.65	0.83
Total green ratio, g/C	0.78	0.78		0.24	0.24	0.27		0.05			0.13	0.67
Uniform delay, d_1	23.0	3.2		32.1	40.4	31.8		50.4			45.7	13.2
Progression factor, PF	1.000	1.000		1.000	1.000	1.000		1.000			1.000	1.000
Delay calibration, k	0.50	0.11		0.11	0.40	0.11		0.11			0.23	0.36
Incremental delay, d_2	35.5	0.1		0.0	17.3	0.4		1.0			7.2	5.4
Initial queue delay, d_3												
Control delay	58.6	3.3		32.1	57.6	32.2		51.4			52.9	18.6
Lane group LOS	E	A		C	E	C		D			D	B
Approach delay	44.0			50.7			51.4			23.1		
Approach LOS	D			D			D			C		
Intersection delay	37.7			X_c = 1.04			Intersection LOS			D		

Appendix N

Phase 1 Cultural Resource Survey

PHASE I CULTURAL RESOURCES SURVEY
SITE ASSESSMENT AND SITE IDENTIFICATION PHASES
PROPOSED GATEWAY SUMMIT AND THE FAIRWAYS DEVELOPMENTS
TOWN OF CARMEL, PUTNAM COUNTY, NEW YORK

Prepared for
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Prepared by
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Report CA488AB-1-6-05
June 2005

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INTRODUCTORY SUMMARY

Development is proposed for two adjacent parcels encompassing approximately 88.3-acres (35.7) hectares) and 100.2 acres (40.5 hectares) located in the northeastern part of the Town of Carmel in central Putnam County, New York. The topography of the study areas range from gently to moderately to steeply sloping upland formerly devoted to pasture.

A Phase IA site assessment study was carried out in September and October 2004 to evaluate the potential for proposed construction to cause impact to standing or buried Native and/or European American era cultural resources. Based on known settlement patterns associated with these two occupations, the nature and quantity of documented cultural resources in the immediate vicinity of the parcels, their physiographic character, and a walkover of the properties to identify subareas of greater and lesser archaeological sensitivity, the flatter, portions of each property were considered to have an above-average potential for containing buried Native American cultural remains. The study areas are seen as unlikely to contain structural remains and cultural features related to the early European American era occupation of the area, based on the apparent use of the land for agricultural and pastoral purposes since the arrival of settlers in this area and the lack of early roads adjacent to the development parcels.

As part of the Phase IA study, standing structures adjacent to and within view of the study area were evaluated with regard to meeting minimum age requirements for inclusion on the State and National Register of Historic Places. No such structures were identified.

Based on these findings, a Phase IB site identification survey was recommended for those portions of the affected areas identified as having an elevated potential for containing archaeological remains, to determine whether buried cultural resources might be present within the proposed construction zones. This Phase IB site identification survey was carried out in May and June of 2005. Those portions of the affected area that are not characterized by steep slopes or serious prior disturbance were investigated by means of 312 hand-dug screened shovel test holes.

Evidence of Native American activity was encountered in four isolated test holes, at one location on the ground surface, and in two clusters of test holes. Supplementary sampling around each of the isolated find spots failed to encounter any more cultural material and these recovered items are interpreted as stray finds rather than as sites of potential focused cultural activity.

Further archaeological investigation as part of a Phase II site evaluation study is recommended for the two subareas where cultural material was recovered from a series of contiguous or nearby test holes, since these have the potential to represent focused cultural activity. Proposed project impact over the remainder of the two parcels is seen to have no effect on cultural resources and no further archaeological investigation is recommended there.

PHASE IA SITE ASSESSMENT STUDY

PROJECT BACKGROUND

The Gateway Summit study area encompasses approximately 88.3 acres (35.7 hectares) of flat to moderately to very steeply sloping terrain in central Putnam County, in southeastern New York. The Fairways study area, situated adjacent to the northeast, contains some 100.2 acres (40.5 hectares) consisting of flat to gently sloping, moderately and very steeply sloping land with a large wetland occupying the northeastern portion of the property. The parcels lie in the northeastern portion of the Town of Carmel and extend to just west of the town limits and the western border of the Town of Southeast. The hamlet of Carmel is located approximately 1.1 miles (1.8 kilometers) to the west-northwest of the properties, the Middle Branch of the Croton flows some 0.3 miles (0.6 kilometers) to the east and northeast, the roughly north/south oriented channel of Michael Brook flows approximately 0.4 miles (0.7 kilometers) to the west. and the West Branch of the Croton River and Lake Gleneida lie just under one mile (1.6 kilometers) farther to the west. The eastern limits of both parcels are located located roughly 0.3 miles (0.5 kilometers) west of the hamlet of Tilly Foster and the Middle Branch Reservoir. The Gateway Summit study area is bounded on the south by US Route 6 and an existing railroad line operated by the Consolidated Railway Corporation (Conrail), with the remainder of both properties surrounded by undeveloped land.

The development adjacent to the Gateway Summit study area along US Route 6 consists of a scattered mix of private residences, retail stores, small service businesses and offices, with more nucleated commercial and residential development to the northwest, west and southwest, adjacent to Fair Street, NYS Route 35, and NYS Route 52. This pattern of structures encompassing a range of ages and uses is typical for this portion of Putnam County, which includes a growing suburban residential component, made up mostly of single-family houses and an expanding service sector to provide for their needs, along with surviving residences dating from the past two centuries.

The proposed residential development site is located in the Hudson Hills portion of the New England Upland region of New York State. Also known as the Highlands of the Hudson, this subdivision is composed of crystalline rocks and its surface has been eroded by running water to form a rather rugged terrain, with the tops of hills reaching 1000 feet (304 meters) above the Hudson River. The portion of Putnam County in which the study area is located is characterized by igneous and metamorphic rocks and lies a short distance from limestone formations to the east and west, and contains shallow acid soils on glacial till in elevated subareas with well-drained to poorly-drained lower subareas adjacent to and overlooking wetlands that make up the northeastern part of the Fairways parcel and which lie south of the railroad that forms the southern boundary of the Gateway Summit property (Thompson 1966: Figs. 8 & 33). Most of the areas where development will be focused are underlain by Charlton and Paxton loam soils, with limited grading proposed for adjacent more poorly drained Ridgebury and Leicester soils. Wetlands, characterized by Sun loam, will not be affected by proposed development.

As noted above, the ground surface of much of the study areas consists of gentle to moderate to steep slopes, with flatter areas on the flanks of Mount Pisgah, which make up the northwestern portion of the Gateway Summit parcel and the northern edge of the Fairways property, and in the southern portion of the Fairways tract, south of the wetlands. This former agricultural setting is populated by young forest growth, scrub vegetation and some mature trees.

This Phase IA site assessment study was performed in September and October 2004 by Stephen Oberon, serving as Principal Investigator, assisted by Kim Croshier, using the resources of the Newburgh Free Library, the New York State Museum, the New York State Office of Parks, Recreation and Historic Preservation, the New York State Library, and the New York State Archives in Albany. A walking reconnaissance of the study area was carried out by the Principal Investigator, during which the relative archaeological potential of the various subareas was assessed, any prior disturbance and other factors likely to reduce such potential were noted, along with any structures that have a view of the proposed development that meet minimum age requirements for inclusion on the State and National Register of Historic Places.

CULTURAL BACKGROUND AND SENSITIVITY ASSESSMENT

As mentioned, the study areas consist mostly of moderately to steeply sloping terrain located between the Middle Branch of the Croton River on the east and Michael Brook on the west, with wetlands to the northeast, south and southwest. Most of the development areas may be characterized as upland terrain formerly used for pasture, populated today by young forest and scrub vegetation, with some mature trees, particularly in former hedge rows.

One structure of late twentieth century vintage stands within the Gateway Summit study area. Reconnaissance noted no structural remains or anomalies likely to indicated the presence of buried structures or other cultural features. Dry-laid field stone farm walls were noted on both properties.

Historic Structures

A search of the site files maintained by the NYS Office of Parks, Recreation and Historic Preservation in Albany indicated no structures currently listed, nominated or determined eligible for listing on the State or National Register of Historic Places located in the vicinity of the study areas. No buildings that meet the minimum age requirements for listing were identified adjacent to or with a view of the proposed development properties.

Native American Era

Three sites of Native American occupation are listed in State Historic Preservation Office and New York State Museum (NYSM) files for this portion of the Croton River drainage within approximately one mile (1.6 kilometers) of the study areas. Carmel Corporate Site 1 (OPRHP Site AO79-01-0064), described as a workshop, is located roughly 0.6 miles (0.9 kilometers) southwest of the Gateway Summit study area. Carmel Corporate Site 2 (OPRHP Site AO79-01-0065), a camp and workshop associated with the Late Archaic Sylvan Lake culture (c. 2500 -1500 BC) and determined to be eligible for listing on the National Register of Historic Places, is situated some 0.7 miles (1.2 kilometers) southeast of that study area. Carmel Corporate Site 3 (OPRHP Site AO79-01-0066), also described as a workshop, affiliated with the Late Archaic Vosburg and the succeeding Sylvan Lake culture (c. 2800-1800 BC), and also determined to be National Register-eligible, lies roughly 0.5miles (0.8 kilometers) to the south-southwest of the Gateway Summit study area, some 1000 feet (300 meters) east of Site 2. These sites would be located approximately 1500 feet (450 meters) farther from the southeastern limits of The Fairways study area.

Other sites documented in the Croton River drainage and in other nearby locations confirm the presence of aboriginal inhabitants in what is now Putnam County from the Archaic through the Late Woodland periods, spanning a time from approximately 4000 BC through the arrival of Europeans around AD 1680. In assessing the potential for Native American presence in the

vicinity of the affected area, it must also be remembered that this area has never had the benefit of a systematic professional archaeological survey. Many sites identified by other means are encountered unexpectedly during construction of roads, railroads or buildings, and through the clearing and cultivation of agricultural fields. Comparatively few investigations of specific areas for which some type of development or construction project is proposed, such as is represented by the present survey, have been conducted in the vicinity of the study area (Baldwin, Taylor and Klein 2003; Hartgen 2000; Dumonski et al. 2000; Wiegand 2000; Oberon 2001, 2003; Gimigliano 1995; LoRusso 1985). As a result, the number and range of Native American occupation sites present in this part of the towns of Carmel and Southeast are likely to be underrepresented in the site files with regard to both temporal and spatial distribution.

The potential must therefore be recognized for better-drained, flatter portions of the study area, to have seen what would most likely have been seasonal occupations by small groups exploiting the riverbank environment just to the west. Occupations of such locations would most likely have been a component in the seasonal patterns of movement that characterized indigenous populations through at least the Archaic and Transitional periods, although small seasonal occupation and observation sites were also present during later times. The vistas provided by the upland areas that make up much of both study areas may have provided observation points useful for hunting and defense. The water resource provided by the wetlands in the northeastern part of The Fairways study area and to the south, southeast and southwest of the Gateway Summit property, as well as the stream and river environments associated with the Middle Branch of the Croton River to the east and Michael Brook to the west, may also have been attractive to the indigenous inhabitants of the area.

As noted, Native American archaeological remains likely to be present in the study areas would probably consist of small, seasonally occupied camps that would have supported small numbers of people for short periods of time, probably on a recurring basis, possibly functioning as special purpose sites. Cultural remains associated with such occupations typically are sparse, shallow and spatially restricted, although they may include hearths, storage pits and/or traces of structures. Larger sites may also include extensive refuse deposits and fortifications. Exposed veins of lithic resources suitable for the manufacture of stone tools, and rock formations such as caves and overhangs that could provide shelter, are also likely to have attracted the indigenous population of the area, as are certain natural phenomena, such as springs and unique rock formations, that would have held religious significance. The potential for the presence of Native American cultural remains pertaining to small, seasonally-occupied camps or observation sites during any of the time periods during which this region saw human occupation may be seen to exist within the study area, along with rock shelters. Reconnaissance revealed no exposed lithic resources useful in the manufacture of stone tools, but systematic observation during minimum leaf conditions would be needed to confirm this finding.

European American Era

European American era occupation of the portion of what is now the Town of Carmel in which the study areas are located dates to the early decades of the eighteenth century. Early settlement was focused around crossroads and locations with sufficient water power to drive the small mills that grew up to serve the surrounding area. The hamlet of Carmel was such a settlement, situated at the intersection of major east/west and north/south roadways and adjacent to Lake Gleneida and served as the county seat. Typical of the region, these small service centers catered to the needs of the outlying population, who occupied farmsteads scattered along early roadways. Development of Carmel was focused along the major roadways and the lake, with the scattered rural settlement pattern just described characterizing areas immediately outside the hamlet in each direction. Another local population cluster formed around the operation of the Fowler and Tilley Foster Harvey Steel and Iron Company a short distance to the east in what became the Town of Southeast, an area now known as the hamlet of Tilly Foster. Another small enclave of structures that grew up near the present intersection of Fair Street and Hill and Dale Road to the north of the study areas was known as Foster Corner (also Fosters Corners). The study areas themselves appear to have contained no residences, industries, cemeteries or other activity areas other than those of an agricultural nature, based on available map and text sources. The present US Route 6 roadway dates from the twentieth century. The nearest old road to either study area is what is now known as Maple Avenue, located some 1000 feet (305 meters) south of the southern limits of the Gateway Summit parcel, and dating from at least the early part of the nineteenth century.

Two documented archaeological sites pertaining to this period of occupation are present within one mile (1.6 kilometers) of the study areas. A cellar hole associated with a former tenant house on the Dykeman farm (OPRHP Site AO79-01-0062) is located approximately 0.5 miles (0.9 kilometers) to the north of the northern limits of The Fairways study area. West Branch Reservoir Dam #1 (OPRHP Site AO79-01-0038), determined eligible for listing on the National Register of Historic Places, was identified some 0.7 miles (1.2 kilometers) to the southwest of the limits the Gateway Summit property. Nineteenth century maps of the area depict no structures within the study areas, which are located east and southeast of the nucleated settlement of Carmel, south of Foster Corner, and west of Tilly Foster (O'Connor 1854; Beers 1867).

Based on known European American era settlement patterns, a walking reconnaissance of the parcels and a search of historical texts and maps, a below average potential is assessed for buried cultural remains pertaining to this period of occupation to be present within each of the study areas. Although the area was settled well before the publication in 1854 of the first map depicting individual structures, and a potential is recognized for the remains of early buildings that were razed prior to that date to be present along early roadways, the fact that no early roads border either study area greatly reduces this potential.

RECOMMENDATIONS

A Phase IB site identification survey consisting of subsurface archaeological sampling is recommended for the flatter portions of the affected area, as such locations in this physiographic setting must be considered to have an above-average potential for the presence of buried Native American cultural remains, as well as any rock shelters and outcrops of lithic resources useful in the manufacture of stone tools identified during systematic reconnaissance under minimum leaf conditions in portions of the property to be affected by proposed development. A below average potential was assessed for the presence of buried European American era cultural remains.

This Phase IB survey should employ sampling methods adequate for detecting traces of the small, seasonally occupied camps likely to occur in this physiographic setting, as well as any deposits associated with early European American era cultural activity areas and structures, as well as any larger occupation sites and/or activity areas that might be present.

PHASE IB SITE IDENTIFICATION SURVEY

RESEARCH DESIGN

The Phase IA site assessment performed for this study area identified a potential for buried Native American cultural remains to be present within the portions of the adjoining approximately 88.3-acre (37.5-hectare) and 100.2-acre (40.5-hectare) development sites. This assessment was based on the proximity of known Native American occupation in this part of the Town of Carmel and the adjacent Town of Southeast, as well as the fact that flatter, better-drained areas, even in an upland setting are known to have been occupied by the indigenous inhabitants of the region.

Flatter, better-drained locations near a water source have been found to have been preferred by indigenous populations in the Northeast for occupations ranging from small camps to villages. In times of turmoil, defensive considerations were added to these criteria. Steeply sloping and poorly drained areas or wetlands would generally be seen as of low potential for the occurrence of Native American cultural resources.

Exceptions to this assessment would include steeply sloping locations where lithic resources such as chert would have been accessible to indigenous populations and/or where rock overhangs and caves that could have served as shelters are present. Although poorly-drained areas would seldom be expected to contain habitation sites, the more elevated, better-drained peripheries of such places are likely to have been selected for camps from which the plant and animal resources of the wetter areas would be exploited. Such camps would have served as temporary habitation sites and locations where food was prepared, tools completed and repaired, and animal resources processed (i.e., skinned, butchered, smoked, dried) after being procured nearby. The presence of quartz deposits in the vicinity of the study area would have provided an incentive for occupation to the degree that these resources were accessible to native populations.

Smaller sites, which predominate prior to the later Woodland Period and continue to occur during this time, are known to have been occupied by indigenous populations in conjunction with what was usually a seasonal exploitation of plant and animal resources. Generally, these camps would be inhabited for short periods of time, although such episodes of occupation are known to have continued on a regular basis over many centuries.

The inventory of reported archaeological sites for this area indicates that Native American occupation of this part of the Croton River drainage persisted from at least the Late Archaic through the Late Woodland period and on into the era of European American settlement during the later seventeenth and eighteenth century. Archaeological deposits present in this area could therefore date anywhere within a time frame extending from approximately 4000BC through AD 1680. Based on this information, the temporal and cultural affiliation of Native American era cultural remains that might be expected to occur in this part of what is now the Town of Carmel could represent any and all but the earliest phases of human culture in this region.

As mentioned above, occupation through at least the Middle Woodland Period is considered likely to have occurred on a seasonal basis and to have usually been associated with the exploitation of nearby plant and animal resources. The material remains of sites reflecting such behavior are most likely to be sparse, shallow and spatially restricted, although deeper cultural features and remains of structures may be present. Larger sites, usually pertaining to Woodland period occupations, may include deep refuse deposits, remains of more substantial structures and defensive constructions, such as stockades.

Although site reconnaissance revealed no outcrops of lithic material likely to have been utilized in the manufacture of stone tools, the potential for the presence of quarry sites was recognized, in view of the presence of quartz deposits and the proximity of documented lithic reduction sites in the vicinity of the hamlet of Carmel (Wiegand 2000, Oberon 2003). The absence of caves and rock overhangs within the affected area eliminates the potential for shelters associated with such features to be present. The presence of glacial till near the ground surface also raises the possibility of localized exploitation of accessible cobbles and boulders of chert, quartz, quartzite and other lithic resources suitable for the manufacture of stone tools and the presence of small stone processing stations and workshops.

No structures that are potentially eligible for listing on the State and National Register of Historic Places consideration were noted to have a view of the affected and no structures now listed on or determined eligible for inclusion on the State or National Register are situated within one mile (1.6 kilometers) of the study area. Potentially eligible residences noted along the west side of Root Avenue are totally screened from view of the proposed developments.

With the exception of the standing former Town of Carmel Department of Public Works building located near the southwestern limits of the Gateways parcel, reconnaissance encountered no structural remains and no other visible surface anomalies that might indicate prior activities in the affected area for other than farm-related purposes. A series of dry-laid stone farm field walls was noted on both properties. The vicinity of the former town garage and a plateau-like feature a short distance to the north were noted to have been stripped of upper soils in the recent past, probably to furnish material for closing a town landfill. Localized upper soil disturbance resulting from machine dug deep soils tests was noted within the area to be affected by proposed construction.

Because this part of Putnam County has seen European American era occupation since before the turn of the eighteenth century, a general potential is noted for the presence of remains of very early structures and activity areas, particularly along early roadways, in whose proximity early buildings were usually constructed. Like smaller Native American sites, the archaeological remains of early buildings that were abandoned prior to the publication of area maps showing individual structures, eighteenth century military activity, and cultural features associated with such sites would be likely to be spatially restricted and characterized by sparse cultural material quite shallow in vertical extent and occurring near the ground surface in areas not characterized by stream or erosion deposition.

The fact that the only property frontage onto a roadway occurs in the southernmost portion of the property along US Route 6 and the fact that this portion of the highway is of twentieth century vintage combine to seriously reduce this potential for this specific parcel. Nonetheless, methods selected for archaeological field investigation would need to be sensitive enough to detect the presence of these smaller Native and European American era sites characterized by relatively sparse cultural material, as well as larger sites.

METHODOLOGY

The affected area consists of abandoned agricultural and pasture land and ranges topographically from flat through gently and moderately sloping to steeply sloping terrain, bordered on the east, north and west by the existing Centennial Golf Club and on the southwest and southeast by steep slopes. A large wetland and pond make up the eastern portion of the study area, separated from proposed construction by steep slopes. The affected area is populated by grasses, scrub vegetation and young forest growth, with mature trees present in greater numbers in former hedgerows, along the stone farm walls, and in the poorly-drained subareas and wetlands outside the proposed zones of development impact.

A subsurface archaeological sampling plan was developed that called for flatter locations within the affected area that retain upper soils to be archaeologically sampled by means of hand-dug shovel test holes executed in roughly parallel transects to form a grid pattern. Test holes would be placed at intervals of approximately 50 feet (15 meters), with adjustments in spacing made as required to follow topographic features or avoid obstacles such as large trees and localized zones of obvious prior serious upper soil disturbance. Measuring roughly 24 inches (60 centimeters) in diameter, these tests would be dug using small hand tools and their contents would be screened through 1/4-inch (6.25-millimeter) hardware cloth to facilitate the recovery of smaller cultural items.

Any Native American era cultural items recovered would be marked with a numbered pin flag and their location later recorded on the project map along with that of other sampling units. Any relative concentrations of pre-World War II European American era material encountered would also be marked for further investigation. Any isolated test holes that produced Native American cultural material or a relative concentration of European American era items would be more intensively sampled by means of four to eight additional shovel tests placed at 5-foot (1.5-meter) intervals at cardinal points around each solitary find spot to determine whether a likely site of cultural activity or a stray find was indicated. Test holes would be numbered sequentially within each sampling sector.

Such methods are considered adequate for detecting traces of smaller Native American camps, special purpose sites and early Euro-American era sites as well as any larger Native or European American era occupations that might be present. Testing as outlined would be less efficient in identifying the remains of structures such as wells and very small buildings, such as privies, which are less likely to be detected by the 50-foot (15-meter) interval. Since the vicinity of small buildings is usually characterized by some scatter of cultural material, it was hoped their presence would at least reveal this more concentrated presence of cultural items, which would in turn lead to the identification of these features and/or structural remains during the more intensive investigation that follows initial identification.

Assessment of soils present within the affected area, which were found to contain gravels and other glacial deposits on or just beneath the ground surface, indicated a low potential for the presence of deeply buried culture-bearing soils.

FIELD INVESTIGATION

Phase IB field investigation of the proposed development site was carried out in May and early June 2004 under good to excellent field conditions, with moderate temperatures ranging between 60 and 75 degrees Fahrenheit (15 and 23.8 degrees Centigrade) and no precipitation. Ground visibility both in areas populated by grasses and in zones of scrub and young forest was generally poor due to the density of growth. Visibility was fair to good along a recently-cut trail and in the southernmost part of the parcel where upper soils had been removed and vegetation is sparse. Soils were found to be dry to slightly moist in areas sampled. Phase IB field investigation was performed by the Principal Investigator assisted by Archibald Miller, Michael Stewart and John Lott.

A series of screened shovel test transects was laid out and executed across the flatter portions of the project area that retained upper soils as outlined in the previous section. Three major sampling subareas were delineated. One, designated Area A, was located in the southeastern corner of the property that is bounded by a small stream on the west, steep slopes on the north and east, and the elevated roadway of US Route 6 on the south. A second (Area B) encompassed the proposed site of a senior housing complex in the west-central part of the parcel. The third took in another cluster of proposed senior housing extending between the central and northern portions of the development site, west of and above the pond and wetland, and was designated Area C. Individual or paired shovel test hole transects were dug along the proposed emergency access road in the northwest and in topographically-restricted subareas elsewhere within the project site. A transect of test holes was dug between the northern limits of the Centennial Golf Course property and the rear of a late twentieth century single-family residence located at 122 Fair Street. A connection to Fair Street is no longer proposed for The Fairways project. As part of the Mitigation Alternative for the project, access is now proposed from US Route 6 to the south, via the Gateway Summit site. However, since the roadway connection to Fair Street was originally proposed in the Draft Generic Environmental Impact Statement (DGEIS) dated 3 January 2005, this route was evaluated herein to address comments received at the public hearing on the DGEIS. The portion of this access that would have crossed the golf course property would have passed across land whose upper soils had been dislocated and redeposited during landscaping associated with construction of the golf course and/or slopes greater than 12 percent. The northern portion of The Fairways property is characterized by similarly steep slopes and was therefore excluded from the sampling universe.

The lengths of the test hole transects varied to accommodate the topography and configuration of the proposed impact area. To facilitate the execution of the shovel tests in the field and the reading of the site map and subsurface sampling record in the report, the shovel tests were numbered in order from the southwest corner of Area A, from the northeast corner of Area B, and from the southwest corner of Area C. Intervening tests were numbered north/south as topography permitted.

Test holes were executed using hand tools, measured approximately 24 inches (60 centimeters) in diameter and were placed roughly 50 feet (15 meters) apart. Adjustments in spacing were made to avoid large objects such as trees, and to follow contours, avoid wetlands, or permit the sampling of less steeply sloping subareas along the margins of the affected area. Contents of all test holes were passed through 1/4-inch (6.25-millimeter) hardware cloth to facilitate the recovery of smaller cultural items.

Culturally sterile soil consisted of orange, yellow orange, orange tan and tan silt with varying amounts of sand and/or clay, under light to medium brown silt, often with coarse, medium and fine gravel, cobbles and sometimes boulders and dark brown root and leaf mat in wooded locations. Upper soils extended to depths ranging between 3.2 and 8 inches (8 and 20 centimeters) in areas not subjected to serious prior stripping, with somewhat deeper upper soils noted in sampling above the stream in the southeastern area (Area A) and bedrock encountered near the ground surface in the northern and eastern part of Area A, the southern part of Area B and in Area C.

Consistency of upper soils depth in Area B indicates this area had been plowed regularly, while no evidence of a fully developed plow zone was encountered in the southeastern or northern portions of the parcel, indicating this land was rarely plowed and instead was used as pasture and/or as a source of hay. Dry-laid field stone farm walls separate the flatter from the more steeply sloping subareas and wetlands, indicating the presence of livestock. No problems occurred that might have influenced the process or outcome of the Phase IB field investigation.

Archaeological sampling identified items associated with the Native American era of occupation in the western portion of Area A and in the southern portion of Area C. Finds consisted of quartz tools, reduction flakes and culturally modified fragments, as well as a chert projectile point. Four test holes produced single items in isolated context, defined here as occurring at a distance of at least 150 feet (45 meters) from the next find spot. Other cultural items were recovered from more closely spaced test holes and/or from the same sampling unit. Eight additional screened test holes were dug at cardinal points around the four isolated find spots as described in the preceding section; only one of these supplementary tests produced a possible cultural item. The chert projectile point, a narrow stemmed spear point missing its tip, was encountered on the ground surface during systematic archaeological inspection of a cleared pathway at the interface of Area B and Area C. The eight additional test holes placed around this location failed to produce more cultural material.

With the exception of modern glass bottle fragments and aluminum pull tabs found in the southern portion of Area A, below the elevated bed of US Route 6, no European American era cultural material was encountered. The recovered items, considered unlikely to contain significant cultural information, were not retained.

CONCLUSIONS AND RECOMMENDATIONS

Systematic archaeological sampling of portions of the approximately 88.3-acre (35.7-hectare) and 100.2-acre (40.5-hectare) proposed development parcels by means of hand-dug screened shovel test holes encountered no evidence of pre-World War II European American cultural activity. The dry-laid field stone farm walls noted to be present across much of the property are ubiquitous remains of the agrarian heritage of the region and are not considered potentially significant cultural resources. Several isolated items pertaining to the Native American era of occupation were encountered. Supplementary, more intensive sampling around each of these find spots failed to produce evidence of possible focused cultural activity and these items are interpreted as representing stray finds.

A more focused occurrence of Native American cultural material was encountered in two clusters of test holes, one in Area A and one in Area C. The range of cultural items recovered, including finished tools as well as debitage, implies focused cultural activity involving at least the production of stone implements took place at these locations. In accordance with OPRHP guidelines, a Phase II site evaluation study is recommended for these two subareas to establish the spatial extent of the cultural deposits, assess their integrity, and provide sufficient information to agency reviewers that will allow them to determine whether either site constitutes a significant cultural resource.

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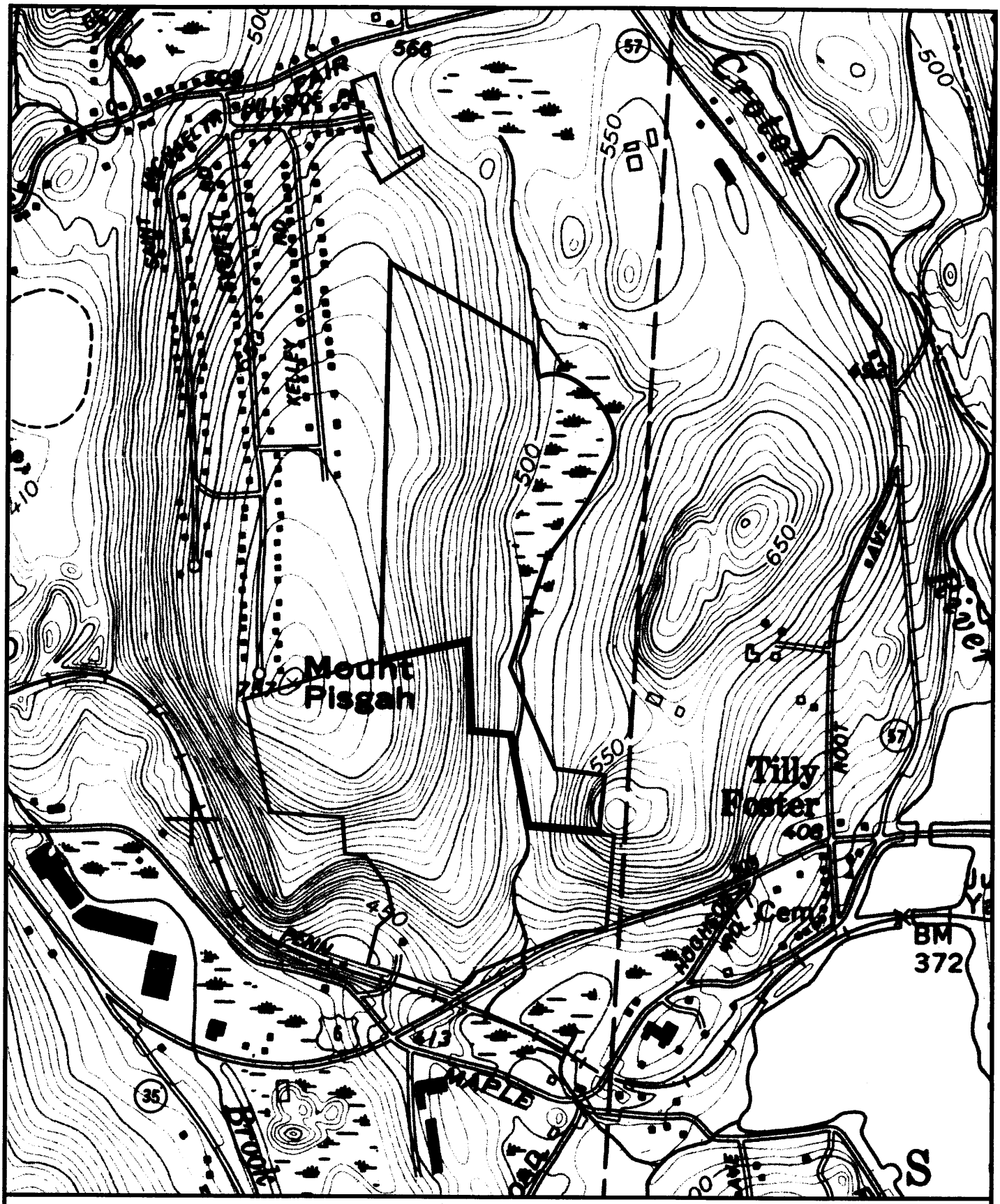
APPENDICES

FIGURES



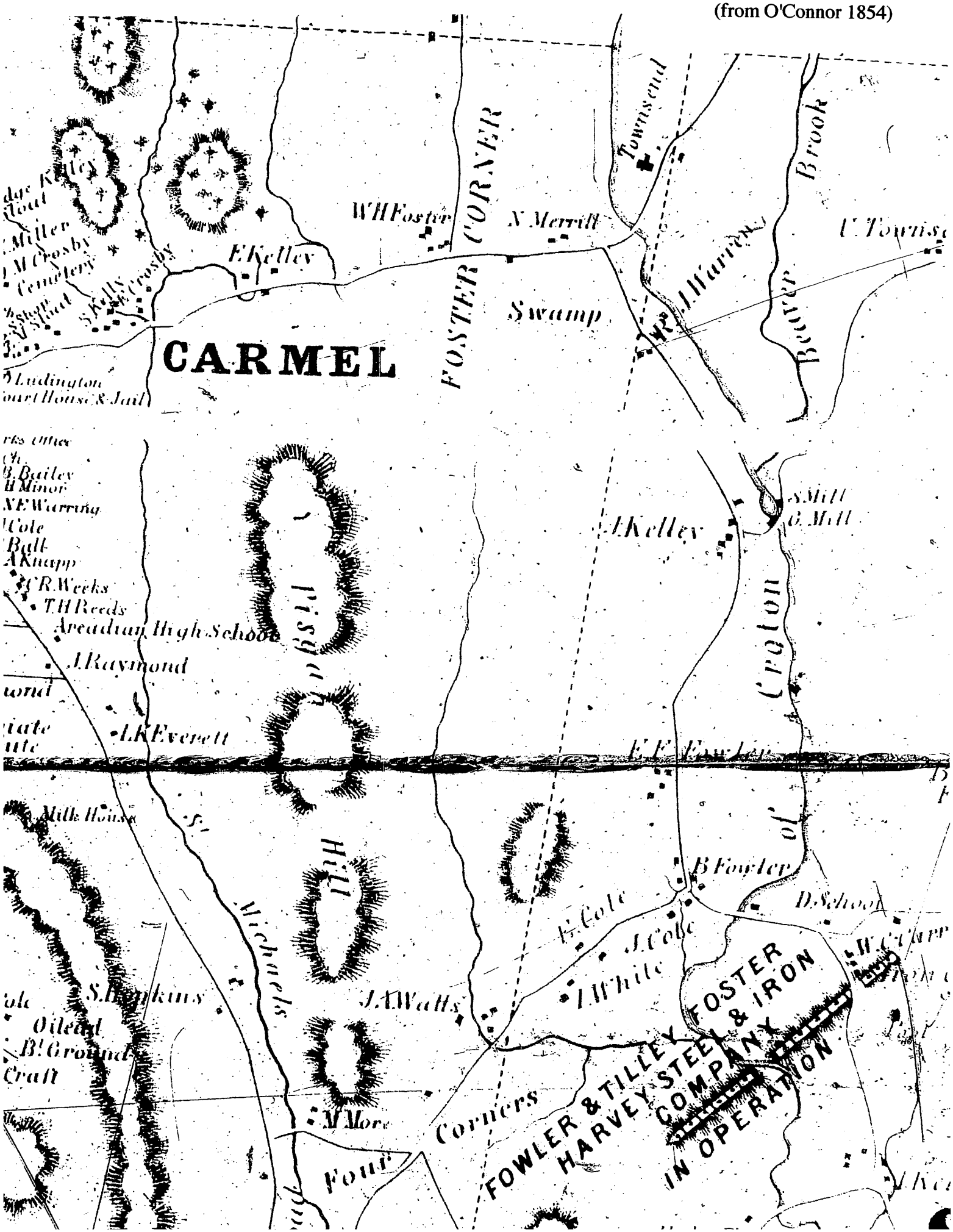
N
W E
S

KEY
= Gateway Summit
= The Fairways

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

STUDY AREA AND VICINITY - 1867
(from Beers 1867)

STUDY AREA AND VICINITY - 1854
(from O'Connor 1854)



EVERETT ROAD

BARD RD

KELLY ROAD

HILLSIDE

OLD ROUTE

U.S. ROUTE

WETLANDS

Wetland Limit Line

EXISTING POND

TOWN OF CARMEL
TOWN OF SOUTHEAST

SIMPSON

- shovel test (not to scale)
- test with cultural material
- surface find
- planned test not dug
- limits of area of potential effect
- serious prior disturbance
- greater than 12% slope

400ft
122m

SUBSURFACE SAMPLING LOCATIONS, AREA OF POTENTIAL EFFECT, STEEP SLOPES AND SERIOUS PRIOR DISTURBANCE

SENIOR HOUSING
COTTAGES (24 UNITS)

2 BOCCE COURTS

GAZEBO

SENIOR HOUSING
TOWNHOUSES (62 UNITS)

SENIOR HOUSING
MULTIFAMILY HOUSING (64 UNITS)

EMERGENCY ACCESS ONLY
12 FOOT WIDE GRAVEL DRIVE
GATED AT BOTH ENDS

KELLY RIDGE ROAD

CENTENNIAL GOLF CLUB

OFFICE
6,000 SF

OFFICE
10,000 SF

PROPOSED TOWN ROAD

CLUBHOUSE

TENNIS COURTS

GREENHOUSE

EMERGENCY ACCESS ONLY
12 FOOT WIDE GRAVEL DRIVE
GATED AT BOTH ENDS

SENIOR HOUSING
TOWNHOUSES (24 UNITS)

SENIOR HOUSING
COTTAGES (30 UNITS)

50' ACCESS EASEMENT

SPORTS COURT

CLUBHOUSE WITH INDOOR POOL

OUTDOOR POOL

SENIOR HOUSING
MULTIFAMILY HOUSING (96 UNITS)

CHILDREN'S PLAYGROUND

GRASS FIELD/ OVERFLOW PARKING

YMCA

PROPERTY LINE TO BE EXTINGUISHED

APPROXIMATE LIMITS OF DISTURBANCE

PROPOSED WALKING TRAIL (TYP.)

RESTAURANT
6,300 S.F.

RESTAURANT
7600 S.F.

OVERFLOW PARKING

WALKING BRIDGE & PATH

CONFERENCE & BANQUET FACILITY

CONSERVATION EASEMENT

CONSERVATION EASEMENT

EXISTING POND

HOTEL
150 ROOMS

CENTENNIAL GOLF CLUB

DETAIL OF PROPOSED DEVELOPMENT

PHOTODOCUMENTATION

PHOTO 2 - Typical view in Sampling Area A (to N)

PHOTO 3 - Typical view in Sampling Area B (to NNW)

PHOTO 4 - Typical view in Sampling Area C (to N)

PHOTO 5 - Typical stone farm wall (to NNE)

SUBSURFACE SAMPLING RECORD

CA 488B - GATEWAY SUMMIT / FAIRWAYS

PHASE IB SUBSURFACE SAMPLING RECORD

UNIT	STRATUM	DEPTH(cm)	SOIL PROFILE	CULTURAL
SAMPLING AREA A				
TP-1	1	0-10	light to medium brown silt, trace sand, cmf gravel, cobbles	none
	2	10-23+	tan clayey silt, cmf gravel, cobbles	none
TP-2	1	0-16	(same as above)	none
	2	16-21+	(same as above)	none
TP-3	1	0-12	(same as above)	none
	2	12-24+	grey tan silt, trace clay, cmf gravel	none
TP-4	1	0-13	(same as above)	none
	2	13-22+	orange tan silt, trace clay, cmf gravel	none
TP-5	1	0-16	medium brown silt, trace sand, cmf gravel, cobbles	quartz
	2	16-28+	orange tan silt, cmf gravel	none
TP-6	1	0-10	(same as above)	none
	2	10-23+	(same as above)	none
TP-7	1	0-11	(same as above)	none
	2	11-22+	(same as above)	none
TP-8	1	0-12	(same as above)	none
	2	12-20+	(same, trace clay)	none
TP-9	1	0-10	(same as above)	none
	2	10-20+	(same as above)	none
TP-10	1	0-13	medium brown silt, trace sand, cmf gravel, under dark brown root/leaf mat	none
	2	13-30+	tan silt, trace orange, cmf gravel, cobbles	none
TP-11	1	0-10	(same as above)	quartz
	2	10-22+	(same as above)	none
TP-12	1	0-11	(same as above)	none
	2	11-28+	(same as above)	none

TP-13	1	0-9	(same as above ove)	none
	2	9-26+	(same as above)	none
TP-14	1	0-12	(same, without root/leaf mat)	none
	2	12-22+	(same as above)	none
TP-15	1	0-13	medium brown silt, trace sand, cmf gravel	none
	2	13-24+	tan silt, trace orange, cmf gravel, cobbles	none
TP-16	1	0-12	(same as above)	none
	2	12-24+	(same as above)	none
TP-17	1	0-13	(same as above)	quartz
	2	13-28+	orange tan silt, cmf gravel, cobbles	none
TP-18	1	0-14	(same, under dark brown root/leaf mat	none
	2	14-26+	(same as above)	none
TP-19	1	0-10	(same as above)	none
	2	10-22+	(same as above)	none
TP-20	1	0-13	medium brown silt, trace sand, cmf gravel	none
	2	13-27+	tan silt, trace orange, cmf gravel, cobbles	none
TP-21	1	0-14	medium to dark brown silt, trace sand, cmf gravel	none
	2	14-30+	tan silt, trace orange, cmf gravel	none
TP-22	1	0-13	(same as above)	quartz
	2	13-24+	(same as above)	none
TP-23	1	0-12	(same, under dark brown root/leaf mat)	quartz
	2	12-24+	(same as above)	none
TP-24	1	0-10	medium brown silt, trace sand, cmf gravel	none
	2	10-23+	orange tan silt, cmf gravel, cobbles	none
TP-25	1	0-8	(same, no root/leaf mat)	none
	2	8-20+	(same as above)	none
TP-26	1	0-13	(same, under dark brown root/leaf mat)	none
	2	13-22+	tan silt, trace orange, cmf gravel	none
TP-27	1	0-12	(same as above)	quartz
	2	12-25+	(same as above)	none
TP-28	1	0-13	(same as above)	quartz
	2	13-30+	orange tan silt, cmf gravel, cobbles	none

TP-29	1	0-11	(same as above)	none
	2	11-21+	(same as above)	none
TP-30	1	0-10	(same as above)	none
	2	10-22+	(same, denser cobbles)	none
TP-31	1	0-14	medium to dark brown silt, trace sand, cmf gravel, under dark brown root/leaf mat	none
	2	14-29+	tan silt, trace orange, cmf gravel	none
TP-32	1	0-13	(same as above)	none
	2	13-30+	(same as above)	none
TP-33	1	0-13	(same as above)	none
	2	13-28+	(same as above)	none
TP-34	1	0-12	(same as above)	none
	2	12-29+	(same as above)	none
TP-35	1	0-10	medium brown silt, trace sand, cmf gravel	none
	2	10-22+	orange tan silt, cmf gravel, denser cobbles	none
TP-36	1	0-9	(same as above)	none
	2	9-20+	(same as above)	none
TP-37	1	0-14	(same, without root/leaf mat)	glass (NR)
	2	14-26+	(same as above, less dense cobbles)	none
TP-38	1	0-12	(same as above)	none
	2	12-23+	(same as above)	none
TP-39	1	0-12	(same, with dark brown root/leaf mat)	none
	2	12-24+	(same as above)	none
TP-40	1	0-10	(same, denser cobbles)	none
	2	10-27+	(same as denser cobbles)	none
TP-41	1	0-9	medium to dark brown silt, trace sand, cmf gravel, under dark brown root/leaf mat	none
	2	9-18+	tan silt, trace orange, cmf gravel, cobbles	none
TP-42	1	0-13	(same, no root/leaf mat)	none
	2	13-25+	(same as above)	none
TP-43	1	0-12	(same, with dark brown root/leaf mat)	none
	2	12-22+	(same as above)	none

TP-44	1	0-12	medium brown silt, trace sand, cmf gravel, cobbles, under dark brown root/leaf mat	none
	2	12-27+	(same as above)	none
TP-45	1	0-10	(same as above)	none
	2	10-23+	(same as above)	none
TP-46	1	0-8	(same, denser cobbles)	none
	2	8-20+	orange tan silt, dense cmf gravel and cobbles	none
TP-47	1	0-13	medium brown silt, trace sand, cmf gravel	aluminum (NR)
	2	13-24+	tan silt, trace orange, cmf gravel	none
TP-48	1	0-12	(same, with dark brown root/leaf mat)	none
	2	12-25+	(same, with cobbles)	none
TP-49	1	0-12	(same as above)	quartz
	2	12-27+	(same as above)	none
TP-50	1	0-10	(same as above)	none
	2	10-23+	orange tan silt, trace sand, cmf gravel, cobbles	none
TP-51	1	0-9	(same, denser gravel and cobbles)	none
	2	9-21+	(same, denser gravel and cobbles)	none
TP-52	1	0-11	medium brown silt, trace sand, cmf gravel	none
	2	11-26+	tan silt, trace orange, cmf gravel, cobbles	none
TP-53	1	0-12	(same, under dark brown root/leaf mat)	none
	2	12-22+	(same as above)	none
TP-54	1	0-11	(same as above)	none
	2	11-22+	(same as above)	none
TP-55	1	0-12	(same as above)	none
	2	12-25+	orange tan silt, cmf gravel, denser cobbles	none
TP-56	1	0-10	(same as above)	none
	2	10-22+	(same as above)	none
TP-57	1	0-14	medium brown silt, some sand, cmf gravel	none
	2	14-27+	tan silt, trace orange, some sand, cmf gravel	none
TP-58	1	0-12	(same, under dark brown root/leaf mat)	none
	2	12-22+	(same, with cobbles)	none

TP-59	1	0-12	(same, with cobbles)	none
	2	12-26+	(same as above)	none
TP-60	1	0-10	(same, denser gravel)	none
	2	10-21+	(same, more cobbles)	none
TP-61	1	0-9	(same as above)	none
	2	9-21+	(same as above)	none
TP-62	1	0-13	medium brown silt, some sand, cmf gravel	glass (NR)
	2	13-24+	tan silt, trace orange, cmf gravel, cobbles	none
TP-63	1	0-13	(same, under dark brown root/leaf mat)	quartz
	2	13-28+	(same as above)	none
TP-64	1	0-12	(same as above)	none
	2	12-24+	(same, denser cobbles)	none
TP-65	1	0-10	(same, denser gravel and cobbles)	none
	2	10-24+	(same as above)	none
TP-66	1	0-11	medium brown silt, some sand, cmf gravel	none
	2	11-23+	tan silt, trace orange, cmf gravel, cobbles	none
TP-67	1	0-12	(same, under dark brown root/leaf mat)	none
	2	12-22	(same as above)	none
TP-68	1	0-8	(same, dense gravel and cobbles)	none
	2	8-21+	(same, denser gravel and cobbles)	none

SAMPLING AREA B

TP-69	1	0-14	medium brown silt, some sand, cmf gravel, cobbles, under dark brown root/leaf mat	none
	2	14-28+	tan silt, some sand, cmf gravel, cobbles	none
TP-70	1	0-12	(same as above)	none
	2	12-25+	(same as above)	none
TP-71	1	0-12	medium to dark brown silt, some sand, cmf gravel, under dark brown root/leaf mat	none
	2	12-27+	tan silt, trace orange, cmf gravel	none
TP-72	1	0-13	(same as above)	iron
	2	13-22+	(same as above)	none
TP-73	1	0-12	(same as above)	none
	2	12-25+	(same as above)	none

TP-74	1	0-13	(same as above)	none
	2	13-22+	(same as above)	none
TP-75	1	0-12	(same as above)	none
	2	12-20+	(same as above)	none
TP-76	1	0-9	(same as above)	none
	2	9-22+	(same as above)	none
TP-77	1	0-10	(same as above)	none
	2	10-21+	orange tan silt, cmf gravel, cobbles	none
TP-78	1	0-11	(same as above)	none
	2	11-21+	(same as above)	none
TP-79	1	0-13	(same as above)	none
	2	13-27+	(same as above)	none
TP-80	1	0-9	(same, denser gravel)	none
	2	9-20+	(same, denser gravel and cobbles)	none
TP-81	1	0-14	medium to dark brown silt, some sand, cmf gravel, under dark brown root/leaf mat	none
	2	14-27+	tan silt, trace orange, cmf gravel	none
TP-82	1	0-12	(same as above)	none
	2	12-25+	(same as above)	none
TP-83	1	0-12	(same as above)	none
	2	12-22+	(same as above)	none
TP-84	1	0-13	(same as above)	none
	2	13-24+	(same as above)	none
TP-85	1	0-12	(same, trace sand)	none
	2	12-23+	(same as above)	none
TP-86	1	0-12	(same as above)	none
	2	12-26+	(same, with cobbles)	none
TP-87	1	0-11	(same as above)	none
	2	11-26+	(same as above)	none
TP-88	1	0-11	(same as above)	none
	2	11-22+	(same as above)	none

TP-89	1	0-13	(same, less gravel)	none
	2	13-22+	(same as above)	none
TP-90	1	0-14	(same as above)	none
	2	14-25+	(same as above)	none
TP-91	1	0-14	medium brown silt, trace sand, cmf gravel	none
	2	14-28+	tan silt, trace orange, cmf gravel	none
TP-92	1	0-12	(same as above)	none
	2	12-22+	(same as above)	none
TP-93	1	0-13	(same as above)	none
	2	13-26+	(same as above)	none
TP-94	1	0-10	(same as above)	none
	2	10-20+	(same as above)	none
TP-95	1	0-14	(same as above)	none
	2	14-21+	(same, cobbles)	none
TP-96	1	0-15	(same as above)	none
	2	15-22+	(same as above)	none
TP-97	1	0-15	(same as above)	none
	2	15-24+	(same as above)	none
TP-98	1	0-14	(same as above)	none
	2	14-28+	(same as above)	none
TP-99	1	0-12	(same as above)	none
	2	12-23+	(same, no cobbles)	none
TP-100	1	0-13	(same as above)	none
	2	13-23+	(same as above)	none
TP-101	1	0-15	medium brown silt, trace sand, cmf gravel	none
	2	15-22+	tan silt, trace orange, cmf gravel, cobbles	none
TP-102	1	0-13	(same as above)	none
	2	13-23+	(same as above)	none
TP-103	1	0-12	(same as above)	none
	2	12-27+	(same as above)	none
TP-104	1	0-16	(same as above)	none
	2	16-24+	(same as above)	none

TP-105	1	0-12	(same as above)	none
	2	12-24+	(same as above)	none
TP-106	1	0-12	(same as above)	none
	2	12-24+	(same as above)	none
TP-107	1	0-10	medium brown silt, trace sand, cmf gravel, under dark brown root/leaf mat	none
	2	10-25+	tan silt, trace orange, cmf gravel	none
TP-108	1	0-12	(same as above)	none
	2	12-30+	(same as above)	none
TP-109	1	0-11	(same as above)	none
	2	11-30+	orange tan silt, trace sand, cmf gravel, cobbles	none
TP-110	1	0-9	(same as above)	none
	2	9-27+	(same as above)	none
TP-111	1	0-13	(same as above)	none
	2	13-25+	(same as above)	none
TP-112	1	0-11	(same as above)	none
	2	11-27+	(same as above)	none
TP-113	1	0-8	(same, dense gravel)	none
	2	8-21+	(same, dense cobbles)	none
TP-114	1	0-9	(same as above)	none
	2	9-21+	(same as above)	none
TP-115	1	0-11	(same as above)	none
	2	11-24+	(same as above)	none
TP-116	1	0-15	(same as above)	none
	2	15-24+	(same, less fewer cobbles)	none
TP-117	1	0-14	medium to dark brown silt, trace sand, cmf gravel, under dark brown root/leaf mat	none none
	2	14-30+	orange tan silt, trace sand, cmf gravel, cobbles	none
TP-118	1	0-15	(same as above)	none
	2	15-26+	(same as above)	none
TP-119	1	0-14	(same as above)	none
	2	14-28+	(same as above)	none

TP-120	1	0-15	(same as above)	none
	2	15-30+	(same as above)	none
TP-121	1	0-11	medium brown silt, trace sand, cmf gravel	none
	2	11-30+	grey tan silt, cmf gravel, under dark brown root/leaf mat	none
TP-122	1	0-12	medium brown silt, trace sand, cmf gravel, cobbles	none
	2	12-22+	tan orange silt, cmf gravel	none
TP-123	1	0-12	(same as above)	none
	2	12-30+	(same as above)	none
TP-124	1	0-14	(same as above)	none
	2	14-22+	(same as above)	none
TP-125	1	0-12	(same, denser gravel)	none
	2	12-24+	(same as above)	none
TP-126	1	0-15	(same as above)	none
	2	15-22+	(same as above)	none
TP-127	1	0-13	(same as above)	none
	2	13-20+	orange tan silt, trace sand, cmf gravel, cobbles	none
TP-128	1	0-16	(same as above)	none
	2	16-26+	tan orange silt, cmf gravel	none
TP-129	1	0-16	(same as above)	none
	2	16-24+	(same as above)	none
TP-130	1	0-15	(same as above)	none
	2	15-24+	(same as above)	none
TP-131	1	0-13	(same as above)	none
	2	13-23+	(same as above)	none
TP-132	1	0-12	(same, denser gravel)	none
	2	12-24+	(same as above)	none
TP-133	1	0-10	(same as above)	none
	2	10-18+	(same as above)	none
TP-134	1	0-17	(same as above)	none
	2	17-25+	(same as above)	none

TP-135	1	0-19	(same as above)	none
	2	19-30+	orange silt, trace sand, cmf gravel, cobbles	none
TP-136	1	0-10	(same as above)	none
	2	10-18+	(same as above)	none
TP-137	1	0-12	(same as above)	none
	2	12-20+	(same as above)	none
TP-138	1	0-12	(same as above)	none
	2	12-22+	(same as above)	none
TP-139	1	0-10	medium brown silt, some sand, cmf gravel, cobbles, under dark brown root/leaf mat	none
	2	10-22+	orange silt, some sand, cmf gravel. cobbles	none
TP-140	1	0-11	medium brown silt, dense cmf gravel	none
	2	11-24+	orange silt, cmf gravel, cobbles	none
TP-141	1	0-11	(same as above)	none
	2	11-22+	(same denser cobbles)	none
TP-142	1	0-12	(same as above)	none
	2	12-25+	(same as above)	none
TP-143	1	0-13	(same as above)	none
	2	13-27+	(same as above)	none
TP-144	1	0-13	(same as above)	none
	2	13-25+	(same as above)	none
TP-145	1	0-16	(same as above)	none
	2	16-29+	(same, fewer cobbles)	none
TP-146	1	0-14	(same as above)	none
	2	14-22+	orange silt, trace tan, cmf gravel, cobbles	none
TP-147	1	0-13	(same as above)	none
	2	13-24+	(same as above)	none
TP-148	1	0-10	(same, denser gravel)	none
	2	10-24+	(same as above)	none
TP-149	1	0-12	(same as above)	none
	2	12-22+	(same as above)	none
TP-150	1	0-14	(same as above)	none
	2	14-22+	(same as above)	none

TP-151	1	0-14	(same, with cobbles)	none
	2	14-27+	(same as above)	none
TP-152	1	0-12	(same as above)	none
	2	12-25+	(same as above)	none
TP-153	1	0-13	(same as above)	none
	2	13-21+	(same, more cobbles)	none
TP-154	1	0-15	(same as above)	none
	2	15-24+	(same as above)	none
TP-155	1	0-12	(same as above)	none
	2	12-23+	orange tan silt, cmf gravel, cobbles	none
TP-156	1	0-12	(same as above)	none
	2	12-22+	(same as above)	none
TP-157	1	0-14	(same as above)	none
	2	14-25+	(same as above)	none
TP-158	1	0-10	(same, less dense gravel)	none
	2	10-24+	(same, fewer cobbles)	none
TP-159	1	0-11	(same as above)	none
	2	11-24+	(same as above)	none
TP-160	1	0-15	(same as above)	none
	2	15-22+	(same as above)	none
TP-161	1	0-12	(same as above)	none
	2	12-27+	(same as above)	none
TP-162	1	0-13	(same as above)	none
	2	13-22+	(same as above)	none
TP-163	1	0-13	medium brown silt, some sand, cmf gravel, cobbles, under dark brown root/leaf mat	none
	2	13-25+	orange tan silt, some sand, cmf gravel, cobbles	none
TP-164	1	0-14	(same as above)	none
	2	14-22+	(same as above)	none
TP-165	1	0-13	(same as above)	none
	2	13-22+	(same as above)	none
TP-166	1	0-14	(same as above)	none
	2	14-25+	(same as above)	none

TP-167	1	0-12	(same, denser gravel)	none
	2	12-24+	(same as above)	none
TP-168	1	0-12	(same as above)	none
	2	12-21+	(same, more cobbles)	none
TP-169	1	0-10	(same as above)	none
	2	10-20+	(same as above)	none
TP-170	1	0-11	(same as above)	none
	2	11-23+	(same as above)	none
TP-171	1	0-9	(same as above)	none
	2	9-20+	(same as above)	none
TP-172	1	0-10	(same as above)	none
	2	10-21+	(same, fewer cobbles)	none
TP-173	1	0-10	(same as above)	none
	2	10-23+	(same as above)	none
TP-174	1	0-12	(same, less dense gravel)	none
	2	12-25+	(same as above)	none
TP-175	1	0-11	(same as above)	none
	2	11-22+	(same as above)	none
TP-176	1	0-13	(same as above)	none
	2	13-22+	tan silt, trace orange, cmf gravel, cobbles	none
TP-177	1	0-14	(same as above)	none
	2	14-26+	(same as above)	none
TP-178	1	0-16	(same as above)	none
	2	16-27+	(same as above)	none
TP-179	1	0-14	(same as above)	none
	2	14-25+	(same as above)	none
TP-180	1	0-13	(same as above)	none
	2	13-24+	(same as above)	none
TP-181	1	0-14	(same as above)	none
	2	14-27+	(same as above)	none
TP-182	1	0-14	(same as above)	none
	2	14-26+	(same as above)	none

TP-183	1	0-14	(same as above)	none
	2	14-23+	(same as above)	none
TP-184	1	0-12	(same, denser gravel)	none
	2	12-22+	(same as above)	none
TP-185	1	0-13	(same, less dense gravel)	none
	2	13-20+	(same as above)	none
TP-186	1	0-14	(same as above)	none
	2	14-26+	(same as above)	none
TP-187	1	0-14	(same as above)	none
	2	14-23+	(same as above)	none
TP-188	1	0-12	(same as above)	none
	2	12-25+	(same as above)	none
TP-189	1	0-12	(same, more sand)	none
	2	12-22+	orange tan silt, some sand, cmf gravel, cobbles	none
TP-190	1	0-14	(same as above)	none
	2	14-22+	(same as above)	none
TP-191	1	0-15	(same as above)	none
	2	15-27+	(same as above)	none
TP-192	1	0-13	(same as above)	none
	2	13-25+	(same, no cobbles)	none
TP-193	1	0-10	(same as above)	none
	2	10-21+	(same, with cobbles)	none
TP-194	1	0-12	(same as above)	none
	2	12-25+	(same as above)	none
TP-195	1	0-12	(same, denser gravel and cobbles)	none
	2	12-22+	(same as above)	none
TP-196		(steep slope - not dug)		
TP-197	1	0-13	(same, fewer cobbles)	none
	2	13-22+	(same as above)	none
TP-198		(steep slope - not dug)		
TP-199	1	0-12	(same as above)	none
	2	12-24+	(same as above)	none

TP-200	1	0-12	(same as above)	none
	2	12-26+	(same, fewer cobbles)	none
TP-201	1	0-11	(same as above)	none
	2	11-21+	(same as above)	none
TP-202	1	0-10	medium brown silt, trace sand, cmf gravel	none
	2	10-23+	orange tan silt, cmf gravel, cobbles	none
TP-203	1	0-14	(same as above)	none
	2	14-24+	(same as above)	none
TP-204	1	0-15	(same as above)	none
	2	15-24+	(same as above)	none
TP-205	1	0-13	(same as above)	none
	2	13-26+	(same as above)	none
TP-206	1	0-13	(same as above)	none
	2	13-22+	(same as above)	none
TP-207	1	0-14	(same as above)	none
	2	14-24+	(same as above)	none
TP-208	1	0-12	(same as above)	none
	2	12-22+q	(same as above)	none
TP-209	1	0-12	(same as above)	none
	2	12-26+	(same as above)	none
TP-210	1	0-14	(same as above)	none
	2	14-26+	(same as above)	none
TP-211	1	0-13	(same as above)	none
	2	13-24+	tan silt, trace orange, cmf gravel, cobbles	none
TP-212	1	0-13	(same as above)	none
	2	13-24+	(same as above)	none
TP-213	1	0-12	(same as above)	none
	2	12-23+	(same as above)	none
TP-214	1	0-12	(same as above)	none
	2	12-20+	(same as above)	none
TP-215	1	0-14	(same as above)	none
	2	14-24+	(same as above)	none

TP-216	1	0-13	(same as above)	none
	2	13-22+	(same as above)	none
TP-217	1	0-11	(same as above)	none
	2	11-24+	(same, denser cobbles)	none
TP-218	1	0-10	(same, denser gravel and cobbles)	none
	2	10-21=	(same as above)	none
TP-219		(steep slope - not dug)		
TP-220		(steep slope - not dug)		
TP-221	1	0-11	medium brown silt, some sand, cmf gravel, cobbles, under dark brown root/leaf mat	none
	2	11-24+	orange tan silt, cmf gravel, cobbles	none
TP-222	1	0-12	(same as above)	none
	2	12-22+	(same as above)	none
TP-223	1	0-12	(same as above)	none
	2	12-25+	(same, fewer cobbles)	none
TP-224	1	0-14	(same as above)	none
	2	14-27+	(same as above)	none
TP-225	1	0-13	(same as above)	none
	2	13-24+	(same as above)	none
TP-226	1	0-14	(same as above)	none
	2	14-22+	(same as above)	none
TP-227	1	0-13	(same, fewer cobbles, less gravel)	none
	2	13-23+	(same as above)	none
TP-228	1	0-12	(same, more cobbles)	none
	2	12-24+	(same, more cobbles)	none
TP-229		(steep slope -not dug)		
TP-230	1	0-9	medium brown silt, some sand, cmf gravel, cobbles, under dark brown root/leaf mat	none
	2	9-21+	orange tan silt, cmf gravel, cobbles	none
TP-231	1	0-12	(same as above)	none
	2	12-22+	(same as above)	none

TP-232	1	0-12	(same as above)	none
	2	12-25+	(same as above)	none
TP-233	1	0-13	(same as above)	none
	2	13-24+	(same as above)	none
TP-235	1	0-11	(same, denser gravel and cobbles)	none
	2	11-21+	(same, more cobbles)	none
TP-236		(steep slope - not dug)		
TP-237	1	0-10	medium brown silt, some sand, dense cmf gravel, cobbles	none
	2	10-22+	orange tan silt, cmf gravel, cobbles	none
TP-238	1	0-12	(same as above)	none
	2	12-25+	(same as above)	none
TP-239	1	0-14	(same, less dense gravel)	none
	2	14-27+	(same as above)	none
TP-240	1	0-14	(same as above)	none
	2	14-23+	(same as above)	none
TP-241	1	0-10	(same as above)	none
	2	10-23+	(same as above)	none
TP-242	1	0-9	(same as above)	none
	2	9-19+	(same as above)	none

SAMPLING AREA C

TP-243	1	0-15	medium brown silt, some sand, cmf gravel, cobbles, under dark brown root/leaf mat	none
	2	15-26+	orange silt, some sand, cmf gravel, cobbles	none
TP-244	1	0-14	(same as above)	quartz
	2	14-22+	(same as above)	none
TP-245	1	0-12	(same as above)	quartz
	2	12-22+	(same as above)	none
TP-246	1	0-11	(same as above)	none
	2	11-23+	(same as above)	none
TP-247	1	0-15	(same as above)	quartz
	2	15-24+	(same as above)	none

TP-248	1	0-14	(same as above)	none
	2	14-25+	(same as above)	none
TP-249	1	0-14	(same as above)	none
	2	14-28+	(same as above)	none
TP-250	1	0-10	(same, denser gravel)	quartz
	2	10-25+	(same as above)	none
TP-251	1	0-12	(same as above)	none
	2	12-22+	orange tan silt, trace sand, cmf gravel	none
TP-252	1	0-11	(same as above)	none
	2	11-21+	(same as above)	none
TP-253	1	0-12	(same as above)	none
	2	12-24+	(same as above)	none
TP-254	1	0-12	(same as above)	none
	2	12-22+	(same, with cobbles)	none
TP-255		(steep slope - not dug)		
TP-256	1	0-13	medium brown silt, trace sand, cmf gravel	none
	2	13-22+	orange tan silt, trace sand, cmf gravel, cobbles	none
TP-257	1	0-13	(same as above)	none
	2	13-25+	(same as above)	none
TP-258	1	0-11	(same as above)	none
	2	11-25+	(same as above)	none
TP-259		(steep slope - not dug)		
TP-260	1	0-10	medium brown silt, trace sand, cmf gravel	none
	2	10-24+	orange tan silt, trace sand, cmf gravel cobbles	none
TP-261	1	0-12	(same as above)	none
	2	12-24+	(same as above)	none
TP-262	1	0-12	(same as above)	none
	2	12-25+	(same as above)	none

TP-263	1	0-11	(same as above)	none
	2	11-23+	(same as above)	none
TP-264	1	0-13	(same as above)	none
	2	13-23+	(same as above)	none
TP-265	1	0-12	(same as above)	none
	2	12-23+	(same as above)	none
TP-266	1	0-10	(same, denser gravel)	none
	2	10-23+	(same as above)	none
TP-267	1	0-11	(same as above)	none
	2	11-25+	(same as above)	none
TP-268	1	0-13	(same, less dense gravel)	none
	2	13-24+	(same as above)	none
TP-269	1	0-13	(same as above)	none
	2	13-24+	(same as above)	none
TP-270	1	0-12	(same as above)	none
	2	12-22+	(same as above)	none
TP-271	1	0-13	(same as above)	none
	2	13-25+	(same as above)	none
TP-272	1	0-11	(same as above)	none
	2	11-22+	(same as above)	none
TP-273	1	0-13	(same as above)	none
	2	13-25+	(same, denser cobbles)	none
TP-274		(steep slope - not dug)		
TP-275	1	0-10	medium brown silt, trace sand, cmf gravel, under dark brown root/leaf mat	none
	2	10-21+	orange tan silt, cmf gravel, cobbles	none
TP-276	1	0-12	(same as above)	none
	2	12-24+	(same as above)	none
TP-277	1	0-12	(same as above)	none
	2	12-23+	(same as above)	none
TP-278		(steep slope - not dug)		

TP-307	1	0-14	medium brown silt, trace sand, cmf gravel, under dark brown root/leaf mat	none
	2	14-26+	orange tan silt, trace sand, cmf gravel	none
TP-308	1	0-15	(same as above)	none
	2	15-27+	(same as above)	none
TP-309	1	0-14	(same as above)	none
	2	14-24+	(same as above)	none
TP-310	1	0-13	(same as above)	none
	2	13-23+	(same as above)	none
TP-311	1	0-14	(same as above)	none
	2	14-22+	(same as above)	none
TP-312	1	0-12	(same as above)	none
	2	12-23+	(same, with cobbles)	none
TP-313	1	0-11	(same as above)	none
	2	11-20+	(same as above)	none
TP-314	1	0-12	(same, more sand)	none
	2	12-24+	(same as above)	none
TP-315	1	0-14	(same as above)	none
	2	14-21+	(same as above)	none
TP-316	1	0-12	(same as above)	none
	2	12-22+	(same as above)	none
TP-317	1	0-14	(same as above)	none
	2	14-23+	(same as above)	none

NR = not retained

ARTIFACT CATALOGUE

CA-488B - GATEWAY SUMMIT / FAIRWAYS

PHASE IB ARTIFACT CATALOGUE

QUANTITY	DESCRIPTION	PROVENIENCE
1	core	TP-5, Level 1
1	fragment	TP-11, Level 1
3	fragments	TP-22, Level 1
3	fragments	TP-23, Level 1
1	core	TP-27, Level 1
1	reduction flake	TP-27, Level 1
1	finishing flake	TP-27, Level 1
2	fragments	TP-27, Level 1
1	reduction flake	TP-49, Level 1
1	fragment	TP-63. Level 1
1	chert projectile point (tip missing)	surface SSW TP-243
1	reduction flake	TP-244, Level 1
2	cores	TP-245, Level 1
1	reduction flake	TP-245, Level 1
3	fragments	TP-245, Level 1
4	fragments	TP-247, Level 1
1	scraper	TP-247, Level 1
1	hammer?	TP-249, Level 1
1	unfinished biface	TP-249, Level 1
2	fragments	TP-249, Level 1
2	finishing flakes	TP-249, Level 1

N.B. - all items except hammers of quartz unless specified

TOTALS

Recovered Items - 36
tools - 4
reduction flakes - 2
finishing flakes - 3
cores - 3
fragments - 24

INVESTIGATOR QUALIFICATIONS

RESUME OF STEPHEN J. OBERON

EDUCATION

Bachelor of Arts (History) - Colgate University
Master of Arts (Archaeology) - Trent University
Master of Arts (Anthropology) - Cornell University
Doctoral Candidacy (Anthropology/Architecture) - Cornell University

PROFESSIONAL EXPERIENCE

- served as Principal Investigator for over 450 cultural resources surveys in New York, Vermont, Massachusetts, Pennsylvania and New Jersey, ranging from Phase I site assessment studies, architectural inventories and site identification surveys through data recovery/impact mitigation programs. These have involved architectural surveys of potential historic districts as well as individual structures, and have dealt with both Native and European American era archaeological sites relating to all time periods represented in this geographic area. Clients have included a variety of federal agencies as well as municipalities, private developers and commercial firms.

- served as Chief Archaeologist with Atlantic Testing Laboratories, Limited for 9 years

- founded HeritageAmerica, Ltd. served as Principal Archaeologist for 8 years

- co-founded Columbia Heritage, Ltd. and has served as Principal Archaeologist since January 1998

- conducted historical and ethnohistorical research and directed archaeological excavations in New Mexico, Ontario, Peru, Jamaica and Switzerland

- directed archaeological field training programs in Ontario and New York

- lectured at various institutions including Cornell University, Syracuse University, Orange Community College, Columbia-Greene Community College, The Gomez Foundation For Mill House, and local historical societies on a variety of topics relating to Native American archaeology, 18th century settlements, industries and structures, the ethnic components of 18th and 19th century architecture, rural African-American cemeteries in the Hudson Valley, and the significance for local communities of listing structures and districts on the State and National Register of Historic Places

CERTIFICATIONS AND APPROVALS

- meets qualifications for Principal Investigator under 36CFR61
- approved as Principal Investigator for historical and archaeological projects involving both Native and European American era sites by the State Historic Preservation Office (SHPO) in New York, Massachusetts, Vermont, Pennsylvania, New Jersey, New Hampshire and Maine, as well as by the U.S. Army Corps of Engineers, the National Parks Service, the U.S. Environmental Protection Agency (EPA), the New York State Department of Environmental Conservation (DEC), the New York State Department of Transportation (DOT), and the New Jersey Department of Environmental Protection (DEP)
- completed OSHA-certified 40-Hour Hazardous Waste Site Personnel Basic Health and Safety Course and 8-Hour Hazardous Waste Site Worker and Emergency Responder Annual Health and Safety Courses

PROFESSIONAL ORGANIZATIONS

The New York Archaeological Council
The Council For Northeast Historical Archaeology
The Society for Historical Archaeology
The Society for American Archaeology
The Society for Industrial Archaeology
The Society of Architectural Historians
The Conference on New England Archaeology
The Native American Institute

Appendix O

Phase 2 Cultural Resource Survey

PHASE II SITE EVALUATION STUDY
GATEWAY SUMMIT AND THE FAIRWAYS DEVELOPMENTS
TOWN OF CARMEL, PUTNAM COUNTY, NEW YORK

Prepared for
Tim Miller Associates, Inc.
10 North Street
Cold Spring, New York 10516

Prepared by
Stephen J. Oberon
Columbia Heritage, Ltd.
56 North Plank Road - Suite 287
Newburgh, New York 12550

Report CA488C-2-12-05
December 2005

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INTRODUCTORY SUMMARY

A Phase IA site assessment study carried out in September and October 2004 for two adjacent sites in the Town of Carmel for which development is proposed. Located in the northeastern part of the township in central Putnam County, New York, the properties are known as Gateway Summit and The Fairways and encompass approximately 183 acres (74.0 hectares). The upland topography of the study areas ranges from gently to moderately to very steeply sloping, much of it formerly devoted to pasture.

The Phase IA study identified an above average potential for the presence of buried cultural remains associated with the Native American occupation of the region on the flatter, better-drained portions of the affected areas. This assessment of archaeological potential was based on the proximity of documented Native American occupation in this portion of the Town of Carmel and the adjacent Town of Southeast and the fact that the physiographic character of these portions of the study area has often been found to correlate with indigenous cultural activity in this region. The affected areas were considered unlikely to contain structural remains and associated cultural features pertaining to the early European American era occupation of the region, based on the lack of structures shown on historical maps, the lack of early roads adjacent to the development parcels, and the apparent use of the land for agricultural and pastoral purposes since the arrival of settlers in this area, based on map information and walking reconnaissance.

Implementing the recommendations of the Phase IA assessment study, a Phase IB site identification survey was carried out in May and June of 2005 to determine whether buried cultural remains are in fact subject to project impact. The survey investigated portions of the affected area not characterized by steep slope, poorly drained soils or prior large-scale stripping and reclamation. Since locations of proposed development are mostly forested or characterized by scrub vegetation, Phase IB sampling was carried out by means of hand-dug shovel tests placed approximately 50 feet (15-meters) apart, with test hole contents screened through 1/4-inch hardware cloth to facilitate recovery of smaller cultural items. Native American cultural material was identified in four isolated test holes and in two clusters of test holes with one item encountered on the ground surface of an area that had previously been graded for a logging road. Sparse and thinly scattered European American era material was encountered in the southern portion of the property, nearest US Route 6, and consisted solely of post-World War II items.

Since the Phase IB site identification survey had identified Native American cultural material in two subareas of the property, more intensive field investigation was recommended for these locations as part of a Phase II site evaluation study. Aside from the Late Archaic projectile point encountered on the ground surface near Sampling Sector C, evidence of Native American activity recovered during the Phase IB survey consisted mostly of waste material associated with the processing of quartz resources for the manufacture of stone tools, along with one uniface scraper and an unfinished biface tool. The goals of the Phase II investigation were to more precisely establish the spatial extent of the cultural deposits and to provide sufficient information to state reviewers for them to determine whether any of these deposits constitutes a significant cultural resource meeting State and National Register of Historic Places eligibility requirements under Criterion D.

The Phase II field investigation was carried out in July and August 2005, with the vicinity of the test holes from which cultural material had been recovered being more intensively sampled. Additional cultural items were recovered from some of the close-interval test holes, while intensive sampling around other Phase IB find spots produced no further evidence of indigenous occupation. The subareas that produced the greatest relative density of cultural items were more intensively investigated by means of six standard archaeological excavation units. These units produced at most a relatively sparse amount of cultural material, all associated with the primary stages of lithic reduction, while three units produced no cultural material at all.

The intensive shovel testing and excavation unit components of the Phase II study confirmed the presence of cultural material in the affected area was sparse, and no traces of cultural features or structural remains were encountered. Based on the findings of the study, even the subareas of greatest relative density of cultural items may be considered unlikely to contain potentially significant cultural information. Consequently, proposed construction may be seen to have no effect on potentially significant cultural resources and no further investigation is recommended.

BACKGROUND AND STRATEGY

A Phase IB site identification survey performed for the portions of the roughly 183-acre project site proposed for development in the northeastern part of the Town of Carmel in central Putnam County, New York encountered evidence of Native American presence in the southern and central portions of the proposed development property. The remainder of the construction impact area was found to contain no cultural items with the exception of sparse, scattered, post-World-War II era trash near US Route 6.

Twenty-two of the 24 items associated with Native American occupation recovered from 10 shovel test holes (91.6%) consisted of waste material produced during the processing of quartz resources for stone tool production. The remaining 8.4% of the Phase IB assemblage was made up one uniface scraper, which can also be described as a retouched flake, and what appears to be an unfinished biface of undetermined function. Both tools are rather crudely fashioned and seem likely to represent single-use items of opportunity. One temporally diagnostic item, a Late Archaic chert projectile point missing its tip, was encountered on the ground surface of a logging road.

The nature of the debitage encountered, consisting of cores, reduction flakes and culturally modified fragments, indicates most of the activity that took place here involved the reduction of locally-available quartz, probably in the form of glacially-deposited cobbles since no outcrops were noted, and probably involved the removal of the higher quality portions of the cobbles to other locations where the latter stages of stone tool production would have taken place. The presence of a uniface scraper as the only recognizable tool type indicates the processing of faunal resources is also likely to have taken place at this location in the central portion of the property. The presence of a chert projectile point missing its tip nearby also points to the procurement of faunal resources in this subarea. The use of two types of stone raises the likelihood that these represent separate episodes of hunting and meat processing. These game-related activities are also likely to be unrelated to the episodes of lithic reduction discussed above.

A few individual European American era iron, glass and plastic pieces were noted in Phase IB sampling nearest US Route 6. These items, all dating from the post-World War II era, were interpreted as representing trash deposited from the elevated road grade from passing vehicles.

Relative density of cultural remains is seen as likely to indicate a location where focused cultural activity would have taken place. Areas of more focused cultural activity are seen to have an elevated potential for containing intact remains of cultural features and/or possible structural remains that might have been preserved. The presence of waste material related to the processing of lithic resources and/or stone tool manufacture was also recognized as possibly indicating the presence of very localized, specialized activity areas, such as lithic workshops. Such nodes of stone tool production might represent the efforts of one or two individuals over a very short time period but can be characterized by relatively dense concentrations of lithic debitage restricted to a very small area. Encountering intact parts of cultural features an/or traces of structures that have been protected from subsequent cultivation-related disturbance could yield significant cultural information about the indigenous inhabitants of this region. Those locations where food processing and preparation, tool manufacture and repair, and residential life took place are most likely to contain cultural information that can prove useful in adding to existing knowledge regarding the lifeways of past populations.

The goal of this Phase II study was to collect information regarding the spatial extent of the deposits of cultural material associated with the positive test holes and the quantity and nature of cultural information likely to be present at these locations. On the basis of these findings the Field Services Bureau of the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) would be able to determine the significance of the cultural resources . In order to most efficiently accomplish this, it was decided to frame the investigation as two progressive components. First, the subareas in which cultural material had been encountered would be more intensively investigated. A series of close-interval screened shovel tests would be dug in cardinal directions around the isolated test holes that had produced cultural items to determine whether the items recovered items represented stray cultural items or could be characterized as part of a cultural manifestation. Areas where cultural items had been recovered from test holes spaced more closely together would be more intensively sampled by means of shovel test holes placed at close intervals in a grid pattern. The information collected on the distribution of cultural material would produce a more complete picture of the occurrence and distribution of Native American cultural material in these subareas.

Based on the distribution and relative density of cultural material encountered, the second component of the Phase II study would involve the further investigation of locations considered to have the greatest potential for having seen focused cultural activity by means of standard archaeological excavation units. The aim of this effort would be to provide a greater sample of cultural material present and to determine whether cultural features such as fire or storage pits or remains of structures might be present.

FIELD INVESTIGATION

The Phase II site evaluation study was performed in July and August of 2005 by the Principal Investigator, assisted by Archibald Miller and Sean Lott. Weather and field conditions were excellent, with temperature ranging from 75 to 85 degrees Fahrenheit (23.8 to 29.4 degrees Centigrade) and no precipitation. Soils were well-drained in all areas investigated as part of this study. Recovered cultural material and field notes are stored at the Columbia Heritage repository facility in New Windsor, New York. No problems were encountered that might have affected the outcome of either component of the Phase II field investigation.

As mentioned in the preceding section, a primary goal of the Phase II study was to more intensely investigate subareas where cultural material had been recovered in order to determine whether human activity can in fact be seen to have been focused at those locations. Where the distribution of recovered cultural items indicates such focused behavior is likely, a second goal was to determine the spatial extent of the archaeological deposits and to ascertain whether remains of cultural features and/or structural remains might be present.

In order to achieve the first goal, it was considered necessary to better understand the distribution of cultural material in the portions of the affected area where Phase IB shovel sampling had encountered Native American cultural items. As noted, two strategies were employed to this end. First, close interval shovel tests were dug to intensively sample the vicinity of test holes where cultural items had been recovered. Eight additional shovel tests placed at cardinal points were dug around isolated Phase IB sampling locations that had produced cultural material, with test hole contents again being screened through 1/4-inch (6.25-millimeter) hardware cloth to facilitate the recovery of smaller cultural items. These close-interval radial tests were dug at 20-foot (6-meter) and 10-foot (3-meter) intervals from the find spot, beginning to the north and progressing clockwise. Five Phase IB test holes (TP-5, TP-11, TP-49, TP-63 and TP-247 fell into this category, along with the vicinity of the location of the chert projectile point that had been found on the ground surface near Sampling Sector C. One additional piece of cultural material, a quartz fragment likely to have been modified by human behavior in TP-49CC, was recovered through this intensive sampling around isolated finds. No additional chert items were encountered.

As outlined in the previous section, close-interval shovel tests were placed in a 15-foot (5-meter) grid pattern around groups of test holes that had yielded cultural material in Phase IB sampling. Contents of these tests were also screened through 1/4-inch (6.25-millimeter) hardware cloth. Additional cultural material was recovered from eight of the 14 Phase II test holes dug in Sampling Sector A and from four of the fifteen close-interval tests dug in Sampling Sector C. Again, almost all the cultural material encountered (93.4%) consisted of quartz debitage associated with the processing of lithic resources and the manufacture of stone tools.

The second strategy for better implementing the goals of the Phase II study involved attempting to refine our understanding not only of the distribution of cultural material but also of the character of the archaeological deposit and its potential for containing significant cultural information. As was noted in the previous section, it is assumed that relative density of cultural material present indicates relative intensity of cultural activity. Such focused activity areas where the remains of lithic resource processing are found today are also considered most likely to have been locations where meals were prepared, manufacture items were stored and possibly shelters constructed.

Therefore, such subareas of relatively intense cultural activity are considered more likely to contain the remains of fire pits, storage pits and structures, all of which can contain significant cultural information relating to the temporal and cultural affiliation of the site occupation(s), the nature of activities carried out there, and finer details regarding the season(s) during which the site was occupied and the duration(s) of the occupation(s).

To more intensively investigate a larger sample of the activity areas, standard archaeological excavation units were executed in the locations of greatest relative artifact concentration. These square units measured 40 inches (1 meter) on each side and were excavated in arbitrary 4-inch (10-centimeter) levels below the zone of plow disturbance. Where a plow zone is found to be present, the subsurface is characterized by vertically and horizontally dislocated soils that have in fact been homogenized, and this stratum was excavated as one level. Profiles of excavation units were drawn to scale along with plan views. Were any cultural features encountered, they would be drawn to scale and photodocumented and samples of the associated soils associated would be retained so that flotation, pollen analysis and other laboratory procedures could be performed at a later time under suitable conditions.

Four excavation units were executed in Sampling Sector A and two in Sector C. Units 1, 2 and 3 were placed within the locations from which the greatest relative density of cultural material had been recovered. It was recognized stratifying a site based entirely on the relative concentration of recovered cultural material composed overwhelmingly of lithic debitage militated against consideration of and sampling for the possibility that intrasite segregation patterns might have placed some cultural activities, such as the location of shelters, away from subareas where lithic production was being carried out, where fish and meat were being cured, or where organic refuse was habitually deposited. In an effort to compensate for the bias inherent in the assumption that locations outside the densest relative concentrations of cultural material would not have seen focused cultural activity, a fourth excavation unit (Unit 4) was executed in an area that had produced somewhat fewer cultural items is situated in a somewhat different setting, than where the greatest relative concentrations of cultural items had occurred.

To a large degree, the cultural material yielded by the excavation units reinforced the impression of the archaeological inspection with regard to intensity of cultural activity. Phase II close-interval archaeological sampling had produced a mix of cultural material largely consistent with the Phase IB assemblage, with few finished tools encountered and the presence of a hammer stone adding to the evidence for lithic resource processing. Thirty-one of the 34 items recovered consisted of quartz debitage, mostly culturally modified fragments, along with three cores, many with cortex. The excavation units produced a similar mix of items and reflected a similar pattern of sparseness, even in the subareas of greatest relative artifact density based on Phase IB results. Unit 1 produced only six items, Unit 2 and Unit 3 each yielded seven, and none were recovered from Unit 4, which was dug to provide a control. No evidence of cultural features was encountered in any of the units excavated.

Intensive sampling in Sector C produced very little cultural material. Phase II shovel tests produced only six additional cultural items, all quartz debitage. Two excavation units (Unit 5 and Unit 6) were executed between the test holes that had produced the greatest relative quantity of cultural material. Five pieces of debitage were recovered from Unit 5, and Unit 6 yielded no cultural material.

ANALYSIS AND RECOMMENDATIONS

The Phase II site evaluation study performed for the proposed Gateway Summit and The Fairways development parcels clarified the impression given by the results of the Phase IB sampling of the affected area. Native American cultural activity was noted to have taken place in two widely separated subareas of the property. While this activity does not appear to have been transitory or unfocused, the nature and quantity of cultural material found to be present and the lack of cultural features or structural remains give these sites little potential for containing significant cultural information. One site (Site 2) appears to have been the location of some hunting and faunal resource processing activities, based on the presence of a projectile point missing its tip and a scraper, along with limited processing of lithic resources. The other (Site 1) seems to have been associated with processing of quartz, based on the type of cultural material recovered, and while the exploitation of nearby stream resources may also have been an impetus for its occupation, no evidence was found to indicate that floral or faunal resources were processed here.

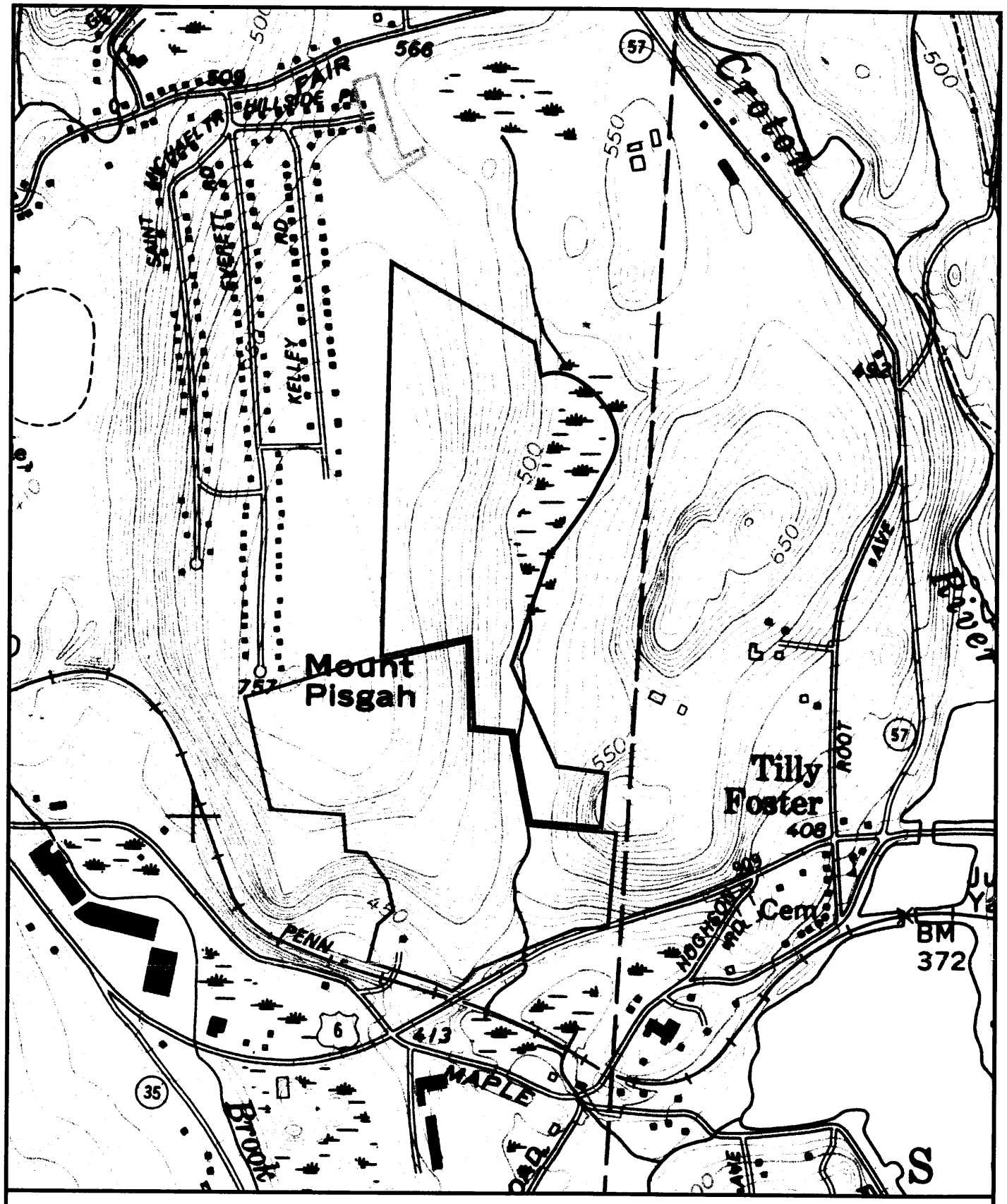
Three excavation units executed at locations within the subarea of greatest relative quantity of cultural material had been encountered during archaeological sampling of Sector A produced relatively small amounts of cultural material, without local nodes of greater relative density. The high proportion of quartz fragments with cortex, along with the presence of cores and secondary reduction flakes reflect a focus on the primary reduction component of lithic resource processing.

No temporally or culturally diagnostic items were recovered. The distribution of cultural material implies this location was visited by small groups of people on what were probably several occasions to process quartz available locally in glacially-deposited cobbles, possibly along the stream bank at Site 1 and in cut banks caused by rapidly flowing hillside runoff in the case of Site 2. These episodes are likely to have been relatively casual in nature, leaving no evidence retrievable today of focused cultural activity beyond the processing of lithic resources at both sites, along with what are likely to have been two episodes of faunal resources procurement and processing at Site 2.

The presence of one simple uniface scraper at Site 2 implies that the processing of faunal resources was taking place, most likely also on a casual basis, using tools made on the spot from available material for that specific purpose on a single occasion. The chert projectile point indicates some tools were brought to this location, most likely by hunters, but also possibly by an animal that had eventually dislodged the spear point. Individual hunters or small numbers men seeking game are likely to have made use of surficial lithic resources to fashion relatively simple uniface and biface scrapers for a particular job at hand, such as skinning a recent kill, and would then have discarded them when the task had been completed. Such activities may or may not have been related to the acquisition of lithic resources that also appears to have taken place at this location.

Gateway Site 1 appears to have been characterized by relatively casual cultural activity apparently aimed at procuring available lithic resources. Site 2 contains a more limited quantity of evidence of lithic resource exploitation with some evidence that meat processing was also being carried out. The fact that no evidence for cultural features was encountered and only relatively few cultural items were recovered from excavation units implies a very limited potential for the presence of significant cultural information at this site. Proposed development may therefore be seen to have no effect on potentially significant cultural resources and no further archaeological investigation is recommended.

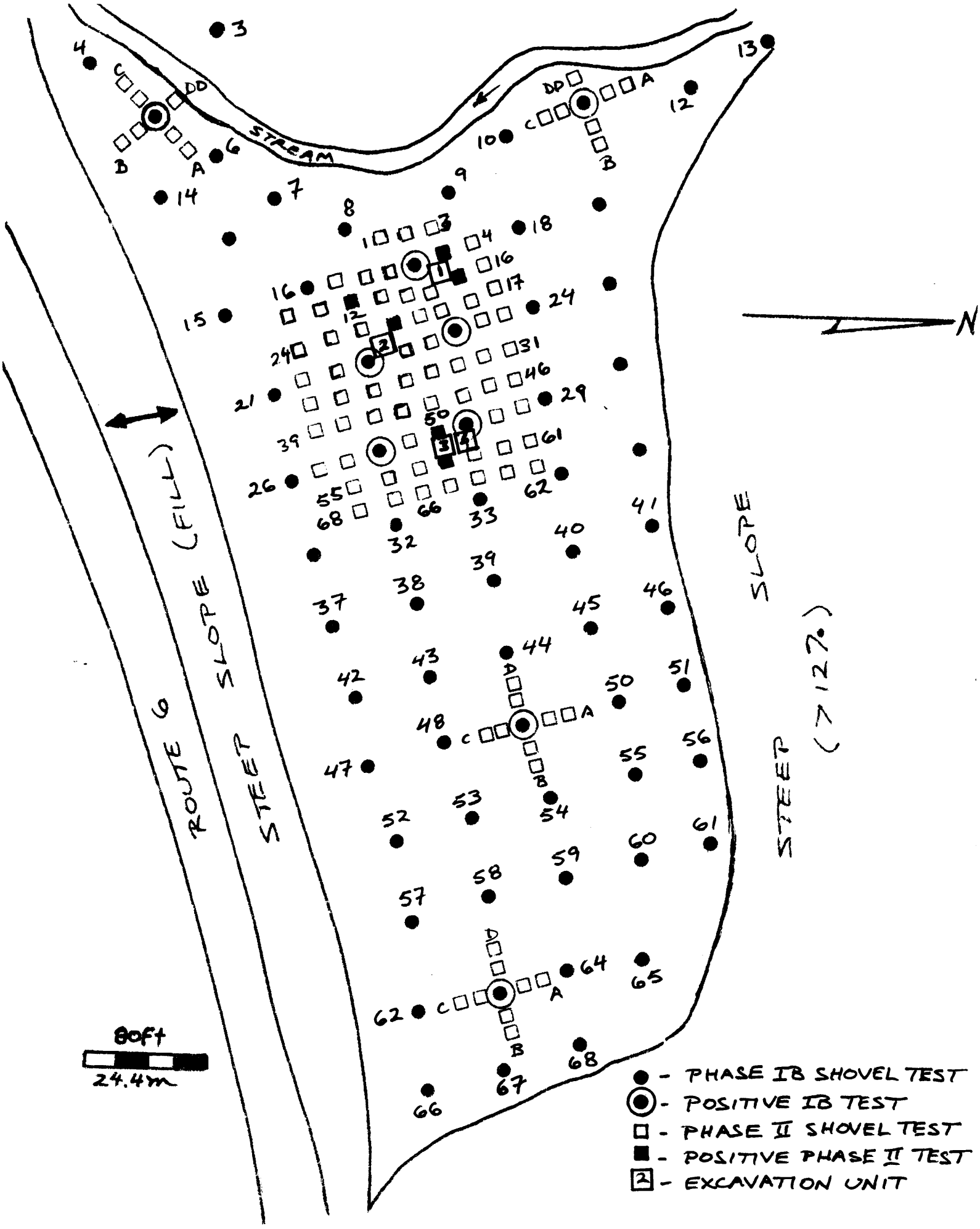
FIGURES



N
W E
S

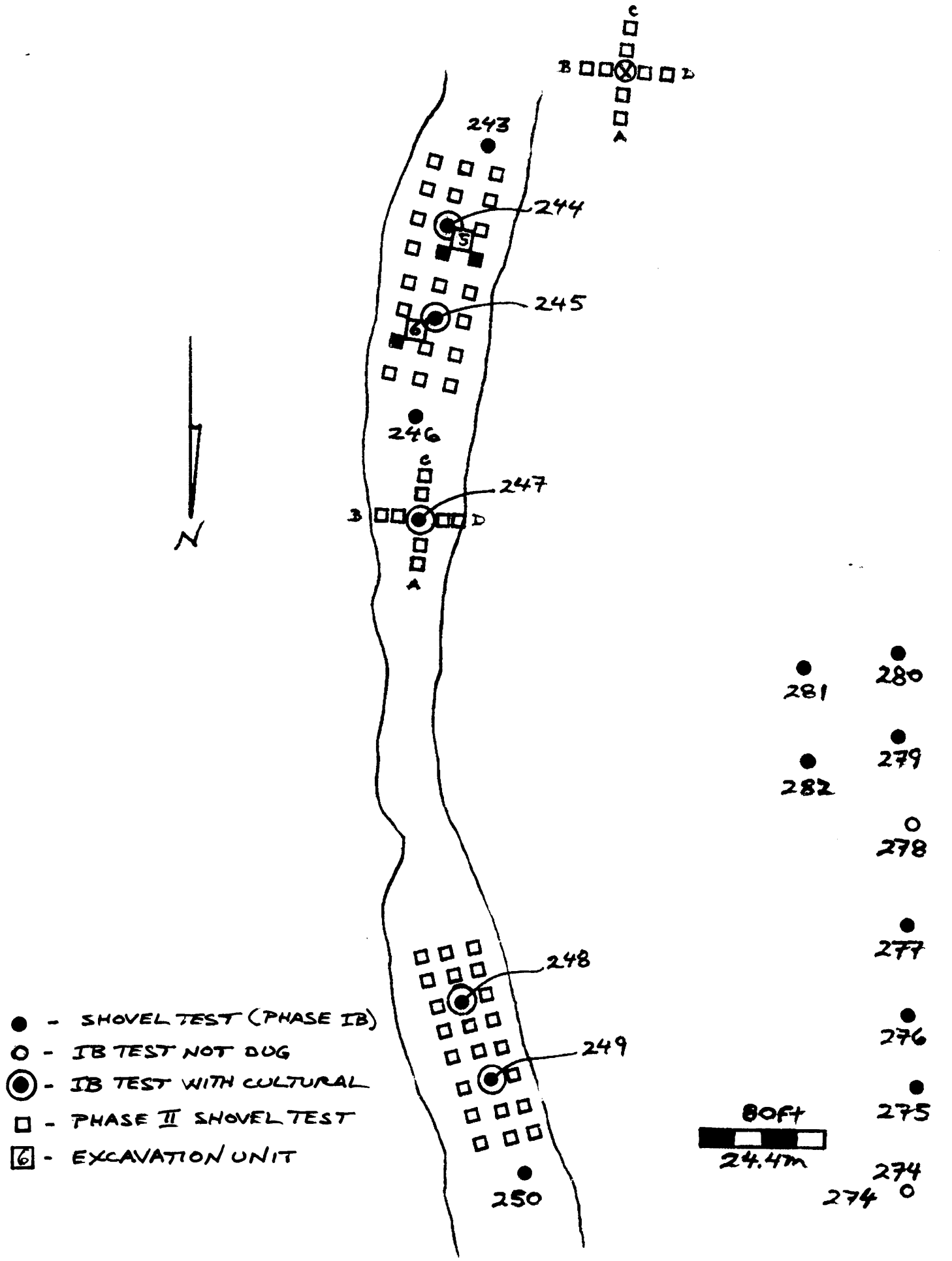
KEY
= Gateway Summit
= The Fairways

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



PHASE II SAMPLING - LOCUS 1

PHASE II SAMPLING - LOCUS 2



ARTIFACT CATALOGUE

CA488C - GATEWAY SUMMIT / THE FAIRWAYS

PHASE II ARTIFACT CATALOGUE

QUANTITY	DESCRIPTION	PROVENIENCE
2	quartz fragments	1TP 2-5, Level 1
1	quartz core	1TP 2-11, Level 1
1	quartz fragment	1TP 2-15, Level 1
1	quartz fragment	1TP 2-21 Level 1
2	quartz fragments w/cortex	1TP 2-50, Level 1
2	quartz cores w/cortex	1TP 2-58. Level 1
2	quartz fragments w/cortex	2TP 2-11, Level 1
1	quartz core?	2TP 2-12, Level 1
1	quartz fragment	2TP 2-18, Level 1
1	quartz fragment w/cortex	2TP 2-18, Level 1
3	quartz fragments	Unit 1, Level 1
1	quartz reduction flake	Unit 1, Level 1
2	quartz fragments	Unit 2, Level 1
1	quartz fragment w/cortex	Unit 2, Level 1
1	quartz reduction flake	Unit 3, Level 1
1	quartz fragment	Unit 3, Level 1
1	quartz fragment w/cortex	Unit 3, Level 1
1	quartz fragment	Unit 4, Level 1
2	quartz fragments	Unit 5, Level 1

TOTALS

Recovered Items - 27

reduction flakes - 2 (7%)
cores - 4 (14.8%)
fragments - 21 (77.7%)

Appendix P

YMCA Option Contract

ORIGINAL

OPTION CONTRACT

OPTION CONTRACT made as of the 19thday of January, 2005 between HUDSON VALLEY REALTY CORPORATION, a New York State Corporation with offices at 1699 Route 6, Suite 1, Carmel, New York 10512 hereinafter referred to as "OPTIONOR" and REGIONAL YMCA OF WESTERN CONNECTICUT AND EASTERN PUTNAM COUNTY, INC., a New York State Corporation, c/o MITIGATE, INC., 62 Gleneida Avenue, Carmel, New York 10512, hereinafter referred to as "OPTIONEE".

The parties hereby agree as follows:

1. Premises. The premises are vacant land consisting of approximately thirteen (13) acres to be optioned by Optionor to Optionee. Said property is part of a large tract of land for which Optionor has filed application for Subdivision. The property is identified as Lot No. 8 as shown on a certain Conceptual Overall Site Plan prepared by Putnam Engineering PLLC entitled "GATEWAY SUMMIT/FAIRWAYS" dated June 22, 2004, which property is located north of Route 6 in the Town of Carmel, Putnam County, New York and as more particularly described on Schedule A, attached hereto and made a part hereof. The property is hereinafter referred to as the "Premises".

Together with Optionor's ownership and rights, if any, to any land lying in the bed of any street or highway, open or proposed, adjoining the Premises to the center line thereof, including any right of Optionor to any unpaid award by reason of any taking by condemnation and/or for any damage to the Premises by reason of change of grade of any street or highway. Optionor shall deliver at no additional cost to Optionee, at Closing (as hereinafter defined), or thereafter, on demand, any documents that Optionee may reasonably require for the conveyance of such title and the assignment and collection of such award or damages.

2. Term and Conditions of Option. The Option period shall be seven and one half (71/2) years commencing January, 2005 through July, 2013,but shall be extended so as to expire not less than three and one half (31/2) years from the date of substantial completion of the roadway and sewer. The Option shall be for the specific purpose of Optionee constructing a YMCA facility and other improvements as specified herein for which approval must be applied for and obtained from the municipality and/or agencies having jurisdiction as further specified herein. Pursuant to paragraph 9(b) herein, Optionee will grant Optionor authority to act on its behalf with respect to obtaining Site Plan Approval from the Town of Carmel and any other agencies having jurisdiction for the erection of a YMCA facility.

IN WITNESS WHEREOF, this contract has been duly executed by the parties hereto.

HUDSON VALLEY REALTY CORP.

By: _____

Attorney for Optionor:

TIMOTHY P. HIGGINS, ESQ.

57 Manhasset Avenue
Manhasset, New York 11030
Telephone: 516-365-6414
Fax: 516-365-8520

REGIONAL YMCA OF WESTERN CONNECTICUT AND EASTERN PUTNAM COUNTY, INC.,

By: _____

President/CEO for Optionee

GARY KOZAK
Regional Y Corporate Office
246 Federal Road
Brookfield Common Unit 21-B
Brookfield, Ct. 06804
Telephone No. 203-740-3432 Ext 219
Fax: 203-775-8350

Receipt of the Down payment is acknowledged and the undersigned agrees to act in accordance with the provisions of paragraph 5. above.

_____

TIMOTHY P. HIGGINS, ESQ.
Escrowee

SALLY GERTRUDE PEACOCK
Notary Public, State N. Y.
Putnam Co. No. 231
Com. Expires 5/31/2006