APPENDIX J

SONIR COMPUTER MODEL DOCUMENTS

APPENDIX J-1

Model User's Guide

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Simulation of Nitrogen in Recharge (SONIR)
Nelson, Pope & Voorhis, LLC Microcomputer Model

INTRODUCTION

SONIR is a microcomputer model developed by Charles J. Voorhis, CEP, AICP for use by Nelson, Pope & Voorhis, LLC in order to simulate the hydrologic water budget of a site and determine total nitrogen and nitrogen present in recharge in connection with land use projects. The model was developed on the Microsoft Excel Spreadsheet (trademark of Microsoft Products) for IBM (trademark of International Business Machines, Inc.) or compatible Personal Computers capable of running Excel.

Nitrogen has been identified as a source of contamination primarily from sanitary discharge and lawn fertilization. Nitrogen is of concern as a drinking water contaminant, and there is an established health limit of 10 milligrams per liter (mg/l) in drinking water. Nitrogen is also of concern in surface water, as it is a nutrient that when present in high concentrations can cause algal blooms, resulting in biological oxygen demand as algae is biologically decomposed. Depleted oxygen in surface waters causes conditions unfavorable to fish species and can result in extremely undesirable aesthetic impacts, primarily related to odors. Accordingly, it is necessary to understand the concentration of nitrogen recharge as related to a proposed site development.

Utilizing a mass-balance concept, and applying known hydrologic facts and basic assumptions, it is possible to predict the concentration of nitrogen in recharge to the shallow aquifer underlying a given site. This prediction can in turn be used to determine impacts and significance of impacts in consideration of hydrogeologic factors. Similar techniques have been used to simulate nitrogen in recharge as published by the New York State Water Resources Institute, Center for Environmental Research at Cornell University, Ithaca, New York (**Hughes and Pacenka, 1985**). SONIR is intended to provide a more versatile model based upon the BURBS Mass-Balance concept. SONIR allows for use of the model to predict nitrogen impact from many sources including sewage treatment plants, and further allows for determination of a wider variety site recharge components under the hydrologic water budget section. SONIR has more versatility in the input of information, and also provides a printout of each step performed by the model, in order for regulatory agencies and review entities to understand how values are derived.

This text describes in detail the definition of terms, supported by referenced information regarding input of data for the simulation. The concept of determining the concentration of nitrogen in recharge involves a predication of the weight of nitrogen introduced to the site, as compared to the quantity of recharge resulting from precipitation and wastewater water discharge. Losses due to evapotranspiration and runoff must be accounted for in the simulation. The values and relationship associated with these parameters determines the quantity of recharge

that enters the site. The prediction is generally annualized due to the availability of average annual hydrologic data; however, data input can be determined on a seasonal basis if information is available.

The model includes four (4) data sheets identified as follows:

* Data Input Field - Sheet 1
* Site Recharge Computations - Sheet 2
* Site Nitrogen Budget - Sheet 3
* Nitrogen in Recharge Output Field - Sheet 4

All information required by the model is input in Sheet 1 - Data Input Field. Sheets 2 and 3 utilize data from Sheet 1 to compute the Site Recharge and the Site Nitrogen Budget. Sheet 4 utilizes the total values from Sheets 2 and 3 to perform the final Nitrogen in Recharge computations. Sheet 4 also includes tabulations of all conversion factors utilized in the model.

It should be noted that the simulation is only as accurate as the data which is input into the model. An understanding of hydrologic principles is necessary to determine and justify much of the data inputs used for water budget parameters. Further principles of environmental science and engineering are applied in determining nitrogen sources, application and discharge rates, degradation and losses, and final recharge. Users must apply caution in arriving at assumptions in order to ensure justifiable results.

SITE RECHARGE COMPUTATIONS

Overview

SONIR utilizes the basic hydrologic equation for determining the quantity of recharge anticipated by subtracting recharge losses from total precipitation. The quantity of recharge resulting from a given site is determined using the hydrologic budget equation **(Koszalka, 1984; p. 19):**

$$R = P - (E + Q)$$

where:
R = recharge
P = precipitation
E = evapotranspiration
Q = overland runoff

The quantity of recharge must be determined for each type of land use existing on a site, in order to determine the resultant site recharge. Surfaces commonly considered include: impervious surfaces; turfed areas; and natural areas; however, SONIR allows for a variety of land cover types to be considered in the model. In addition, site recharge occurs as a result of irrigation and wastewater discharge. In cases where water is imported to a site via a public water system, this

quantity of recharge must be considered as additional water recharged on site. SONIR allows for all of these recharge components to be included in the simulation. Many sites have fresh surface water in the form of lakes and ponds. Precipitation falls upon these surfaces; however, such features generally act as a mechanism for water loss as a result of evaporation. SONIR includes a Water Area Loss component in determining the site Hydrologic Water Budget and in computing recharge nitrogen.

Data Input - Sheet 1

The following provides a discussion of data sources and assumptions associated with the hydrologic water budget, corresponding to the Data Input Field in Sheet 1 of SONIR:

1. *Area of Site* - The total area of the site (in acres) that is capable of recharging precipitation is entered in this data cell. For sites that include tidal wetlands, the area that is inundated by tidal waters should be excluded, as recharge from these areas should not be considered in the context of nitrogen simulation. For sites that include surface water, the area can be included, provided evaporative water loss from surface water is considered by entering the acreage of surface water in Data Cell 15 noted below.

2. *Precipitation Rate* - Precipitation in the form of rainfall and snowmelt is determined using long-term recorded values from local weather stations. Cornell University maintains the Northeast Regional Climate Center, from which long-term precipitation data for Long Island weather stations is available. Monthly precipitation averages are published for the period 1951-1980 in Thornthwaite and Mather's Climatic Water Budget Method **(Snowden and Pacenka, 1985).** A tabulation of monthly and annual precipitation averages excerpted from this reference is included in the table cited for Evapotranspiration values. Data entry is in inches.

3. *Acreage of Lawn* - The total area of lawn (in acres) is entered in this Data Cell. This area includes all lawn area whether it is irrigated, fertilized or unmaintained. If there is no lawn area, a value of zero (0) is entered.

4. *Fraction of Land in Lawn* - No entry need be made in this Data Cell. SONIR will compute the Fraction of Land in Lawn by dividing the lawn area by total area.

5. *Evapotranspiration from Lawn* - Evapotranspiration is the natural water loss attributed to evaporation and plant utilization. Rainwater that is evaporated and transpired by plants is returned to the atmosphere as vapor. There are various methods for determining evapotranspiration, including direct measure and calculation. A commonly recognized method is the Thornthwaite and Mather Climatic Water Budget Method. Evapotranspiration rates for various locations on Long Island have been determined by the U.S. Geological Survey, as documented in: “Ground-Water-Recharge Rates in Nassau and Suffolk Counties, New York”

(Peterson, 1987; p. 10). The following general rates as a percent of total precipitation are excerpted from that reference:

Location	Soil Type	Vegetation	ET (in)	ET (%)
Bridgehampton	sandy loam	shallow root	21.2	46.6
	silt loam	shallow root	21.4	47.2
LaGuardia	sand	shallow root	24.2	52.9
	clay loam	shallow root	25.4	55.5
	sandy loam	moderate root	26.2	57.2
JFK Airport	sand	shallow root	22.5	53.8
	clay loam	shallow root	23.9	57.3
	sandy loam	moderate root	25.0	60.0
Mineola	sand	shallow root	22.4	47.8
	sand-silt	shallow root	23.8	51.0
	sandy loam	moderate root	25.1	53.7
	sandy loam	orchards	25.5	54.5
Patchogue	fine sand	mature forest	25.5	53.5
Riverhead	sandy loam	shallow root	22.4	49.3
		orchards	24.8	54.7
Setauket	sandy loam	mature forest	26.8	57.9
Upton	silt loam	deep root	23.9	48.4
	sandy loam	moderate root	23.0	46.5

6. *Runoff from Lawn* - Runoff is the quantity of water that travels overland during a precipitation event. Soil infiltration capacity is the critical factor in determining runoff; however, factors such as slope and vegetation also determine runoff characteristics to a lesser extent on Long Island because of soil conditions. Less urbanized areas of Long Island with characteristically dry soils with groundcover will have a low runoff percentage as a function of total precipitation, as compared to the more urbanized portions of western Long Island. Peterson **(1984; p. 14)** estimates runoff as a percent of total precipitation for Nassau County (2.1 percent); Suffolk County (0.7 percent), and Long Island in general (1.0 percent). If an average precipitation rate of 45 inches per year is assumed, runoff will vary from 0.31 to 0.94 inches. Lawn areas would be expected to be in the lower end of the range. Judgements of higher and lower runoff can be made on a site-specific basis depending upon slope and groundcover types.

7. *Acreage of Impervious* - The total area of impervious surface (in acres) is entered in this Data Cell. This area includes paved driveways, parking areas, roofs, roads, etc. If there are no impervious surfaces, a value of zero (0) is entered.

8. *Fraction of Land Impervious* - No entry need be made in this Data Cell. SONIR will compute the Fraction of Land in Impervious by dividing the impervious area by total area.

9. *Evaporation from Impervious* - Impervious surfaces will allow water to evaporate, particularly during summer months. There is no vegetation; therefore there is no transpiration by plants. Evaporation from Impervious is estimated to be approximately 10 percent of total precipitation **(Hughes and Porter, 1983; p. 10).** This value accounts for evaporation from parking lots and other surfaces during summer months, averaged over the entire year. This indicates that recharge/runoff would comprise the remaining 90 percent of precipitation. This assumption coincides with most drainage computations required by Code Subdivision Regulations for determined leaching pool capacity.

10. *Runoff from Impervious* - The approximation of Evaporation from Impervious would indicate that recharge/runoff would comprise the remaining 90 percent of precipitation, as there are no other losses from impervious surfaces. In consideration of paved areas, runoff is not transported off the site or to surface water as a loss. Runoff is diverted to leaching pools and allowed to re-enter the hydrologic system beneath a given site. Therefore, in terms of site recharge computations, the value for Runoff from Impervious is zero (0).

11. *Acreage of Unvegetated* - The total acreage of unvegetated area is entered in this Data Cell. This area includes sand, barren soils, and porous drives and trails. If there is no unvegetated area, a value of zero (0) is used.

12. *Fraction of Land Unvegetated* - No entry need be made in this Data Cell. SONIR will compute the Fraction of Land Unvegetated by dividing the unvegetated area by total area.

13. *Evapotranspiration from Unvegetated* - Evapotranspiration from Unvegetated areas is determined in the same manner as described for Data Cell 5 above.

14. *Runoff from Unvegetated* - The runoff coefficients noted in the discussion for Data Cell 6 above, are applied to unvegetated areas on a site-specific basis. Runoff in the middle to the higher end of the range (0.7 to 2.1 percent of precipitation) is expected due to lack of groundcover vegetation.

15. *Acreage of Water* - SONIR considers evaporation from surface water in the computation of site recharge. Surface water, particularly groundwater fed lakes and ponds are a source of water loss in the water budget. The quantity of fresh surface water (in acres) is entered in this Data Cell.

16. *Fraction of Land in Water* - No entry need be made in this Data Cell. SONIR will compute the Fraction of Water on the site by dividing the water area by total area.

17. *Evaporation from Water* - Surface water features will cause evaporation of water in excess of normal evapotranspiration as documented by **Warren et al, 1968,** Hydrology of Brookhaven National Laboratory and Vicinity Suffolk County, New York. It is estimated that the upper limit of evaporation from a large free-water surface is

approximately 30.00 inches per year **(Warren et al, 1968; p. 26).** This value is entered in Data Cell 17 as the most accurate approximation.

18. *Makeup Water* - SONIR allows for consideration of the impact of man-made lakes on site recharge. Lakes are generally lined with an impermeable material. Evaporation occurs from the surface of the lake at a rate of 30.00 inches per year. In order to maintain a constant water level, an on-site well is generally installed to provide make-up water to the lake or pond. The quantity of make-up water is equivalent to the quantity of evaporation, given the fact that the function of the well is to replace water that is evaporated. Therefore, for cases where make-up water is used to maintain a constant water level, a value of 30.00 inches per year is entered in Data Cell 18.

19. *Acreage of Natural* - The total quantity of natural area (in acres) is entered in this Data Cell. This area includes naturally vegetated areas such as woodland, meadow, etc. If there is no natural area, a value of zero (0) is entered.

20. *Fraction of Land Natural* - No entry need be made in this Data Cell. SONIR will compute the Fraction of Land Natural by dividing the natural area by total area.

21. *Evapotranspiration from Natural* - Evapotranspiration from Natural areas is determined in the same manner as described for Data Cell 5 above.

22. *Runoff from Natural* - The runoff coefficients noted in the discussion for Data Cell 6 above, are applied to natural areas on a site specific basis. Generally lower values in the range of 0.7 percent of precipitation are expected due to groundcover and canopy vegetation.

23. *Acreage of Other Area* - This is a general category which can be used to include additional groundcover types in the simulation. Acreage of Other Area is entered (in acres). This Data Cell can be used to include site recharge considerations from a portion of the site that has different hydrologic properties, such as a moist hardwood forest or vegetated freshwater wetland, where evapotranspiration would be high and runoff would be extremely low.

24. *Fraction of Land in Other Area* - No entry need be made in this Data Cell. SONIR will compute the Fraction of Land in Other Area by dividing the land in other area by total area.

25. *Evapotranspiration from Other Area* - Evapotranspiration from Other areas is determined in the same manner as described for Data Cell 5 above. Value can be varied depending upon the hydrologic properties of the groundcover type.

26. *Runoff from Other Area* - The runoff coefficients noted in the discussion for Data Cell 6 above, are applied to Other Areas on a site-specific basis. Value can be varied depending upon the hydrologic properties of the groundcover type.

27. *Acreage of Land Irrigated* - Imported water for irrigation purposes is an additional site recharge component not considered in any of the Data Cells above. The quantity of land irrigated on a given site is entered in this Data Cell (in acres).

28. *Fraction of Land Irrigated* - No entry need be made in this Data Cell. SONIR will compute the Fraction of Land Irrigated by dividing the Land Irrigated area by total area.

29. *Irrigation Rate* - The rate of irrigation must be entered in this Data Cell (in inches). Hughes and Porter **(1983; p. 19)** have indicated that lawn irrigation is estimated to be about 5.5 inches per year. This value is entered in Data Cell 29 as the most accurate approximation.

30. *Number of Dwellings* - The number of dwellings is entered in this Data Cell in order to allow for computation of wastewater disposal from residential use. Wastewater imported to a site, or even withdrawn from on-site wells and recharged through sanitary effluent is an additional recharge component that must be considered. If the project is for a commercial use or utilizes a denitrification system, the number of dwellings should not be entered in the Data Entry Field, as the wastewater flow will include recharge and nitrogen components.

31. *Water Use per Dwelling* - The water use should correspond to the total site non-irrigation water use, divided by the number of units.

32. *Wastewater Design Flow* - No entry need be made in this Data Cell. SONIR will compute the Wastewater Design Flow by multiplying the Number of Dwellings by the Water Use per Dwelling.

33. *Commercial/STP Design Flow* - SONIR permits the consideration of recharge from commercial projects, denitrification systems and sewage treatment plants. The Commercial/STP Design Flow is entered in this Data Cell as per County Health Department or engineering design standards.

Site Recharge Computations - Sheet 2

Once data entry is complete for Site Recharge Parameters, SONIR will complete a series of detailed Water Budget computations for the overall site. The following describes the computations that are performed by the model:

A. *Lawn Area Recharge* - Lawn Area Recharge is determined by use of the basic Hydrologic Budget Equation [R = P - (E + Q)] as defined previously. The quantity of recharge determined by this method is then multiplied by that portion of the site occupied by Lawn Area to determine the component of Lawn Area Recharge in overall site recharge.

B. *Impervious Area Recharge* - Impervious area recharge is also determined using the Hydrologic Budget Equation; however, the value for runoff is zero (0) due to the fact that runoff is controlled by conveyance to on site leaching facilities or is allowed to runoff into depressions where runoff is recharged on site.

C. *Unvegetated Area Recharge* - Unvegetated Area Recharge is determined by use of the basic Hydrologic Budget Equation. The quantity of recharge determined by this method is then multiplied by that portion of the site occupied by Unvegetated Area to determine the component of Unvegetated Area Recharge in overall site recharge.

D. *Water Area Loss* - The Hydrologic Budget Equation is modified to consider Water Area Loss. This is particularly useful in water quantity stressed areas of Long Island. If runoff (Q) is considered be zero (0), then lake storage/recharge without make-up water would be Precipitation minus Evaporation (P - E). The resultant quantity of lake storage/recharge is then reduced by the amount of make-up water (M). The final quantity of loss is then multiplied by that portion of the site occupied by water to determine the component of water loss as related to the overall site water budget.

E. *Natural Area Recharge* - Natural Area Recharge is determined by use of the basic Hydrologic Budget Equation. The quantity of recharge determined by this method is then multiplied by that portion of the site occupied by Natural Area to determine the component of Natural Area Recharge in overall site recharge.

F. *Other Area Recharge* - Other Area Recharge is determined by use of the basic Hydrologic Budget Equation. The quantity of recharge determined by this method is then multiplied by that portion of the site occupied by Other Area to determine the component of Other Area Recharge in overall site recharge.

G. *Irrigation Recharge* - Irrigation recharge is an additional recharge component artificially added on sites where irrigation occurs. This quantity is determined in the same manner as the Hydrologic Water Budget except that the irrigation rate (in inches) is substituted for precipitation. The resultant recharge is multiplied by the area of the site that is irrigated, in order to determine the Irrigation Recharge in overall site recharge.

H. *Wastewater Recharge* - Wastewater is also a recharge component artificially added to a site. SONIR annualizes the wastewater design flow and assumes it is applied over the entire by multiplying Wastewater Design Flow by the Area of the Site, resulting in a per foot measure of wastewater over the site. This is converted to inches to be included in overall site recharge.

Once the eight (8) series of Site Recharge Computations are complete, SONIR totals each individual component to determine Total Site Recharge. The sum of these recharge contributions, is that quantity of water that is expected to enter the site on an annual basis due to

precipitation, after the development is completed. This value is important in determining the concentration of nitrogen in recharge, and is important as a means of determining hydrologic impacts of a project in terms of changes to site recharge.

SITE NITROGEN BUDGET

Overview

The total nitrogen released on a given site must be determined in order to provide a means of simulating nitrogen in recharge. Nitrogen sources include: sanitary nitrogen; fertilizer nitrogen; pet waste nitrogen; precipitation nitrogen; and water supply nitrogen (wastewater and irrigation). The total of these quantities represents total site nitrogen.

Data Input - Sheet 1

The following provides a discussion of data sources and assumptions associated with the nitrogen budget, corresponding to the Data Input Field in Sheet 1 of SONIR:

1. *Persons per Dwelling* - The number of persons per dwelling is a demographic multiplier used in the determination of human population of a site. Based on multipliers listed in "The New Practitioner's Guide to Fiscal Impact Analysis", (**Rutgers, 1985**), the average number of residents is calculated at 0.00/unit (Existing Conditions), and will be 4.1/unit (Proposed Conditions).

2. *Nitrogen per Person per Year* - Annual nitrogen per person is a function of nitrogen bearing waste in wastewater. For residential land use the population of the development is determined and the nitrogen generated is assumed to be 10 pounds per capita per year **(Hughes and Porter, 1983; p. 8).**

3. *Sanitary Nitrogen Leaching Rate* - For normal residential systems, Porter and Hughes report that 50 percent of the nitrogen entering the system is converted to gaseous nitrogen and the remainder leaches into the soil **(Porter and Hughes, 1983; p. 14).**

4. *Area of Land Fertilized 1* - The area of land fertilized is input in Data Cell 4. This value may correspond to the Acreage of Lawn and/or the Acreage of Land Irrigated, but is not necessarily the same value. This entry should be determined on a site-specific basis.

5. *Fertilizer Application Rate 1* - Fertilizer nitrogen is determined by a fertilizer application rate over a specified area of the site. The fertilizer application rates vary depending upon the type of use. The following table indicates the rate of fertilization as a function of use as excerpted from the Non-Point Source Management Handbook **(Koppelman, 1984; Chapter 5, p.6):**

Residential (contract)	1.5 lbs/1000 sq ft

Residential (unmanaged)	2.3 lbs/1000 sq ft
Commercial	3.5 lbs/1000 sq ft
Golf Course	3.5 lbs/1000 sq ft
Sod Farms	4.0 lbs/1000 sq ft
Recreational Lands	0.2 lbs/1000 sq ft

A commercial landscaping firm has been interviewed to determine trends in commercial fertilizer application. Various fertilizer formulations are used including 10-6-4, 16-4-8 and 20-10-5 (nitrogen-phosphate-potash) depending upon season. Heavier nitrogen application rates are generally used in the spring. Fertilizer used is 50 percent organic nitrogen. This is applied in a dry form approximately 2-3 times per year, and a 50-pound bag is applied over approximately 16,000 square feet. Based on this rate if 20- 10-5 nitrogen were applied in the spring, and 16-4-8 were applied during summer and fall, this would result in an application rate of 1.5-2.1 pounds per 1000 square feet. The high of this range is a conservative value based on three applications of relatively high nitrogen fertilizer, which will be used for nitrogen in recharge simulation.

In addition, it is noted that the Non-Point Source Management Handbook indicates that application rates as low as 1.0 lb/1000 sq ft can be achieved with proper fertilizer management control.

6. *Fertilizer Nitrogen Leaching Rate 1* - Nitrogen applied as fertilizer is subject to plant uptake (20 to 80%; 50% on average) and storage in thatch and soils (36 to 47%), thereby reducing the total amount of nitrogen leached. The percentage of plant uptake and storage are based on studies cited in the LIRPB's Special Groundwater Protection Area Plan. Based on those studies, a conservative nitrogen leaching rate of 14% has been applied in the model.

7. *Area of Land Fertilized 2* - More than one fertilizer nitrogen input is provided in order allow consideration of mixed use and/or golf course projects where land is fertilized at different rates.

8. *Fertilizer Application Rate 2* - Fertilizer Application Rates for this entry can be determined based upon Data Cell 5 above.

9. *Fertilizer Nitrogen Leaching Rate 2* - Fertilizer Nitrogen Leaching Rates can be determined based upon Data Cell 6 above.

10. *Pet Waste Application Rate* - Pet Waste Nitrogen results from the excretion of domestic pets in the outside environment. There is relatively little definitive information concerning this nitrogen source; however, several references were located and are analyzed herein. The 208 Study provides a table of nitrogen concentration in manure for various animals, not including dogs or cats. Total nitrogen values in the range of 0.30-0.43 lbs/day/1000 lbs live weight are reported for cattle, sheep and horses **(Koppelman, 1978; Animal Waste report p. 3).** It is assumed that dogs constitute the major source

of animal waste that would be present in the yards of residential developments. Cat waste would be significantly less due to the lesser live weight of cats and the fact that many cat owners dispose of cat waste in solid waste by using an indoor litter box. If an average of 0.35 lbs of nitrogen is assumed for dogs, and an average of 25 pounds live weight is assumed per dog, then the total annual nitrogen per pet would be 3.19 lbs/year. The only other reference located that approximates nitrogen in pet waste is Land Use and Ground-Water Quality in the Pine Barrens of Southampton **(Hughes and Porter, 1983; p. 10).** This reference assumed an application rate of 6.5 lbs/acre of nitrogen. Pet waste was assumed to be deposited evenly over all turf. This assumption was not correlated to population density or pet density, but only to turfed acreage. In comparison of the two values, the per pet value corresponds to approximately 2 turfed acres. For the purpose of this model, the value of 3.19 lbs/pet/year is considered to be the most justifiable value for pet waste and is entered in this Data Cell.

11. *Pet Waste Nitrogen Leaching Rate* - Pet waste is also subject to a leaching rate factor whereby, 50 percent of the nitrogen applied to the ground is removed as a gas.

12. *Area of Land Irrigated* - No entry need be made in this Data Cell. This value is the same as Data Cell 27 of the Site Recharge Parameters and SONIR will transfer the data entry to this Cell.

13. *Irrigation Rate* - No entry need be made in this Data Cell. This value is the same as Data Cell 29 of the Site Recharge Parameters and SONIR will transfer the data entry to this Cell.

14. *Irrigation Nitrogen Leaching Rate* - Hughes and Porter **(1983; p. 10)** states "plant uptake and gaseous losses are assumed to remove 85% of the nitrogen entering in precipitation". Irrigation nitrogen would be expected to be subject to the same losses; therefore, a leaching rate of 15% is entered in this Data Cell.

15 *Nitrogen in Precipitation* - Groundwater nitrogen is partially derived from rainwater. Nitrate-nitrogen concentrations in precipitation have been reported to be on the order of 1-2 mg/l in Nassau and Suffolk Counties **(SCDHS, 1987; p. 6-4).**

16. *Precipitation Nitrogen Leaching Rate* - As indicated above, a nitrogen leaching rate of 15% is applied to precipitation nitrogen.

17. *Nitrogen in Water Supply* - The concentration of Nitrogen in Water Supply determines the quantity of nitrogen that enters the site as a result of irrigation nitrogen and wastewater flow. Local water supply data should be utilized if available, otherwise a value of between 1 and 2 mg/l could be utilized.

18. *Nitrogen in Commercial/STP Flow* - This data entry allows SONIR to compute the quantity of nitrogen resulting from commercial discharge, denitrification systems and/or

sewage treatment plants. Total nitrogen in community wastewater is identified as having a total nitrogen concentration of 20 mg/l in weak effluent; 40 mg/l in medium strength effluent, and 85 mg/l in strong effluent **(Metcalf & Eddy, Inc, 1991).** It is recommended that a value of 40 mg/l be used for total nitrogen concentration in commercial sanitary systems. Properly functioning denitrification systems and sewage treatment plants are capable of reducing total nitrogen to less than 10 mg/l in accordance with discharge limitations. A value of 10 mg/l can be entered in this data cell for such systems. The SONIR model computes the number of pounds of nitrogen in sanitary discharge as a function of concentration. The absolute nitrogen is utilized in the model; however, it must recognized that from the discharge point, nitrogen is nitrified through conversion of ammonia to nitrate in the leaching area beneath the discharge point. Further natural transformation in the form of denitrification occurs as a result of bacteria. This causes release of nitrogen gas and may account for further reduction of 50 percent or more subsequent to discharge **(Canter and Knox, 1979; pp. 77-78; Hughes and Porter, 1983; p. 14).** As a result SONIR is conservative in predicting the concentration of nitrogen in recharge, and when natural denitrification of sanitary effluent is considered, actual concentration would be less.

Site Nitrogen Budget - Sheet 2

Once data entry is complete for Nitrogen Budget Parameters, SONIR will complete a series of detailed computations to determine the individual component of nitrogen from each source and the total nitrogen for the overall site and use. The following describes the computations that are performed by the model:

A. *Sanitary Nitrogen - Residential* - SONIR establishes the site population using the number of units on the site, and the demographic multiplier. The nitrogen load factor is then applied and reduced by the leaching rate, resulting in the total residential nitrogen component. If the project is for a commercial use or utilizes a denitrification system, the number of dwellings should not be entered in the Data Entry Field, in which case the total nitrogen from this source will be zero (0).

B. *Pet Waste Nitrogen* - The pet waste nitrogen was determined on a per pet basis; however, the number of pets for a given residential project must be determined. In order to correlate the number of pets to human population, a ratio was determined using information contained in the 208 Study, wherein it was estimated that there is 1 dog per 5 residents in suburban areas and 1 dog per 7 residents in urban areas **(Koppelman, 1978; Animal Waste Report, pp. 6).** This results in an average number of dogs based upon of 17 percent of the human population. Accordingly, this multiplier is used based upon the population of a land use project in order to estimate the nitrogen waste from pets. The pet waste nitrogen is subject to reduction as a function of the leaching rate, leading to the total pet waste nitrogen in pounds.

C. *Sanitary Nitrogen (Commercial/STP)* - SONIR utilizes the Commercial/STP Flow that is converted to liters and multiplied by the nitrogen concentration in waste.

This provides a weight of nitrogen in milligrams, which is converted to pounds for the total nitrogen from this component.

D. *Water Supply Nitrogen* - SONIR utilizes the residential wastewater design flow to compute the weight of nitrogen contributed from the water supply. The method of calculation is the same as Sanitary Nitrogen (Commercial/STP). For commercial projects, this value is accounted for in the Commercial/STP Flow.

E. *Fertilizer Nitrogen 1* - This calculation utilizes data entry from the Area of Land Fertilized 1, in the Data Input Field, to determine the weight of fertilizer nitrogen applied to the area. The area is multiplied by the application rate and reduced by the leaching rate documented previously to arrive at total weight.

F. *Fertilizer Nitrogen 2* - If fertilization rates vary, the Area of Land Fertilized 2, is utilized to determine nitrogen from this source.

G. *Precipitation Nitrogen* - Nitrogen in precipitation is considered by determining the liters of Natural Recharge entering the site, multiplied by the concentration of nitrogen in precipitation. SONIR uses the sum of natural recharge components from the Site Recharge Computations to establish the natural recharge. A precipitation nitrogen leaching rate of 15% is utilized as referenced above.

H. *Irrigation Nitrogen* - Although a very small component, the Irrigation Nitrogen is determined using the Irrigation Recharge R(irr) computed in the Site Recharge Computations, over the irrigated area of the site to produce a volume of irrigation recharge. The Irrigation Recharge value is used in order to account for reduction of recharge due to evapotranspiration, since this component is only intended to determine nitrogen leaching into soil as a result of irrigation nitrogen in the water supply. This value is converted to liters and multiplied by the concentration of nitrogen in irrigation water supply. The Irrigation Nitrogen Leaching Rate (expected to the same as for precipitation) is applied to the weight to determine the total nitrogen from this source.

Once the eight (8) series of Site Nitrogen Budget computations are complete, SONIR totals each individual component to determine the Total Site Nitrogen. This value is used in determining the weight per volume ratio of nitrogen in recharge as computed in Sheet 4 of the SONIR model.

FINAL COMPUTATIONS AND SUMMARY

SONIR utilizes data generated in Sheets 2 and 3 of the model to compute a mass/volume ratio for nitrogen in recharge. Nitrogen in recharge is converted from pounds to milligrams in order to provide units compatible for mass/volume concentration. Likewise, the quantity of site recharge is applied over the site in order to determine an overall volume number for site

recharge. This is then converted to liters. The final computation divides the total weight of nitrogen in milligrams, by the total volume of recharge in liters, to arrive at the Nitrogen in Recharge ratio in milligrams per liter (mg/l). This concentration represents the Final Concentration of Nitrogen in Recharge, which is highlighted on Sheet 4.

Sheet 4 also provides a site recharge summary in order to compare recharge between natural conditions, a proposed project and/or alternatives. Total Site Recharge is presented in both inches, and as a volume in cubic feet/year, gallons/year and million gallons/year (MGY).

The final field summarizes the Conversions Used in SONIR. Conversions are standard conversion multipliers as found in standard engineering references.

SONIR is a valuable tool allowing for versatile determination of site recharge as determined from many components of site recharge. SONIR determines the weight of nitrogen applied to a site from a variety of sources as well. SONIR is a fully referenced model utilizing basic hydrologic and engineering principals, in a simulation of nitrogen in recharge. Input data should be carefully justified in order to achieve best results. SONIR can be used effectively in comparing land use alternatives and relative impact upon groundwater due to nitrogen. By running the model for Existing Conditions, Proposed Project conditions and/or alternative land uses comparison of impacts can be made for consideration in land use decision-making. Questions, comments or suggestions concerning this model should be addressed to Nelson, Pope & Voorhis, LLC, 572 Walt Whitman Road, Melville, New York 11747.

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

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SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT **The Uplands at St. Johnland**

DATA INPUT FIELD **Existing Conditions/Alt. 1** **SHEET 1**

A	*Site Recharge Parameters*	*Value*	*Units*
1	Area of Site	54.69	acres
2	Precipitation Rate	42.82	inches
3	Acreage of Lawn	0.10	acres
4	Fraction of Land in Lawn	0.002	fraction
5	Evapotranspiration from Lawn	24.20	inches
6	Runoff from Lawn	0.30	inches
7	Acreage of Impervious	0.36	acres
8	Fraction of Land Impervious	0.007	fraction
9	Evaporation from Impervious	4.28	inches
10	Runoff from Impervious	0.00	inches
11	Acreage of Unvegetated	0.00	acres
12	Fraction of Land Unvegetated	0.000	fraction
13	Evapotrans. from Unvegetated	24.20	inches
14	Runoff from Unvegetated	0.30	inches
15	Acreage of Water	0.78	acres
16	Fraction of Site in Water	0.014	fraction
17	Evaporation from Water	30.00	inches
18	Makeup Water (if applicable)	0.00	inches
19	Acreage of Natural Area	53.45	acres
20	Fraction of Land Natural	0.977	fraction
21	Evapotrans. from Natural Area	24.20	inches
22	Runoff from Natural Area	0.30	inches
23	Acreage of Other Area	0.00	acres
24	Fraction of Land Other Area	0.000	fraction
25	Evapotrans. from Other Area	0.00	inches
26	Runoff from Other Area	0.30	inches
27	Acreage of Land Irrigated	0.00	acres
28	Fraction of Land Irrigated	0.000	fraction
29	Irrigation Rate	5.50	inches
30	Number of Dwellings	0	units
31	Water Use per Dwelling	0	gal/day
32	Wastewater Design Flow	0	gal/day
33	Commercial /STP Design Flow	0	gal/day

B	*Nitrogen Budget Parameters*	*Value*	*Units*
1	Persons per Dwelling	0.00	persons
2	Nitrogen per Person per Year	10.0	lbs
3	a. Sanitary Nitrogen Leaching Rate	50%	percent
3	b. Sanitary Nitrogen Leaching Rate	0%	percent
4	Area of Land Fertilized 1	0.00	acres
5	Fertilizer Application Rate 1	2.30	lbs/1000 sq ft
6	Fertilizer Nitrogen Leaching Rate 1	14%	percent
7	Area of Land Fertilized 2	0.00	acres
8	Fertilizer Application Rate 2	0.00	lbs/1000 sq ft
9	Fertilizer Nitrogen Leaching Rate 2	0%	percent
10	Pet Waste Application Rate	3.19	lbs/pet
11	Pet Waste Nitrogen Leaching Rate	50%	percent
12	Area of Land Irrigated	0.00	acres
13	Irrigation Rate	5.50	inches
14	Irrigation Nitrogen Leaching Rate	15%	percent
15	Nitrogen in Precipitation	1.00	mg/l
16	Precipitation Nitrogen Leaching Rate	15%	percent
17	Nitrogen in Water Supply	5.94	mg/l
18	Nitrogen in Commercial/STP Flow	50.00	mg/l

C	*Comments*
1)	Please refer to user manual for data input instructions.

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE RECHARGE COMPUTATIONS — **Existing Conditions/Alt. 1** — **SHEET 2**

A	*Lawn Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Lawn	0.002	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(l) = P - (E + Q)	18.32	inches
6	R(L) = R(l) x A	0.03	inches

B	*Impervious Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Impervious	0.007	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	4.28	inches
4	Q = Runoff Rate	0.00	inches
5	R(i) = P - (E + Q)	38.54	inches
6	R(I) = R(i) x A	0.25	inches

C	*Unvegetated Area Recharge*		
1	A = Fraction of Land Unveg.	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.30	inches
4	Q = Runoff Rate	0.78	inches
5	R(u) = P - (E + Q)	41.74	inches
6	R(U) = R(u) x A	0.00	inches

D	*Water Area Loss*		
1	A = Fraction of Site in Water	0.014	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evaporation Rate	30.00	inches
4	Q = Runoff Rate	0.00	inches
5	M = Makeup Water	0.00	inches
6	R(w) = {P - (E+Q)} - M	12.82	inches
7	R(W) = R(w) x A	0.18	inches

E	*Natural Area Recharge*		
1	A = Fraction of Land in Natural	0.977	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(n) = P - (E + Q)	18.32	inches
6	R(N) = R(n) x A	17.90	inches

F	*Other Area Recharge*		
1	A = Fraction of Land in Other	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.00	inches
4	Q = Runoff Rate	0.30	inches
5	R(o) = P - (E + Q)	42.52	inches
6	R(O) = R(o) x A	0.00	inches

G	*Irrigation Recharge*		
1	A = Fraction of Land Irrigated	0.000	fraction
2	I = Irrigation Rate	5.50	inches
3	E = Evaptranspiration Rate	3.11	inches
4	Q = Runoff Rate	0.30	inches
5	R(irr) = I - (E + Q)	2.09	inches
6	R(IRR) = R(irr) x A	0.00	inches

H	*Wastewater Recharge*		
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	cu ft/yr
3	A = Area of Site	2,382,296	sq ft
4	R(ww) = WDF/A	0.00	feet
5	R(WW) = Wastewater Recharge	0.00	inches

Total Site Recharge		
R(T) =	R(L) + R(I) + R(U) + R(W) + R(N) + R(O) + R(IRR) + R(WW)	
R(T) =	**18.37**	**inches**

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE NITROGEN BUDGET — Existing Conditions/Alt. 1 — **SHEET 3**

A	*Sanitary Nitrogen-Residential*	*Value*	*Units*
1	Number of Dwellings	0	units
2	Persons per Dwelling	0.00	capita
3	P = Population	0.00	capita
4	N = Nitrogen per person	10	lbs
5	LR = Leaching Rate	50%	percent
6	N(S) = P x N x LR	0.00	lbs
7	N(S) = Sanitary Nitrogen	0.00	lbs

B	*Pet Waste Nitrogen*	*Value*	*Units*
1	AR = Application Rate	3.19	lbs/pet
2	Human Population	0	capita
3	Pets = 17 percent of capita	0	pets
4	N(p) = AR x pets	0.00	lbs
5	LR = Leaching Rate	50%	percent
6	N(P) = N(p) x LR	0.00	lbs
7	N(P) = Pet Waste Nitrogen	0.00	lbs

C	*Sanitary Nitrogen (Commercial/STP)*		
1	CF = Commercial/STP Flow	0	gal/day
2	CF = Commercial/STP Flow	0	liters/yr
3	N = Nitrogen in Commercial	50.00	mg/l
4	LR = Leaching Rate	50%	percent
5	N(S) = CF x N x LR	0	milligrams
6	N(S) = Sanitary Nitrogen	0.00	lbs

D	*Water Supply Nitrogen (other than wastewater, if applicable)*		
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	liters/yr
3	N = Nitrogen in Water Supply	5.94	mg/l
4	N(WW) = WDF x N	0	milligrams
5	N(WW) = Wastewater Nitrogen	0.00	lbs

E	*Fertilizer Nitrogen 1*		
1	A = Area of Land Fertilized 1	0	sq ft
2	AR = Application Rate	2.30	lbs/1000 sf
3	LR = Leaching Rate	14%	percent
4	N(F1) = A x AR x LR	0.00	lbs
5	N(F1) = Fertilizer Nitrogen	0.00	lbs

F	*Fertilizer Nitrogen 2*		
1	A = Area of Land Fertilized 2	0	sq ft
2	AR = Application Rate	0.00	lbs/1000 sf
3	LR = Leaching Rate	0%	percent
4	N(F2) = A x AR x LR	0.00	lbs
5	N(F2) = Fertilizer Nitrogen	0.00	lbs

G	*Precipitation Nitrogen*		
1	R(n) = Natural Recharge (feet)	1.53	feet
2	A = Area of Site (sq ft)	2,382,296	sq ft
3	R(N) = R(n) x A	3,647,874	cu ft
4	R(N) = Natural Recharge (liters)	103,307,787	liters
5	N = Nitrogen in Precipitation	1.00	mg/l
6	LR = Leaching Rate	15%	percent
7	N(ppt) = R(N) x N x LR	1,033,078	milligrams
8	N(ppt) = Precipitation Nitrogen	2.28	lbs

H	*Irrigation Nitrogen*		
1	R = Irrigation Recharge (inches)	2.09	inches
2	R = Irrigation Rate (feet)	0.17	feet
3	A = Area of Land Irrigated	0	sq ft
4	R(I) = R(irr) x A	0	cu ft
5	R(I) = Site Precipitation (liters)	0	liters
6	N = Nitrogen in Water Supply	5.94	mg/l
7	LR = Leaching Rate	15%	percent
8	N(irr) = R(I) x N x LR	0	milligrams
9	N(irr) = Irrigation Nitrogen	0.00	lbs

Total Site Nitrogen	
N=	N(S) + N(P) + N(WW) + N(F1) + N(F2) + N(ppt) + N(irr)
N=	**2.28** lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

The Uplands at St. Johnlanc
Existing Conditions/Alt. 1

FINAL COMPUTATIONS **SHEET 4**

A	*Nitrogen in Recharge*	*Value*	*Units*
1	N = Total Nitrogen (lbs)	2.28	lbs
2	N = Total Nitrogen (milligrams)	1,034,183	milligrams
3	R(T) = Total Recharge (inches)	18.37	inches
4	R(T) = Total Recharge (feet)	1.53	feet
5	A = Area of Site	2,382,296	sq ft
6	R = R(T) x A	3,647,874	cu ft
7	R = Site Recharge Volume	103,307,787	liters
9	NR = N/R	0.01	mg/l

FINAL CONCENTRATION OF NITROGEN IN RECHARGE

0.01

B	*Site Recharge Summary*	*Value*	*Units*
1	R(T) = Total Site Recharge	18.37	inches/yr
2	R = Site Recharge Volume	3,647,874	cu ft/yr
3	R = Site Recharge Volume	27,287,993	gal/yr
4	R = Site Recharge Volume	27.29	MG/yr

Conversions used in SONIR
Acres x 43,560 = Square Feet
Cubic Feet x 7.48052 = Gallons
Cubic Feet x 28.32 = Liters
Days x 365 = Years
Feet x 12 = Inches
Gallons x 0.1337 = Cubic Feet
Gallons x 3.785 = Liters
Grams / 1,000 = Milligrams
Grams x 0.002205 = Pounds
Milligrams / 1,000 = Grams

APPENDIX J-3

Proposed Project

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT **The Uplands at St. Johnland**

DATA INPUT FIELD **Proposed Project** **SHEET 1**

A	*Site Recharge Parameters*	*Value*	*Units*
1	Area of Site	54.69	acres
2	Precipitation Rate	42.82	inches
3	Acreage of Lawn	14.04	acres
4	Fraction of Land in Lawn	0.257	fraction
5	Evapotranspiration from Lawn	24.20	inches
6	Runoff from Lawn	0.30	inches
7	Acreage of Impervious	9.53	acres
8	Fraction of Land Impervious	0.174	fraction
9	Evaporation from Impervious	4.28	inches
10	Runoff from Impervious	0.00	inches
11	Acreage of Unvegetated	0.00	acres
12	Fraction of Land Unvegetated	0.000	fraction
13	Evapotrans. from Unvegetated	24.20	inches
14	Runoff from Unvegetated	0.30	inches
15	Acreage of Water	0.78	acres
16	Fraction of Site in Water	0.014	fraction
17	Evaporation from Water	30.00	inches
18	Makeup Water (if applicable)	0.00	inches
19	Acreage of Natural Area	30.34	acres
20	Fraction of Land Natural	0.555	fraction
21	Evapotrans. from Natural Area	24.20	inches
22	Runoff from Natural Area	0.30	inches
23	Acreage of Other Area	0.00	acres
24	Fraction of Land Other Area	0.000	fraction
25	Evapotrans. from Other Area	0.00	inches
26	Runoff from Other Area	0.30	inches
27	Acreage of Land Irrigated	9.04	acres
28	Fraction of Land Irrigated	0.165	fraction
29	Irrigation Rate	5.50	inches
30	Number of Dwellings	0	units
31	Water Use per Dwelling	0	gal/day
32	Wastewater Design Flow	0	gal/day
33	Commercial /STP Design Flow	37,820	gal/day

B	*Nitrogen Budget Parameters*	*Value*	*Units*
1	Persons per Dwelling	0.00	persons
2	Nitrogen per Person per Year	10.0	lbs
3	a. Sanitary Nitrogen Leaching Rate	50%	percent
3	b. Sanitary Nitrogen Leaching Rate	100%	percent
4	Area of Land Fertilized 1	9.04	acres
5	Fertilizer Application Rate 1	2.30	lbs/1000 sq ft
6	Fertilizer Nitrogen Leaching Rate 1	14%	percent
7	Area of Land Fertilized 2	0.00	acres
8	Fertilizer Application Rate 2	0.00	lbs/1000 sq ft
9	Fertilizer Nitrogen Leaching Rate 2	0%	percent
10	Pet Waste Application Rate	3.19	lbs/pet
11	Pet Waste Nitrogen Leaching Rate	50%	percent
12	Area of Land Irrigated	9.04	acres
13	Irrigation Rate	5.50	inches
14	Irrigation Nitrogen Leaching Rate	15%	percent
15	Nitrogen in Precipitation	1.00	mg/l
16	Precipitation Nitrogen Leaching Rate	15%	percent
17	Nitrogen in Water Supply	5.94	mg/l
18	Nitrogen in Commercial/STP Flow	10.00	mg/l

C	*Comments*
1)	Please refer to user manual for data input instructions.
2)	Sanitary Nitrogen Leaching Rate 3.a.) is for conventional systems and 3.b.) is for commercial or STP which may vary from 90 to 100 percent leaching rates. 100 percent is used as a conservative value.
3)	Wastewater to be conveyed to the Kings Park STP which in turn will pump effluent to the ±5-acre St. Johnland parcel for groundwater recharge; increased effluent from Proposed Project is considered in this analysis.

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE RECHARGE COMPUTATIONS — **Proposed Project** — **SHEET 2**

A	*Lawn Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Lawn	0.257	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(l) = P - (E + Q)	18.32	inches
6	R(L) = R(l) x A	4.70	inches

B	*Impervious Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Impervious	0.174	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	4.28	inches
4	Q = Runoff Rate	0.00	inches
5	R(i) = P - (E + Q)	38.54	inches
6	R(I) = R(i) x A	6.72	inches

C	*Unvegetated Area Recharge*		
1	A = Fraction of Land Unveg.	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.30	inches
4	Q = Runoff Rate	0.78	inches
5	R(u) = P - (E + Q)	41.74	inches
6	R(U) = R(u) x A	0.00	inches

D	*Water Area Loss*		
1	A = Fraction of Site in Water	0.014	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evaporation Rate	30.00	inches
4	Q = Runoff Rate	0.00	inches
5	M = Makeup Water	0.00	inches
6	R(w) = {P - (E+Q)} - M	12.82	inches
7	R(W) = R(w) x A	0.18	inches

E	*Natural Area Recharge*		
1	A = Fraction of Land in Natural	0.555	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(n) = P - (E + Q)	18.32	inches
6	R(N) = R(n) x A	10.16	inches

F	*Other Area Recharge*		
1	A = Fraction of Land in Other	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.00	inches
4	Q = Runoff Rate	0.30	inches
5	R(o) = P - (E + Q)	42.52	inches
6	R(O) = R(o) x A	0.00	inches

G	*Irrigation Recharge*		
1	A = Fraction of Land Irrigated	0.165	fraction
2	I = Irrigation Rate	5.50	inches
3	E = Evaptranspiration Rate	3.11	inches
4	Q = Runoff Rate	0.30	inches
5	R(irr) = I - (E + Q)	2.09	inches
6	R(IRR) = R(irr) x A	0.35	inches

H	*Wastewater Recharge*		
1	WDF = Wastewater Design Flow	37,820	gal/day
2	WDF = Wastewater Design Flow	1,845,635	cu ft/yr
3	A = Area of Site	2,382,296	sq ft
4	R(ww) = WDF/A	0.77	feet
5	R(WW) = Wastewater Recharge	9.30	inches

Total Site Recharge		
R(T) =	R(L) + R(I) + R(U) + R(W) + R(N) + R(O) + R(IRR) + R(WW)	
R(T) =	**31.41**	**inches**

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE NITROGEN BUDGET **Proposed Project** **SHEET 3**

A	*Sanitary Nitrogen-Residential*	*Value*	*Units*
1	Number of Dwellings	0	units
2	Persons per Dwelling	0.00	capita
3	P = Population	0.00	capita
4	N = Nitrogen per person	10	lbs
5	LR = Leaching Rate	50%	percent
6	N(S) = P x N x LR	0.00	lbs
7	N(S) = Sanitary Nitrogen	0.00	lbs

B	*Pet Waste Nitrogen*	*Value*	*Units*
1	AR = Application Rate	3.19	lbs/pet
2	Human Population	0	capita
3	Pets = 17 percent of capita	0	pets
4	N(p) = AR x pets	0.00	lbs
5	LR = Leaching Rate	50%	percent
6	N(P) = N(p) x LR	0.00	lbs
7	N(P) = Pet Waste Nitrogen	0.00	lbs

C	*Sanitary Nitrogen (Commercial/STP)*		
1	CF = Commercial/STP Flow	37,820	gal/day
2	CF = Commercial/STP Flow	52,249,276	liters/yr
3	N = Nitrogen in Commercial	10.00	mg/l
4	LR = Leaching Rate	100%	percent
5	N(S) = CF x N x LR	522,492,755	milligrams
6	N(S) = Sanitary Nitrogen	1152.10	lbs

D	*Water Supply Nitrogen (other than wastewater, if applicable)*		
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	liters/yr
3	N = Nitrogen in Water Supply	5.94	mg/l
4	N(WW) = WDF x N	0	milligrams
5	N(WW) = Wastewater Nitrogen	0.00	lbs

E	*Fertilizer Nitrogen 1*		
1	A = Area of Land Fertilized 1	393,782	sq ft
2	AR = Application Rate	2.30	lbs/1000 sf
3	LR = Leaching Rate	14%	percent
4	N(F1) = A x AR x LR	126.80	lbs
5	N(F1) = Fertilizer Nitrogen	126.80	lbs

F	*Fertilizer Nitrogen 2*		
1	A = Area of Land Fertilized 2	0	sq ft
2	AR = Application Rate	0.00	lbs/1000 sf
3	LR = Leaching Rate	0%	percent
4	N(F2) = A x AR x LR	0.00	lbs
5	N(F2) = Fertilizer Nitrogen	0.00	lbs

G	*Precipitation Nitrogen*		
1	R(n) = Natural Recharge (feet)	1.81	feet
2	A = Area of Site (sq ft)	2,382,296	sq ft
3	R(N) = R(n) x A	4,320,930	cu ft
4	R(N) = Natural Recharge (liters)	122,368,747	liters
5	N = Nitrogen in Precipitation	1.00	mg/l
6	LR = Leaching Rate	15%	percent
7	N(ppt) = R(N) x N x LR	1,223,687	milligrams
8	N(ppt) = Precipitation Nitrogen	2.70	lbs

H	*Irrigation Nitrogen*		
1	R = Irrigation Recharge (inches)	2.09	inches
2	R = Irrigation Rate (feet)	0.17	feet
3	A = Area of Land Irrigated	393,782	sq ft
4	R(I) = R(irr) x A	68,646	cu ft
5	R(I) = Site Precipitation (liters)	1,944,057	liters
6	N = Nitrogen in Water Supply	5.94	mg/l
7	LR = Leaching Rate	15%	percent
8	N(irr) = R(I) x N x LR	1,732,155	milligrams
9	N(irr) = Irrigation Nitrogen	3.82	lbs

Total Site Nitrogen	
N=	N(S) + N(P) + N(WW) + N(F1) + N(F2) + N(ppt) + N(irr)
N=	**1285.41** lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

The Uplands at St. Johnlanc
Proposed Project

FINAL COMPUTATIONS **SHEET 4**

A	*Nitrogen in Recharge*	*Value*	*Units*
1	N = Total Nitrogen (lbs)	1285.41	lbs
2	N = Total Nitrogen (milligrams)	583,577,089	milligrams
3	R(T) = Total Recharge (inches)	31.41	inches
4	R(T) = Total Recharge (feet)	2.62	feet
5	A = Area of Site	2,382,296	sq ft
6	R = R(T) x A	6,235,211	cu ft
7	R = Site Recharge Volume	176,581,186	liters
9	NR = N/R	3.30	mg/l

FINAL CONCENTRATION OF NITROGEN IN RECHARGE

3.30

B	*Site Recharge Summary*	*Value*	*Units*
1	R(T) = Total Site Recharge	31.41	inches/yr
2	R = Site Recharge Volume	6,235,211	cu ft/yr
3	R = Site Recharge Volume	46,642,623	gal/yr
4	R = Site Recharge Volume	46.64	MG/yr

Conversions used in SONIR
Acres x 43,560 = Square Feet
Cubic Feet x 7.48052 = Gallons
Cubic Feet x 28.32 = Liters
Days x 365 = Years
Feet x 12 = Inches
Gallons x 0.1337 = Cubic Feet
Gallons x 3.785 = Liters
Grams / 1,000 = Milligrams
Grams x 0.002205 = Pounds
Milligrams / 1,000 = Grams

APPENDIX J-4

Alternatives 2 - 5

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT **The Uplands at St. Johnland**

DATA INPUT FIELD **Alt. 2: Single-Family Units** **SHEET 1**

A	*Site Recharge Parameters*	*Value*	*Units*
1	Area of Site	54.69	acres
2	Precipitation Rate	42.82	inches
3	Acreage of Lawn	29.32	acres
4	Fraction of Land in Lawn	0.536	fraction
5	Evapotranspiration from Lawn	24.20	inches
6	Runoff from Lawn	0.30	inches
7	Acreage of Impervious	6.04	acres
8	Fraction of Land Impervious	0.110	fraction
9	Evaporation from Impervious	4.28	inches
10	Runoff from Impervious	0.00	inches
11	Acreage of Unvegetated	0.00	acres
12	Fraction of Land Unvegetated	0.000	fraction
13	Evapotrans. from Unvegetated	24.20	inches
14	Runoff from Unvegetated	0.30	inches
15	Acreage of Water	0.50	acres
16	Fraction of Site in Water	0.009	fraction
17	Evaporation from Water	30.00	inches
18	Makeup Water (if applicable)	0.00	inches
19	Acreage of Natural Area	18.83	acres
20	Fraction of Land Natural	0.344	fraction
21	Evapotrans. from Natural Area	24.20	inches
22	Runoff from Natural Area	0.30	inches
23	Acreage of Other Area	0.00	acres
24	Fraction of Land Other Area	0.000	fraction
25	Evapotrans. from Other Area	0.00	inches
26	Runoff from Other Area	0.30	inches
27	Acreage of Land Irrigated	29.32	acres
28	Fraction of Land Irrigated	0.536	fraction
29	Irrigation Rate	5.50	inches
30	Number of Dwellings	21	units
31	Water Use per Dwelling	300	gal/day
32	Wastewater Design Flow	6,300	gal/day
33	Commercial /STP Design Flow	0	gal/day

B	*Nitrogen Budget Parameters*	*Value*	*Units*
1	Persons per Dwelling	3.30	persons
2	Nitrogen per Person per Year	10.0	lbs
3	a. Sanitary Nitrogen Leaching Rate	50%	percent
3	b. Sanitary Nitrogen Leaching Rate	0%	percent
4	Area of Land Fertilized 1	29.32	acres
5	Fertilizer Application Rate 1	2.30	lbs/1000 sq ft
6	Fertilizer Nitrogen Leaching Rate 1	14%	percent
7	Area of Land Fertilized 2	0.00	acres
8	Fertilizer Application Rate 2	0.00	lbs/1000 sq ft
9	Fertilizer Nitrogen Leaching Rate 2	0%	percent
10	Pet Waste Application Rate	3.19	lbs/pet
11	Pet Waste Nitrogen Leaching Rate	50%	percent
12	Area of Land Irrigated	29.32	acres
13	Irrigation Rate	5.50	inches
14	Irrigation Nitrogen Leaching Rate	15%	percent
15	Nitrogen in Precipitation	1.00	mg/l
16	Precipitation Nitrogen Leaching Rate	15%	percent
17	Nitrogen in Water Supply	5.94	mg/l
18	Nitrogen in Commercial/STP Flow	50.00	mg/l

C	*Comments*
1)	Please refer to user manual for data input instructions.
2)	Sanitary Nitrogen Leaching Rate 3.a.) is for conventional systems and 3.b.) is for commercial or STP which may vary from 90 to 100 percent leaching rates. 100 percent is used as a conservative value.
3)	Assumes on-site conventional sanitary systems.

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE RECHARGE COMPUTATIONS — **Alt. 2: Single-Family Units** — **SHEET 2**

A	*Lawn Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Lawn	0.536	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(l) = P - (E + Q)	18.32	inches
6	R(L) = R(l) x A	9.82	inches

B	*Impervious Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Impervious	0.110	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	4.28	inches
4	Q = Runoff Rate	0.00	inches
5	R(i) = P - (E + Q)	38.54	inches
6	R(I) = R(i) x A	4.26	inches

C	*Unvegetated Area Recharge*		
1	A = Fraction of Land Unveg.	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.30	inches
4	Q = Runoff Rate	0.50	inches
5	R(u) = P - (E + Q)	42.02	inches
6	R(U) = R(u) x A	0.00	inches

D	*Water Area Loss*		
1	A = Fraction of Site in Water	0.009	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evaporation Rate	30.00	inches
4	Q = Runoff Rate	0.00	inches
5	M = Makeup Water	0.00	inches
6	R(w) = {P - (E+Q)} - M	12.82	inches
7	R(W) = R(w) x A	0.12	inches

E	*Natural Area Recharge*		
1	A = Fraction of Land in Natural	0.344	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(n) = P - (E + Q)	18.32	inches
6	R(N) = R(n) x A	6.31	inches

F	*Other Area Recharge*		
1	A = Fraction of Land in Other	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.00	inches
4	Q = Runoff Rate	0.30	inches
5	R(o) = P - (E + Q)	42.52	inches
6	R(O) = R(o) x A	0.00	inches

G	*Irrigation Recharge*		
1	A = Fraction of Land Irrigated	0.536	fraction
2	I = Irrigation Rate	5.50	inches
3	E = Evaptranspiration Rate	3.11	inches
4	Q = Runoff Rate	0.30	inches
5	R(irr) = I - (E + Q)	2.09	inches
6	R(IRR) = R(irr) x A	1.12	inches

H	*Wastewater Recharge*		
1	WDF = Wastewater Design Flow	6,300	gal/day
2	WDF = Wastewater Design Flow	307,443	cu ft/yr
3	A = Area of Site	2,382,296	sq ft
4	R(ww) = WDF/A	0.13	feet
5	R(WW) = Wastewater Recharge	1.55	inches

Total Site Recharge		
R(T) =	R(L) + R(I) + R(U) + R(W) + R(N) + R(O) + R(IRR) + R(WW)	
R(T) =	**23.17**	**inches**

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE NITROGEN BUDGET — Alt. 2: Single-Family Units — **SHEET 3**

A	*Sanitary Nitrogen-Residential*	*Value*	*Units*
1	Number of Dwellings	0	units
2	Persons per Dwelling	3.30	capita
3	P = Population	0.00	capita
4	N = Nitrogen per person	10	lbs
5	LR = Leaching Rate	50%	percent
6	N(S) = P x N x LR	0.00	lbs
7	N(S) = Sanitary Nitrogen	0.00	lbs

B	*Pet Waste Nitrogen*	*Value*	*Units*
1	AR = Application Rate	3.19	lbs/pet
2	Human Population	69	capita
3	Pets = 17 percent of capita	12	pets
4	N(p) = AR x pets	37.58	lbs
5	LR = Leaching Rate	50%	percent
6	N(P) = N(p) x LR	18.79	lbs
7	N(P) = Pet Waste Nitrogen	18.79	lbs

C	*Sanitary Nitrogen (Commercial/STP)*		
1	CF = Commercial/STP Flow	6,300	gal/day
2	CF = Commercial/STP Flow	8,703,608	liters/yr
3	N = Nitrogen in Commercial	50.00	mg/l
4	LR = Leaching Rate	50%	percent
5	N(S) = CF x N x LR	217,590,188	milligrams
6	N(S) = Sanitary Nitrogen	479.79	lbs

D	*Water Supply Nitrogen (other than wastewater, if applicable)*		
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	liters/yr
3	N = Nitrogen in Water Supply	5.94	mg/l
4	N(WW) = WDF x N	0	milligrams
5	N(WW) = Wastewater Nitrogen	0.00	lbs

E	*Fertilizer Nitrogen 1*		
1	A = Area of Land Fertilized 1	1,277,179	sq ft
2	AR = Application Rate	2.30	lbs/1000 sf
3	LR = Leaching Rate	14%	percent
4	N(F1) = A x AR x LR	411.25	lbs
5	N(F1) = Fertilizer Nitrogen	411.25	lbs

F	*Fertilizer Nitrogen 2*		
1	A = Area of Land Fertilized 2	0	sq ft
2	AR = Application Rate	0.00	lbs/1000 sf
3	LR = Leaching Rate	0%	percent
4	N(F2) = A x AR x LR	0.00	lbs
5	N(F2) = Fertilizer Nitrogen	0.00	lbs

G	*Precipitation Nitrogen*		
1	R(n) = Natural Recharge (feet)	1.71	feet
2	A = Area of Site (sq ft)	2,382,296	sq ft
3	R(N) = R(n) x A	4,070,363	cu ft
4	R(N) = Natural Recharge (liters)	115,272,680	liters
5	N = Nitrogen in Precipitation	1.00	mg/l
6	LR = Leaching Rate	15%	percent
7	N(ppt) = R(N) x N x LR	1,152,727	milligrams
8	N(ppt) = Precipitation Nitrogen	2.54	lbs

H	*Irrigation Nitrogen*		
1	R = Irrigation Recharge (inches)	2.09	inches
2	R = Irrigation Rate (feet)	0.17	feet
3	A = Area of Land Irrigated	1,277,179	sq ft
4	R(I) = R(irr) x A	222,644	cu ft
5	R(I) = Site Precipitation (liters)	6,305,284	liters
6	N = Nitrogen in Water Supply	5.94	mg/l
7	LR = Leaching Rate	15%	percent
8	N(irr) = R(I) x N x LR	5,618,008	milligrams
9	N(irr) = Irrigation Nitrogen	12.39	lbs

Total Site Nitrogen	
N=	N(S) + N(P) + N(WW) + N(F1) + N(F2) + N(ppt) + N(irr)
N=	**924.76** lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

The Uplands at St. Johnlanc
Alt. 2: Single-Family Units

FINAL COMPUTATIONS **SHEET 4**

A	*Nitrogen in Recharge*	*Value*	*Units*
1	N = Total Nitrogen (lbs)	924.76	lbs
2	N = Total Nitrogen (milligrams)	419,840,237	milligrams
3	R(T) = Total Recharge (inches)	23.17	inches
4	R(T) = Total Recharge (feet)	1.93	feet
5	A = Area of Site	2,382,296	sq ft
6	R = R(T) x A	4,600,450	cu ft
7	R = Site Recharge Volume	130,284,754	liters
9	NR = N/R	3.22	mg/l

FINAL CONCENTRATION OF NITROGEN IN RECHARGE

3.22

B	*Site Recharge Summary*	*Value*	*Units*
1	R(T) = Total Site Recharge	23.17	inches/yr
2	R = Site Recharge Volume	4,600,450	cu ft/yr
3	R = Site Recharge Volume	34,413,761	gal/yr
4	R = Site Recharge Volume	34.41	MG/yr

Conversions used in SONIR
Acres x 43,560 = Square Feet
Cubic Feet x 7.48052 = Gallons
Cubic Feet x 28.32 = Liters
Days x 365 = Years
Feet x 12 = Inches
Gallons x 0.1337 = Cubic Feet
Gallons x 3.785 = Liters
Grams / 1,000 = Milligrams
Grams x 0.002205 = Pounds
Milligrams / 1,000 = Grams

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT **The Uplands at St. Johnland**

DATA INPUT FIELD **Alt. 3: Proposed Project, Revised Plan** **SHEET 1**

A	*Site Recharge Parameters*	*Value*	*Units*
1	Area of Site	54.69	acres
2	Precipitation Rate	42.82	inches
3	Acreage of Lawn	12.09	acres
4	Fraction of Land in Lawn	0.221	fraction
5	Evapotranspiration from Lawn	24.20	inches
6	Runoff from Lawn	0.30	inches
7	Acreage of Impervious	11.45	acres
8	Fraction of Land Impervious	0.209	fraction
9	Evaporation from Impervious	4.28	inches
10	Runoff from Impervious	0.00	inches
11	Acreage of Unvegetated	0.00	acres
12	Fraction of Land Unvegetated	0.000	fraction
13	Evapotrans. from Unvegetated	24.20	inches
14	Runoff from Unvegetated	0.30	inches
15	Acreage of Water	0.78	acres
16	Fraction of Site in Water	0.014	fraction
17	Evaporation from Water	30.00	inches
18	Makeup Water (if applicable)	0.00	inches
19	Acreage of Natural Area	30.37	acres
20	Fraction of Land Natural	0.555	fraction
21	Evapotrans. from Natural Area	24.20	inches
22	Runoff from Natural Area	0.30	inches
23	Acreage of Other Area	0.00	acres
24	Fraction of Land Other Area	0.000	fraction
25	Evapotrans. from Other Area	0.00	inches
26	Runoff from Other Area	0.30	inches
27	Acreage of Land Irrigated	7.09	acres
28	Fraction of Land Irrigated	0.130	fraction
29	Irrigation Rate	5.50	inches
30	Number of Dwellings	0	units
31	Water Use per Dwelling	0	gal/day
32	Wastewater Design Flow	0	gal/day
33	Commercial /STP Design Flow	37,820	gal/day

B	*Nitrogen Budget Parameters*	*Value*	*Units*
1	Persons per Dwelling	0.00	persons
2	Nitrogen per Person per Year	10.0	lbs
3	a. Sanitary Nitrogen Leaching Rate	50%	percent
3	b. Sanitary Nitrogen Leaching Rate	100%	percent
4	Area of Land Fertilized 1	7.09	acres
5	Fertilizer Application Rate 1	2.30	lbs/1000 sq ft
6	Fertilizer Nitrogen Leaching Rate 1	14%	percent
7	Area of Land Fertilized 2	0.00	acres
8	Fertilizer Application Rate 2	0.00	lbs/1000 sq ft
9	Fertilizer Nitrogen Leaching Rate 2	0%	percent
10	Pet Waste Application Rate	3.19	lbs/pet
11	Pet Waste Nitrogen Leaching Rate	50%	percent
12	Area of Land Irrigated	7.09	acres
13	Irrigation Rate	5.50	inches
14	Irrigation Nitrogen Leaching Rate	15%	percent
15	Nitrogen in Precipitation	1.00	mg/l
16	Precipitation Nitrogen Leaching Rate	15%	percent
17	Nitrogen in Water Supply	5.94	mg/l
18	Nitrogen in Commercial/STP Flow	10.00	mg/l

C	*Comments*
1)	Please refer to user manual for data input instructions.
2)	Sanitary Nitrogen Leaching Rate 3.a.) is for conventional systems and 3.b.) is for commercial or STP which may vary from 90 to 100 percent leaching rates. 100 percent is used as a conservative value.
3)	Wastewater to be conveyed to the Kings Park STP which in turn will pump effluent to the ±5-acre St. Johnland parcel for groundwater recharge; increased effluent from Proposed Project is considered in this analysis.

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE RECHARGE COMPUTATIONS — **Alt. 3: Proposed Project, Revised Plan** — **SHEET 2**

A	*Lawn Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Lawn	0.221	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(l) = P - (E + Q)	18.32	inches
6	R(L) = R(l) x A	4.05	inches

B	*Impervious Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Impervious	0.209	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	4.28	inches
4	Q = Runoff Rate	0.00	inches
5	R(i) = P - (E + Q)	38.54	inches
6	R(I) = R(i) x A	8.07	inches

C	*Unvegetated Area Recharge*		
1	A = Fraction of Land Unveg.	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.30	inches
4	Q = Runoff Rate	0.78	inches
5	R(u) = P - (E + Q)	41.74	inches
6	R(U) = R(u) x A	0.00	inches

D	*Water Area Loss*		
1	A = Fraction of Site in Water	0.014	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evaporation Rate	30.00	inches
4	Q = Runoff Rate	0.00	inches
5	M = Makeup Water	0.00	inches
6	R(w) = {P - (E+Q)} - M	12.82	inches
7	R(W) = R(w) x A	0.18	inches

E	*Natural Area Recharge*		
1	A = Fraction of Land in Natural	0.555	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(n) = P - (E + Q)	18.32	inches
6	R(N) = R(n) x A	10.17	inches

F	*Other Area Recharge*		
1	A = Fraction of Land in Other	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.00	inches
4	Q = Runoff Rate	0.30	inches
5	R(o) = P - (E + Q)	42.52	inches
6	R(O) = R(o) x A	0.00	inches

G	*Irrigation Recharge*		
1	A = Fraction of Land Irrigated	0.130	fraction
2	I = Irrigation Rate	5.50	inches
3	E = Evaptranspiration Rate	3.11	inches
4	Q = Runoff Rate	0.30	inches
5	R(irr) = I - (E + Q)	2.09	inches
6	R(IRR) = R(irr) x A	0.27	inches

H	*Wastewater Recharge*		
1	WDF = Wastewater Design Flow	37,820	gal/day
2	WDF = Wastewater Design Flow	1,845,635	cu ft/yr
3	A = Area of Site	2,382,296	sq ft
4	R(ww) = WDF/A	0.77	feet
5	R(WW) = Wastewater Recharge	9.30	inches

Total Site Recharge		
R(T) =	R(L) + R(I) + R(U) + R(W) + R(N) + R(O) + R(IRR) + R(WW)	
R(T) =	**32.04** **inches**	

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE NITROGEN BUDGET — **Alt. 3: Proposed Project, Revised Plan** — **SHEET 3**

A	*Sanitary Nitrogen-Residential*	*Value*	*Units*
1	Number of Dwellings	0	units
2	Persons per Dwelling	0.00	capita
3	P = Population	0.00	capita
4	N = Nitrogen per person	10	lbs
5	LR = Leaching Rate	50%	percent
6	N(S) = P x N x LR	0.00	lbs
7	N(S) = Sanitary Nitrogen	0.00	lbs

B	*Pet Waste Nitrogen*	*Value*	*Units*
1	AR = Application Rate	3.19	lbs/pet
2	Human Population	0	capita
3	Pets = 17 percent of capita	0	pets
4	N(p) = AR x pets	0.00	lbs
5	LR = Leaching Rate	50%	percent
6	N(P) = N(p) x LR	0.00	lbs
7	N(P) = Pet Waste Nitrogen	0.00	lbs

C	*Sanitary Nitrogen (Commercial/STP)*		
1	CF = Commercial/STP Flow	37,820	gal/day
2	CF = Commercial/STP Flow	52,249,276	liters/yr
3	N = Nitrogen in Commercial	10.00	mg/l
4	LR = Leaching Rate	100%	percent
5	N(S) = CF x N x LR	522,492,755	milligrams
6	N(S) = Sanitary Nitrogen	1152.10	lbs

D	*Water Supply Nitrogen (other than wastewater, if applicable)*		
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	liters/yr
3	N = Nitrogen in Water Supply	5.94	mg/l
4	N(WW) = WDF x N	0	milligrams
5	N(WW) = Wastewater Nitrogen	0.00	lbs

E	*Fertilizer Nitrogen 1*		
1	A = Area of Land Fertilized 1	308,840	sq ft
2	AR = Application Rate	2.30	lbs/1000 sf
3	LR = Leaching Rate	14%	percent
4	N(F1) = A x AR x LR	99.45	lbs
5	N(F1) = Fertilizer Nitrogen	99.45	lbs

F	*Fertilizer Nitrogen 2*		
1	A = Area of Land Fertilized 2	0	sq ft
2	AR = Application Rate	0.00	lbs/1000 sf
3	LR = Leaching Rate	0%	percent
4	N(F2) = A x AR x LR	0.00	lbs
5	N(F2) = Fertilizer Nitrogen	0.00	lbs

G	*Precipitation Nitrogen*		
1	R(n) = Natural Recharge (feet)	1.87	feet
2	A = Area of Site (sq ft)	2,382,296	sq ft
3	R(N) = R(n) x A	4,461,854	cu ft
4	R(N) = Natural Recharge (liters)	126,359,701	liters
5	N = Nitrogen in Precipitation	1.00	mg/l
6	LR = Leaching Rate	15%	percent
7	N(ppt) = R(N) x N x LR	1,263,597	milligrams
8	N(ppt) = Precipitation Nitrogen	2.79	lbs

H	*Irrigation Nitrogen*		
1	R = Irrigation Recharge (inches)	2.09	inches
2	R = Irrigation Rate (feet)	0.17	feet
3	A = Area of Land Irrigated	308,840	sq ft
4	R(I) = R(irr) x A	53,839	cu ft
5	R(I) = Site Precipitation (liters)	1,524,709	liters
6	N = Nitrogen in Water Supply	5.94	mg/l
7	LR = Leaching Rate	15%	percent
8	N(irr) = R(I) x N x LR	1,358,516	milligrams
9	N(irr) = Irrigation Nitrogen	3.00	lbs

Total Site Nitrogen	
N=	N(S) + N(P) + N(WW) + N(F1) + N(F2) + N(ppt) + N(irr)
N=	**1257.32** lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

The Uplands at St. Johnlanc
Alt. 3: Proposed Project, Revised Plan

FINAL COMPUTATIONS **SHEET 4**

A	*Nitrogen in Recharge*	*Value*	*Units*
1	N = Total Nitrogen (lbs)	1257.32	lbs
2	N = Total Nitrogen (milligrams)	570,825,501	milligrams
3	R(T) = Total Recharge (inches)	32.04	inches
4	R(T) = Total Recharge (feet)	2.67	feet
5	A = Area of Site	2,382,296	sq ft
6	R = R(T) x A	6,361,327	cu ft
7	R = Site Recharge Volume	180,152,790	liters
9	NR = N/R	3.17	mg/l

FINAL CONCENTRATION OF NITROGEN IN RECHARGE

3.17

B	*Site Recharge Summary*	*Value*	*Units*
1	R(T) = Total Site Recharge	32.04	inches/yr
2	R = Site Recharge Volume	6,361,327	cu ft/yr
3	R = Site Recharge Volume	47,586,036	gal/yr
4	R = Site Recharge Volume	47.59	MG/yr

Conversions used in SONIR
Acres x 43,560 = Square Feet
Cubic Feet x 7.48052 = Gallons
Cubic Feet x 28.32 = Liters
Days x 365 = Years
Feet x 12 = Inches
Gallons x 0.1337 = Cubic Feet
Gallons x 3.785 = Liters
Grams / 1,000 = Milligrams
Grams x 0.002205 = Pounds
Milligrams / 1,000 = Grams

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT **The Uplands at St. Johnland**

DATA INPUT FIELD **Alternative 4: 392 Senior Apts.** **SHEET 1**

A	*Site Recharge Parameters*	*Value*	*Units*
1	Area of Site	54.69	acres
2	Precipitation Rate	42.82	inches
3	Acreage of Lawn	14.94	acres
4	Fraction of Land in Lawn	0.273	fraction
5	Evapotranspiration from Lawn	24.20	inches
6	Runoff from Lawn	0.30	inches
7	Acreage of Impervious	11.25	acres
8	Fraction of Land Impervious	0.206	fraction
9	Evaporation from Impervious	4.28	inches
10	Runoff from Impervious	0.00	inches
11	Acreage of Unvegetated	0.00	acres
12	Fraction of Land Unvegetated	0.000	fraction
13	Evapotrans. from Unvegetated	24.20	inches
14	Runoff from Unvegetated	0.30	inches
15	Acreage of Water	0.78	acres
16	Fraction of Site in Water	0.014	fraction
17	Evaporation from Water	30.00	inches
18	Makeup Water (if applicable)	0.00	inches
19	Acreage of Natural Area	27.72	acres
20	Fraction of Land Natural	0.507	fraction
21	Evapotrans. from Natural Area	24.20	inches
22	Runoff from Natural Area	0.30	inches
23	Acreage of Other Area	0.00	acres
24	Fraction of Land Other Area	0.000	fraction
25	Evapotrans. from Other Area	0.00	inches
26	Runoff from Other Area	0.30	inches
27	Acreage of Land Irrigated	9.94	acres
28	Fraction of Land Irrigated	0.182	fraction
29	Irrigation Rate	5.50	inches
30	Number of Dwellings	0	units
31	Water Use per Dwelling	0	gal/day
32	Wastewater Design Flow	0	gal/day
33	Commercial /STP Design Flow	58,800	gal/day

B	*Nitrogen Budget Parameters*	*Value*	*Units*
1	Persons per Dwelling	0.00	persons
2	Nitrogen per Person per Year	10.0	lbs
3	a. Sanitary Nitrogen Leaching Rate	50%	percent
3	b. Sanitary Nitrogen Leaching Rate	100%	percent
4	Area of Land Fertilized 1	9.94	acres
5	Fertilizer Application Rate 1	2.30	lbs/1000 sq ft
6	Fertilizer Nitrogen Leaching Rate 1	14%	percent
7	Area of Land Fertilized 2	0.00	acres
8	Fertilizer Application Rate 2	0.00	lbs/1000 sq ft
9	Fertilizer Nitrogen Leaching Rate 2	0%	percent
10	Pet Waste Application Rate	3.19	lbs/pet
11	Pet Waste Nitrogen Leaching Rate	50%	percent
12	Area of Land Irrigated	9.94	acres
13	Irrigation Rate	5.50	inches
14	Irrigation Nitrogen Leaching Rate	15%	percent
15	Nitrogen in Precipitation	1.00	mg/l
16	Precipitation Nitrogen Leaching Rate	15%	percent
17	Nitrogen in Water Supply	5.94	mg/l
18	Nitrogen in Commercial/STP Flow	10.00	mg/l

C	*Comments*
1)	Please refer to user manual for data input instructions.
2)	Sanitary Nitrogen Leaching Rate 3.a.) is for conventional systems and 3.b.) is for commercial or STP which may vary from 90 to 100 percent leaching rates. 100 percent is used as a conservative value.
3)	Wastewater to be conveyed to the Kings Park STP which in turn will pump effluent to the ±5-acre St. Johnland parcel for groundwater recharge; increased effluent from Proposed Project is considered in this analysis.

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE RECHARGE COMPUTATIONS — **Alternative 4: 392 Senior Apts.** — **SHEET 2**

A	*Lawn Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Lawn	0.273	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(l) = P - (E + Q)	18.32	inches
6	R(L) = R(l) x A	5.00	inches

B	*Impervious Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Impervious	0.206	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	4.28	inches
4	Q = Runoff Rate	0.00	inches
5	R(i) = P - (E + Q)	38.54	inches
6	R(I) = R(i) x A	7.93	inches

C	*Unvegetated Area Recharge*		
1	A = Fraction of Land Unveg.	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.30	inches
4	Q = Runoff Rate	0.78	inches
5	R(u) = P - (E + Q)	41.74	inches
6	R(U) = R(u) x A	0.00	inches

D	*Water Area Loss*		
1	A = Fraction of Site in Water	0.014	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evaporation Rate	30.00	inches
4	Q = Runoff Rate	0.00	inches
5	M = Makeup Water	0.00	inches
6	R(w) = {P - (E+Q)} - M	12.82	inches
7	R(W) = R(w) x A	0.18	inches

E	*Natural Area Recharge*		
1	A = Fraction of Land in Natural	0.507	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(n) = P - (E + Q)	18.32	inches
6	R(N) = R(n) x A	9.29	inches

F	*Other Area Recharge*		
1	A = Fraction of Land in Other	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.00	inches
4	Q = Runoff Rate	0.30	inches
5	R(o) = P - (E + Q)	42.52	inches
6	R(O) = R(o) x A	0.00	inches

G	*Irrigation Recharge*		
1	A = Fraction of Land Irrigated	0.182	fraction
2	I = Irrigation Rate	5.50	inches
3	E = Evaptranspiration Rate	3.11	inches
4	Q = Runoff Rate	0.30	inches
5	R(irr) = I - (E + Q)	2.09	inches
6	R(IRR) = R(irr) x A	0.38	inches

H	*Wastewater Recharge*		
1	WDF = Wastewater Design Flow	58,800	gal/day
2	WDF = Wastewater Design Flow	2,869,469	cu ft/yr
3	A = Area of Site	2,382,296	sq ft
4	R(ww) = WDF/A	1.20	feet
5	R(WW) = Wastewater Recharge	14.45	inches

Total Site Recharge		
R(T) =	R(L) + R(I) + R(U) + R(W) + R(N) + R(O) + R(IRR) + R(WW)	
R(T) =	**37.24**	**inches**

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE NITROGEN BUDGET — **Alternative 4: 392 Senior Apts.** — **SHEET 3**

A	*Sanitary Nitrogen-Residential*	*Value*	*Units*
1	Number of Dwellings	0	units
2	Persons per Dwelling	0.00	capita
3	P = Population	0.00	capita
4	N = Nitrogen per person	10	lbs
5	LR = Leaching Rate	50%	percent
6	N(S) = P x N x LR	0.00	lbs
7	N(S) = Sanitary Nitrogen	0.00	lbs

B	*Pet Waste Nitrogen*	*Value*	*Units*
1	AR = Application Rate	3.19	lbs/pet
2	Human Population	0	capita
3	Pets = 17 percent of capita	0	pets
4	N(p) = AR x pets	0.00	lbs
5	LR = Leaching Rate	50%	percent
6	N(P) = N(p) x LR	0.00	lbs
7	N(P) = Pet Waste Nitrogen	0.00	lbs

C	*Sanitary Nitrogen (Commercial/STP)*		
1	CF = Commercial/STP Flow	58,800	gal/day
2	CF = Commercial/STP Flow	81,233,670	liters/yr
3	N = Nitrogen in Commercial	10.00	mg/l
4	LR = Leaching Rate	100%	percent
5	N(S) = CF x N x LR	812,336,700	milligrams
6	N(S) = Sanitary Nitrogen	1791.20	lbs

D	*Water Supply Nitrogen (other than wastewater, if applicable)*		
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	liters/yr
3	N = Nitrogen in Water Supply	5.94	mg/l
4	N(WW) = WDF x N	0	milligrams
5	N(WW) = Wastewater Nitrogen	0.00	lbs

E	*Fertilizer Nitrogen 1*		
1	A = Area of Land Fertilized 1	432,986	sq ft
2	AR = Application Rate	2.30	lbs/1000 sf
3	LR = Leaching Rate	14%	percent
4	N(F1) = A x AR x LR	139.42	lbs
5	N(F1) = Fertilizer Nitrogen	139.42	lbs

F	*Fertilizer Nitrogen 2*		
1	A = Area of Land Fertilized 2	0	sq ft
2	AR = Application Rate	0.00	lbs/1000 sf
3	LR = Leaching Rate	0%	percent
4	N(F2) = A x AR x LR	0.00	lbs
5	N(F2) = Fertilizer Nitrogen	0.00	lbs

G	*Precipitation Nitrogen*		
1	R(n) = Natural Recharge (feet)	1.87	feet
2	A = Area of Site (sq ft)	2,382,296	sq ft
3	R(N) = R(n) x A	4,447,174	cu ft
4	R(N) = Natural Recharge (liters)	125,943,977	liters
5	N = Nitrogen in Precipitation	1.00	mg/l
6	LR = Leaching Rate	15%	percent
7	N(ppt) = R(N) x N x LR	1,259,440	milligrams
8	N(ppt) = Precipitation Nitrogen	2.78	lbs

H	*Irrigation Nitrogen*		
1	R = Irrigation Recharge (inches)	2.09	inches
2	R = Irrigation Rate (feet)	0.17	feet
3	A = Area of Land Irrigated	432,986	sq ft
4	R(I) = R(irr) x A	75,480	cu ft
5	R(I) = Site Precipitation (liters)	2,137,603	liters
6	N = Nitrogen in Water Supply	5.94	mg/l
7	LR = Leaching Rate	15%	percent
8	N(irr) = R(I) x N x LR	1,904,604	milligrams
9	N(irr) = Irrigation Nitrogen	4.20	lbs

Total Site Nitrogen	
N=	N(S) + N(P) + N(WW) + N(F1) + N(F2) + N(ppt) + N(irr)
N=	**1937.60** lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

The Uplands at St. Johnlanc
Alternative 4: 392 Senior Apts.

FINAL COMPUTATIONS **SHEET 4**

A	*Nitrogen in Recharge*	*Value*	*Units*
1	N = Total Nitrogen (lbs)	1937.60	lbs
2	N = Total Nitrogen (milligrams)	879,670,746	milligrams
3	R(T) = Total Recharge (inches)	37.24	inches
4	R(T) = Total Recharge (feet)	3.10	feet
5	A = Area of Site	2,382,296	sq ft
6	R = R(T) x A	7,392,124	cu ft
7	R = Site Recharge Volume	209,344,953	liters
9	NR = N/R	4.20	mg/l

FINAL CONCENTRATION OF NITROGEN IN RECHARGE

4.20

B	*Site Recharge Summary*	*Value*	*Units*
1	R(T) = Total Site Recharge	37.24	inches/yr
2	R = Site Recharge Volume	7,392,124	cu ft/yr
3	R = Site Recharge Volume	55,296,932	gal/yr
4	R = Site Recharge Volume	55.30	MG/yr

Conversions used in SONIR
Acres x 43,560 = Square Feet
Cubic Feet x 7.48052 = Gallons
Cubic Feet x 28.32 = Liters
Days x 365 = Years
Feet x 12 = Inches
Gallons x 0.1337 = Cubic Feet
Gallons x 3.785 = Liters
Grams / 1,000 = Milligrams
Grams x 0.002205 = Pounds
Milligrams / 1,000 = Grams

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT **The Uplands at St. Johnland**

DATA INPUT FIELD **Alt. 5: Proposed Project, with new STP** **SHEET 1**

A	*Site Recharge Parameters*	*Value*	*Units*
1	Area of Site	54.69	acres
2	Precipitation Rate	42.82	inches
3	Acreage of Lawn	13.91	acres
4	Fraction of Land in Lawn	0.254	fraction
5	Evapotranspiration from Lawn	24.20	inches
6	Runoff from Lawn	0.30	inches
7	Acreage of Impervious	9.66	acres
8	Fraction of Land Impervious	0.177	fraction
9	Evaporation from Impervious	4.28	inches
10	Runoff from Impervious	0.00	inches
11	Acreage of Unvegetated	0.00	acres
12	Fraction of Land Unvegetated	0.000	fraction
13	Evapotrans. from Unvegetated	24.20	inches
14	Runoff from Unvegetated	0.30	inches
15	Acreage of Water	0.78	acres
16	Fraction of Site in Water	0.014	fraction
17	Evaporation from Water	30.00	inches
18	Makeup Water (if applicable)	0.00	inches
19	Acreage of Natural Area	30.34	acres
20	Fraction of Land Natural	0.555	fraction
21	Evapotrans. from Natural Area	24.20	inches
22	Runoff from Natural Area	0.30	inches
23	Acreage of Other Area	0.00	acres
24	Fraction of Land Other Area	0.000	fraction
25	Evapotrans. from Other Area	0.00	inches
26	Runoff from Other Area	0.30	inches
27	Acreage of Land Irrigated	9.04	acres
28	Fraction of Land Irrigated	0.165	fraction
29	Irrigation Rate	5.50	inches
30	Number of Dwellings	0	units
31	Water Use per Dwelling	0	gal/day
32	Wastewater Design Flow	0	gal/day
33	Commercial /STP Design Flow	37,820	gal/day

B	*Nitrogen Budget Parameters*	*Value*	*Units*
1	Persons per Dwelling	0.00	persons
2	Nitrogen per Person per Year	10.0	lbs
3	a. Sanitary Nitrogen Leaching Rate	50%	percent
3	b. Sanitary Nitrogen Leaching Rate	100%	percent
4	Area of Land Fertilized 1	9.04	acres
5	Fertilizer Application Rate 1	2.30	lbs/1000 sq ft
6	Fertilizer Nitrogen Leaching Rate 1	14%	percent
7	Area of Land Fertilized 2	0.00	acres
8	Fertilizer Application Rate 2	0.00	lbs/1000 sq ft
9	Fertilizer Nitrogen Leaching Rate 2	0%	percent
10	Pet Waste Application Rate	3.19	lbs/pet
11	Pet Waste Nitrogen Leaching Rate	50%	percent
12	Area of Land Irrigated	9.04	acres
13	Irrigation Rate	5.50	inches
14	Irrigation Nitrogen Leaching Rate	15%	percent
15	Nitrogen in Precipitation	1.00	mg/l
16	Precipitation Nitrogen Leaching Rate	15%	percent
17	Nitrogen in Water Supply	5.94	mg/l
18	Nitrogen in Commercial/STP Flow	10.00	mg/l

C	*Comments*
1)	Please refer to user manual for data input instructions.
2)	Sanitary Nitrogen Leaching Rate 3.a.) is for conventional systems and 3.b.) is for commercial or STP which may vary from 90 to 100 percent leaching rates. 100 percent is used as a conservative value.
3)	Wastewater to be conveyed to a new STP constructed as part of the Proposed Project and located on the ±5-acre parcel.

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE RECHARGE COMPUTATIONS — **Alt. 5: Proposed Project, with new STP** — **SHEET 2**

A	*Lawn Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Lawn	0.254	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(l) = P - (E + Q)	18.32	inches
6	R(L) = R(l) x A	4.66	inches

B	*Impervious Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Impervious	0.177	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	4.28	inches
4	Q = Runoff Rate	0.00	inches
5	R(i) = P - (E + Q)	38.54	inches
6	R(I) = R(i) x A	6.81	inches

C	*Unvegetated Area Recharge*		
1	A = Fraction of Land Unveg.	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.30	inches
4	Q = Runoff Rate	0.78	inches
5	R(u) = P - (E + Q)	41.74	inches
6	R(U) = R(u) x A	0.00	inches

D	*Water Area Loss*		
1	A = Fraction of Site in Water	0.014	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evaporation Rate	30.00	inches
4	Q = Runoff Rate	0.00	inches
5	M = Makeup Water	0.00	inches
6	R(w) = {P - (E+Q)} - M	12.82	inches
7	R(W) = R(w) x A	0.18	inches

E	*Natural Area Recharge*		
1	A = Fraction of Land in Natural	0.555	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	24.20	inches
4	Q = Runoff Rate	0.30	inches
5	R(n) = P - (E + Q)	18.32	inches
6	R(N) = R(n) x A	10.16	inches

F	*Other Area Recharge*		
1	A = Fraction of Land in Other	0.000	fraction
2	P = Precipitation Rate	42.82	inches
3	E = Evapotranspiration Rate	0.00	inches
4	Q = Runoff Rate	0.30	inches
5	R(o) = P - (E + Q)	42.52	inches
6	R(O) = R(o) x A	0.00	inches

G	*Irrigation Recharge*		
1	A = Fraction of Land Irrigated	0.165	fraction
2	I = Irrigation Rate	5.50	inches
3	E = Evaptranspiration Rate	3.11	inches
4	Q = Runoff Rate	0.30	inches
5	R(irr) = I - (E + Q)	2.09	inches
6	R(IRR) = R(irr) x A	0.35	inches

H	*Wastewater Recharge*		
1	WDF = Wastewater Design Flow	37,820	gal/day
2	WDF = Wastewater Design Flow	1,845,635	cu ft/yr
3	A = Area of Site	2,382,296	sq ft
4	R(ww) = WDF/A	0.77	feet
5	R(WW) = Wastewater Recharge	9.30	inches

Total Site Recharge		
R(T) =	R(L) + R(I) + R(U) + R(W) + R(N) + R(O) + R(IRR) + R(WW)	
R(T) =	**31.46**	**inches**

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE NITROGEN BUDGET — **Alt. 5: Proposed Project, with new STP** — **SHEET 3**

A	*Sanitary Nitrogen-Residential*	*Value*	*Units*
1	Number of Dwellings	0	units
2	Persons per Dwelling	0.00	capita
3	P = Population	0.00	capita
4	N = Nitrogen per person	10	lbs
5	LR = Leaching Rate	50%	percent
6	N(S) = P x N x LR	0.00	lbs
7	N(S) = Sanitary Nitrogen	0.00	lbs

B	*Pet Waste Nitrogen*	*Value*	*Units*
1	AR = Application Rate	3.19	lbs/pet
2	Human Population	0	capita
3	Pets = 17 percent of capita	0	pets
4	N(p) = AR x pets	0.00	lbs
5	LR = Leaching Rate	50%	percent
6	N(P) = N(p) x LR	0.00	lbs
7	N(P) = Pet Waste Nitrogen	0.00	lbs

C	*Sanitary Nitrogen (Commercial/STP)*		
1	CF = Commercial/STP Flow	37,820	gal/day
2	CF = Commercial/STP Flow	52,249,276	liters/yr
3	N = Nitrogen in Commercial	10.00	mg/l
4	LR = Leaching Rate	100%	percent
5	N(S) = CF x N x LR	522,492,755	milligrams
6	N(S) = Sanitary Nitrogen	1152.10	lbs

D	*Water Supply Nitrogen (other than wastewater, if applicable)*		
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	liters/yr
3	N = Nitrogen in Water Supply	5.94	mg/l
4	N(WW) = WDF x N	0	milligrams
5	N(WW) = Wastewater Nitrogen	0.00	lbs

E	*Fertilizer Nitrogen 1*		
1	A = Area of Land Fertilized 1	393,782	sq ft
2	AR = Application Rate	2.30	lbs/1000 sf
3	LR = Leaching Rate	14%	percent
4	N(F1) = A x AR x LR	126.80	lbs
5	N(F1) = Fertilizer Nitrogen	126.80	lbs

F	*Fertilizer Nitrogen 2*		
1	A = Area of Land Fertilized 2	0	sq ft
2	AR = Application Rate	0.00	lbs/1000 sf
3	LR = Leaching Rate	0%	percent
4	N(F2) = A x AR x LR	0.00	lbs
5	N(F2) = Fertilizer Nitrogen	0.00	lbs

G	*Precipitation Nitrogen*		
1	R(n) = Natural Recharge (feet)	1.82	feet
2	A = Area of Site (sq ft)	2,382,296	sq ft
3	R(N) = R(n) x A	4,330,472	cu ft
4	R(N) = Natural Recharge (liters)	122,638,968	liters
5	N = Nitrogen in Precipitation	1.00	mg/l
6	LR = Leaching Rate	15%	percent
7	N(ppt) = R(N) x N x LR	1,226,390	milligrams
8	N(ppt) = Precipitation Nitrogen	2.70	lbs

H	*Irrigation Nitrogen*		
1	R = Irrigation Recharge (inches)	2.09	inches
2	R = Irrigation Rate (feet)	0.17	feet
3	A = Area of Land Irrigated	393,782	sq ft
4	R(I) = R(irr) x A	68,646	cu ft
5	R(I) = Site Precipitation (liters)	1,944,057	liters
6	N = Nitrogen in Water Supply	5.94	mg/l
7	LR = Leaching Rate	15%	percent
8	N(irr) = R(I) x N x LR	1,732,155	milligrams
9	N(irr) = Irrigation Nitrogen	3.82	lbs

Total Site Nitrogen	
N=	N(S) + N(P) + N(WW) + N(F1) + N(F2) + N(ppt) + N(irr)
N=	**1285.42** lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

The Uplands at St. Johnlanc
Alt. 5: Proposed Project, with new STP

FINAL COMPUTATIONS **SHEET 4**

A	*Nitrogen in Recharge*	*Value*	*Units*
1	N = Total Nitrogen (lbs)	1285.42	lbs
2	N = Total Nitrogen (milligrams)	583,579,794	milligrams
3	R(T) = Total Recharge (inches)	31.46	inches
4	R(T) = Total Recharge (feet)	2.62	feet
5	A = Area of Site	2,382,296	sq ft
6	R = R(T) x A	6,244,753	cu ft
7	R = Site Recharge Volume	176,851,406	liters
9	NR = N/R	3.30	mg/l

FINAL CONCENTRATION OF NITROGEN IN RECHARGE

3.30

B	*Site Recharge Summary*	*Value*	*Units*
1	R(T) = Total Site Recharge	31.46	inches/yr
2	R = Site Recharge Volume	6,244,753	cu ft/yr
3	R = Site Recharge Volume	46,714,000	gal/yr
4	R = Site Recharge Volume	46.71	MG/yr

Conversions used in SONIR
Acres x 43,560 = Square Feet
Cubic Feet x 7.48052 = Gallons
Cubic Feet x 28.32 = Liters
Days x 365 = Years
Feet x 12 = Inches
Gallons x 0.1337 = Cubic Feet
Gallons x 3.785 = Liters
Grams / 1,000 = Milligrams
Grams x 0.002205 = Pounds
Milligrams / 1,000 = Grams

APPENDIX K

APPLICABLE NURP STUDY SECTIONS

Section 1 - Introduction

1.0 THE NATIONWIDE URBAN RUNOFF PROGRAM

Years of massive federal, state and private investments for the construction of municipal and industrial sewage treatment facilities have failed to achieve anticipated improvements in water quality. The findings of various 208 studies provided conclusive evidence that in many areas pollutant loadings contributed by non-point sources exceed those contributed by point sources; and that urban runoff is the single most important non-point source. By 1977 various investigations by the United States Environmental Protection Agency (E.P.A.) and other investigations had begun to document the role of urban runoff in contaminant transport. Yet numerous areas of uncertainty still remained. In response to this and related matters the Congress enacted *P.L. 95-217*, which amended the *Clean Water Act* by providing funds for problem assessment and planning. The Act also calls for E.P.A. preparation of a report of the findings to be delivered to the Congress in 1983. This authorization highlights the significance of stormwater runoff as a determinant of water quality. It is an attempt to improve the adequacy of information concerning, *pollutant sources, areal accumulation patterns, washoff and transport mechanisms, instream behavior of pollutants, and control effectiveness.* (Water Planning Division, E.P.A. 1978).

The Nationwide Urban Runoff Program has attempted to address some of the more critical areas of uncertainty, among them:

- the actual proportion of the total pollutant loading that can be attributed to stormwater runoff, given the presence of other point and non-point sources and conditions within the receiving waters;
- sources, washoff/transport mechanisms and receiving water impacts;
- the appropriate criteria to be used in determining the existence of a runoff problem; and
- the effectiveness and cost of proposed but relatively untried non-structural control measures.

The program is meant to obtain answers to the following questions:

- Where and under what conditions is urban runoff likely to cause water quality problems?
- What types of problems can be anticipated?
- What solutions are available, and at what cost?

Another aim was to facilitate the rapid development of the data base needed for the production of a nationwide assessment of urban runoff.

The Water Planning Division of E.P.A. devised a ten task work plan, which included a combination of E.P.A. Headquarters and Regional-local components. The latter, of which the Long Island Program is a part, comprised a series of selected demonstration projects designed to meet local as well as national needs. It was expected that the local projects or program components would produce water quality management plans that were not only appropriate but acceptable and affordable; that focused on local needs, recommended realistic control options, and proposed implementable, least cost solutions.

1.1 RELATION OF THE NATIONWIDE URBAN RUNOFF PROGRAM TO LONG ISLAND

The Nassau-Suffolk region was among the first nineteen areas chosen as potential project sites. E.P.A. selected candidate areas on the basis of geographic and climatic diversity, type of receiving water, evidence of a serious existing or suspected runoff problem, and the area wide or state agency's achievements in 208 planning.

In the fall of 1978, the Regional Office of the United States Geological Survey approached the Long Island Regional Planning 208 Technical Advisory Committee, which had continued to meet informally to discuss water quality matters, to apprise it of the opportunity to participate in the Nationwide Urban Runoff Program and to propose a cooperative undertaking to do so. Eventually 28 state or areawide agencies agreed to participate in the NURP planning effort. Six non-NURP projects furnished supplementary data. (See Appendix A for a listing of NURP participants and project locations).

Each project constituted a separate entity, often with multiple parts; each study design reflected the distinctive problems and conditions of a specific area. All, however, comprised one or more of the following tasks: characterization of pollutant types, loads and effects on receiving waters; determination of the need for control; and evaluation of various alternatives for stormwater pollution control (E.P.A., March 1982).

The E.P.A.'s decision to seek broad participation in the $30 million Nationwide Urban Runoff Program and to host several national meetings has already fostered the inter-agency exchange of information. It appears likely that the completion of the Program and its component projects will generate further interest in *transferable solutions* to runoff problems and new requests for information. For this reason, a brief description of the two county Long Island region and of the resource is in order.

1.2 DESCRIPTION OF THE AREA

Nassau and Suffolk comprise a 1200 square mile area of glacial moraine and outwash plains located directly east of New York City. Long Island Sound lies to the north; the Atlantic Ocean to the south and east. Although the region is only a little more than 100 miles long and 20 miles wide at its widest point, bi-county stream, lake, river, bay, ocean and Sound water-frontage exceeds 1,000 linear miles. The climate is temperate, with a mean daily maximum temperature of 81.9°F during the warmest month, July; mean daily minimum temperature of 19.0°F during the coldest month, January (Nagle, 1975 and 1978). The Island-wide average rainfall is 44 inches, and is fairly well distributed throughout the year.

Approximately 2.6 million people reside in the Nassau-Suffolk area; two-thirds of them in the western third of the region. The development in the western and central portions is primarily residential, with moderate to higher suburban densities—generally no more than five to ten dwelling units per acre—gradually giving way to lower densities as one proceeds toward the north shore in Nassau and western Suffolk and toward the more recently subdivided areas in western and central Suffolk. The eastern portion of Suffolk remains semi-rural, with a mix of agricultural, resort, and residential land uses; open fields; and woodlands.

1.3 WATER QUALITY PLANNING ON LONG ISLAND

The quantity and quality of Long Island's groundwater and the quality of its surface water have long been concerns of officials and residents who recognized their dependence on groundwater for potable supplies and on the surface waters for recreation and for the economically important tourism and fisheries industries.

During the past three decades an increasing number of federal, state, local, and even privately funded studies have focused on one or another aspect of Nassau and Suffolk's water resources. However, it was not until 1975, well after the Congressional enactment of *Section 208 of the Federal Water Pollution Control Act Amendments of 1972 (P.L. 92-500),* that coordinated comprehensive water quality management planning became a reality on Long Island. The Governor's December 1974 designation of the Nassau-Suffolk Regional Planning Board—now known as the Long Island Regional Planning Board—as the areawide planning agency, was followed by a E.P.A.'s award of a $5.2 million grant for a three year study of both surface water and groundwater quality problems in the bi-county area.

Findings of the 208 Study suggested that urban stormwater runoff might be a significant source of groundwater contamination. A major concern was that the more than 3000 recharge basins or sumps* that dot the Long Island land-

* Recharge basins or sumps are excavated areas, averaging about an acre in size, that receive the collected runoff from residential, commercial, and industrial areas and from highways, and permit it to percolate through moderate to highly permeable sand and gravel deposits to the water table.

scape might be functioning as conduits facilitating the passage of pollutants from the surface of the land to the water table aquifer and in some instances, to the deeper aquifers. The question of the role of the recharge basins in contaminant transport and their impact on groundwater quality attracted little or no attention from the time of the introduction of basins on Long Island in the 1930's until suspected organic contamination of drinking water emerged as a major concern in the mid-1970's.

The recharge basin has long been regarded as an extremely useful device serving a dual function: the provision of effective surface drainage at moderate cost in inland areas, especially those where ponding of runoff might otherwise occur; and the partial replenishment of the Upper Glacial or water table aquifer through recharge of fresh water that might otherwise be lost as a result of evaporation from impervious surfaces or diversion to coastal waters.

The 208 Study definitively implicated stormwater runoff as the major source of bacterial loading to coastal waters. It thus established a clear causal relationship between urban runoff and the closure of considerable portions of the shellfish areas, especially those along the south shore; and the occasional closure of public beaches. Modeling studies of eight bays, including extensive pre-storm and post-storm sample collection and analysis, indicated that in most parts of the region, runoff contributes more than 95% of the annual bacterial loading to the bays. This bacterial loading is apparently of nonhuman origin. The studies also implicated runoff as a contributor of inorganic chemicals, organic matter and sediment, and, possibly organic chemicals.

There is no doubt that past and present stormwater management practices have adversely affected surface water quality, and that poor water quality has, in turn, resulted in the denial of a beneficial use. The elevated coliform counts associated with urban runoff have been responsible for repeated or continuing contravention of the public health standards for the certification of shellfish waters (Appendix B) and the relatively infrequent contravention of the less restrictive standard for the operation of public beaches. The current ban on the harvesting of shellfish in approximately one-fourth of the most productive portions of the bays, containing an estimated one-third of the clams, seriously affects the hard clam industry, which reported a catch worth $17.4 million dockside value in 1981. It also affects commercial shellfishermen who specialize in other species, and a host of recreational clam diggers.

Given the economic and social impacts of the shellfish area closures, on the livelihood and recreation of Long Islanders, it is hardly surprising that questions have been raised concerning the reliability of the total and fecal coliform standard as a public health yardstick for the measurement of potential risk from the ingestion of shellfish. The continuing illegal harvesting of shellfish from uncertified waters, whether for personal consumption or sale, combined with the apparent low incidence of shellfish-transmitted disease, seems to suggest that administrative convenience, rather than a well documented causal relationship and predictive capability, may be the strongest argument in favor of retention of the existing standards.

1.4 PROBLEMS SELECTED FOR STUDY: THE LONG ISLAND CONTRIBUTION TO THE NATIONAL EFFORT

The decision to participate in the Nationwide Urban Runoff Program presented the Long Island Regional Planning Board with an opportunity and a responsibility.

It afforded an opportunity to expand the continuing planning activities initiated shortly after the completion of the *208 Areawide Waste Treatment Management Plan*, by providing sufficient funding to allow the Board and the cooperating agencies to address several high priority runoff-related concerns; namely, to verify or refute a critical assumption concerning the groundwater quality impacts of the use of recharge basins; to confirm or modify 208 findings regarding pollutant loadings by land use category; to determine the relative importance of animal as opposed to human sources of coliform bacteria; and to investigate the frequency and extent of the occurrence of a human pathogen, salmonella, in stormwater runoff. It imposed a responsibility to contribute specified precipitation, runoff and receiving water data to E.P.A.'s rapidly expanding national data base as part of that agency's Congressionally mandated effort to gain a better understanding of the importance of runoff-related pollution and of the most appropriate, least-cost strategies for mitigating unacceptable water quality impacts.

The bi-county component of the Nationwide Urban Runoff Program was designed to meet local and national needs. The Water Division of E.P.A. suggested that the prime focus should be the investigation of the effects of urban runoff-borne contaminants, especially toxics, on the water supply. However, considerable discussion among the proposed participants with E.P.A. Headquarters staff and its NURP consultants resulted in an expansion of the project scope to include stormwater runoff impacts on marine waters. In its final form, the Long Island program provided for the further investigation of the source, type, and fate of pollutants in runoff on Long Island, and an evaluation of the changes in runoff quality; that is, the reduction in pollutant loading that could be achieved through the adoption of selected best management practices. It attempted to respond not only to relevant 208 questions and findings, but also to the doubts as to the scientific validity of the coliform standards as a measure of potential pathogenic effects in humans attributable to shellfish consumption.

1.5 THE WORK PLAN

Following the normal delay in start-up time attributable to the need to prepare a detailed work plan and unanticipated delays attributable to the necessity for budgetary revisions to resolve a last minute funding problem and to unfavorable weather conditions, the United States Geological Survey and the county agencies commenced study site instrumentation and initial sampling in the latter part of 1980.

The work plan originally identified twelve separate tasks, nine of a technical nature. The tasks involved:

- study site and monitoring station selection
- baseline data collection, analysis, and evaluation
- control measure application or modification
- post-control measure data collection, analysis, and effectiveness evaluation
- relative cost, cost-effectiveness, and control measure applicability assessment
- management program development

A long dry spell coupled with delays in the procurement of monitoring equipment necessitated some changes in program scope and scheduling. The excessive cost of constructing one of the proposed control measures, the energy dissipator, in accordance with the engineering consultant's plans and specifications resulted in a decision to drop the proposed control measure evaluation at the Carlls River site.

1.6 REPORT DESCRIPTION

This volume is divided into two parts. Part I contains the *Long Island Segment of the Nationwide Urban Runoff Program Project Report*—esentially an expansion, modification and detailing of the findings and plan recommendations relating to runoff presented in Volume I of the Long Island Waste Treatment Management Plan, published in 1978. Part II contains a series of *Appendices,* consisting of selected technical materials generated as part of the Long Island Project. Part II is an extension of Volume II of the 1978 publication.

Additional Nationwide Urban Runoff Program materials, including raw data for individual storm events, consultant memoranda and reports, and instructions and preliminary National Program reports from E.P.A. Headquarters, are available for review at the Long Island Regional Planing Board or may be accessed through the participating agencies.

The Project Report (Part I) consists of six sections.

Section One — Introduction — covers the general background, including a description of the Nationwide Urban Runoff Program, its relation to Long Island, the local role, the problems addressed and the work plan.

Section Two — The Groundwater Component — discusses the U.S. Geological Survey's investigation of the extent to which recharge basins facilitate or impede the movement of runoff-borne contaminants from the land surface to the water table, and the extent to which pollutant loadings and contaminant transfer is affected by drainage area land uses or basin characteristics. This section includes a description of the study sites and control measure effectiveness.

Section Three—The Surface Water Component: Detailed Study Areas in Nassau and Western Suffolk—discusses the Nassau County Department of Health and Suffolk County Department of Health Services investigations of contamination of surface waters, with emphasis on bacterial indicators, including a description of the study sites and control measures; the sampling program, analytical procedures, results; and an evaluation of control measures. This section also incorporates portions of the work of the engineering consultant, particularly those relating to load reduction analysis.

Section Four — The Surface Water Component: Remainder of the Island presents a general discussion of the location and extent of coliform contamination of near shore marine surface waters outside the detailed study area. It includes a revised map and description of the areas contributing surface runoff directly to streams and saltwater bodies, a recalculation of the runoff-related pollutant contribution to several bays for which the presumed drainage area boundaries were changed, and additional calculations of runoff-related pollutant loadings to a number of streams and bays that were not modeled during the initial 208 study. It deals with areas currently closed to shellfishing and assesses the likelihood of certification even with the achievement of significant reductions in runoff-related pollutant loads; and with areas now open, but subject to severe degradation and possible closure unless measures to protect water quality accompany future residential or other development.

Section Five — Findings, Conclusions and Plan Recommendations — summarizes the more important findings and conclusions, poses a series of stormwater management alternatives for surface water coliform load reduction and recommends a course of action.

Section Six — Annotated Bibliography — presents a brief description of various documents produced during the course of the Nationwide Urban Runoff Program.

Part II comprises eight appendices.

Appendix A contains a listing of the twenty-eight state or areawide agencies participating in the Nationwide Urban Runoff Program and a map indicating the location of prototype projects.

Appendix B a copy of the New York State laws and regulations relating to shellfishing.

Appendix C a report of a U.S. Geological Survey literature search dealing with microorganisms in stormwater.

Appendix D which has been excerpted from the report prepared by the Planning Board's engineering consultant, presents an evaluation of the various control measures that were considered.

Appendix E focuses on waterfowl and includes a Nassau County Department of Health report dealing with the relation of waterfowl activities on water quality in three south shore ponds and waterfowl counts for numerous south shore areas.

Appendix F presents additional material provided by the engineering consultant; in this instance, a description of the modeling effort that constituted a key element of the study.

Appendix G contains a memorandum describing a methodology for, and the results of calculations of, the value of the standing crop of hard clams in selected areas.

Appendix H presents two memoranda describing the initial investigations undertaken as part of the study of occurence of Salmonella organisms in surface waters.

1.7 REFERENCES CITED

Nagle, C.M., 1975, *Climatology of Brookhaven National Laboratory 1949 through 1973*, BNL50466, Brookhaven National Laboratory, Upton, N.Y.

Nagle, C.M., 1978, *Climatology of Brookhaven National Laboratory 1974 through 1977*, BNL40857, UC-11, Brookhaven National Laboratory, Upton, N.Y.

Water Planning Division, U.S. Environmental Protection Agency, 1978, *1978-1983 Work Plan for the Nationwide Urban Runoff Program*, Water Planning Division, U.S. Environmental Protection Agency, Washington, D.C.

Section 2 - The Groundwater Component

2.0 INTRODUCTION

Groundwater is the sole source of fresh water for the more than 2.6 million residents of Nassau and Suffolk Counties on Long Island, New York (Figure 2-1). Under natural conditions, the groundwater reservoir is recharged only by local precipitation seeping from the land surface to the water table. Since the 1920's, when Nassau County began to experience urbanization, the construction of highways and parkways, houses, shopping centers, industrial parks, and streets and sidewalks in areas that had been farmland has continuously reduced the amount of land surface through which precipitation can infiltrate to the water table. After urbanization, storm runoff from the paved surfaces was carried to streams or coastal waters through storm sewers, which resulted in a substantial loss of recharge to the groundwater reservoir.

When Nassau County recognized that natural recharge was being lost, it began, in 1935, to excavate large basins to impound stormwater so that the water could infiltrate to the groundwater reservoir through the pervious sand and gravel beds that underlie Long Island. The use of stormwater basins not only helped to conserve storm runoff and to augment the groundwater supply, but also eliminated the need for long, costly trunk storm sewers to carry runoff to coastal waters. The concept was adopted throughout Suffolk County some years later. In spite of these efforts, there remain significant areas that are not served by recharge basins because the depth to groundwater is insufficient. Therefore, large quantities of runoff are still discharged to bays.

The findings of the *Long Island Comprehensive Waste Treatment Management Plan (Koppelman, 1978)* suggested that urban stormwater runoff, routed through storm sewers to the more than 3,000 recharge basins or sumps in Nassau and Suffolk Counties (Figure 2-1), might be a significant source of pollution to the groundwater reservoir and ultimately, through subsurface outflow, to the surrounding marine waters.

The purpose of the groundwater component of the Long Island Nationwide Urban Runoff Program, carried out by the U.S. Geological Survey, New York District, Syosset Subdistrict, was to determine:

- the source, type, quantity, and fate of pollutants in stormwater runoff routed to recharge basins, and
- the extent to which these pollutants are, or are not, attenuated as they percolate through the unsaturated zone.

In order to accomplish this objective, five recharge basins, located in areas with distinct land use types, were selected for intensive monitoring during and immediately following storm events.

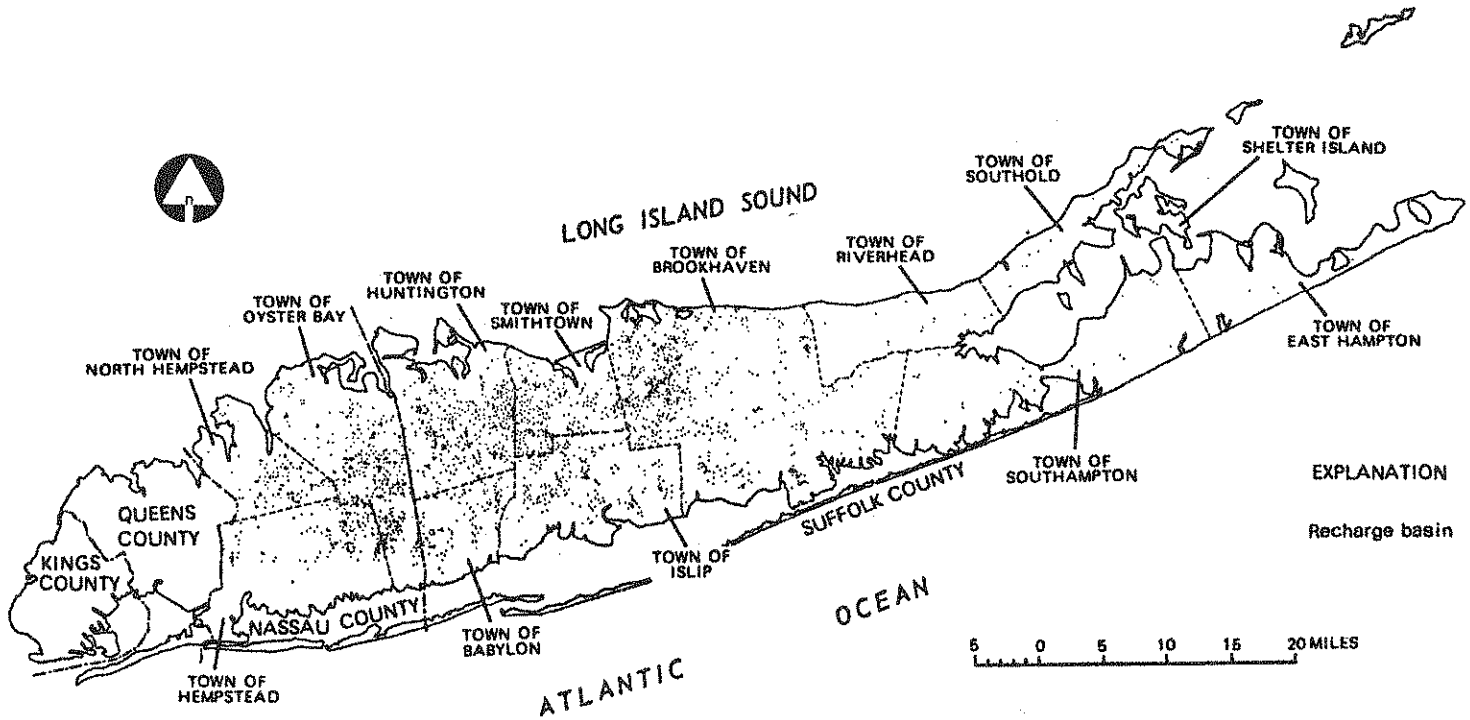


FIGURE 2-1 *Location of recharge basins used for storm runoff on Long Island in 1969 (from Seaburn and Aronson, 1973)*

2.1 DESCRIPTION OF MONITORING SITES

Five recharge basins, three in Nassau County and two in Suffolk County, were chosen for study (Figure 2-2) on the basis of the type of land use from which they receive stormwater runoff. A variety of land use types is represented. The physical characteristics of these recharge basins and their drainage areas are summarized in Table 2-1. A topographic map and an aerial photograph of each of the five drainage areas are shown in Figures 2-3.1 to 2-3.5.

2.1.1 Centereach. The recharge basin at Centereach (Figure 2-3.1) drains storm runoff from a four-lane asphalt State highway that is bordered on both sides by small commercial establishments. Although the topographic drainage area is 553 acres, the effective drainage area as determined by the New York State Department of Transportation (DOT), which owns and maintains the basin, is only 69 acres. Of this, 4.9 acres is impervious area, consisting of the state highway, driveways, and side road intersections.

The basin floor occupies about 0.5 acres and is underlain by sand and gravel. Topographic relief in the drainage area is about 10 feet.

This recharge basin was constructed in 1977 and was designated *Ecological Recharge Basin #2* by the New York State Department of Transportation. The basin bottom was lined with 30-mil polyvinylchloride sheets so that it retains water and has formed an artificial pond. The pond is stocked with aquatic animals and vegetation by the DOT. Beneath the impermeable liner there is an exfiltration system consisting of perforated pipes. When the pond level rises, the excess water flows through a filter box into the exfiltration system and ultimately recharges the groundwater.

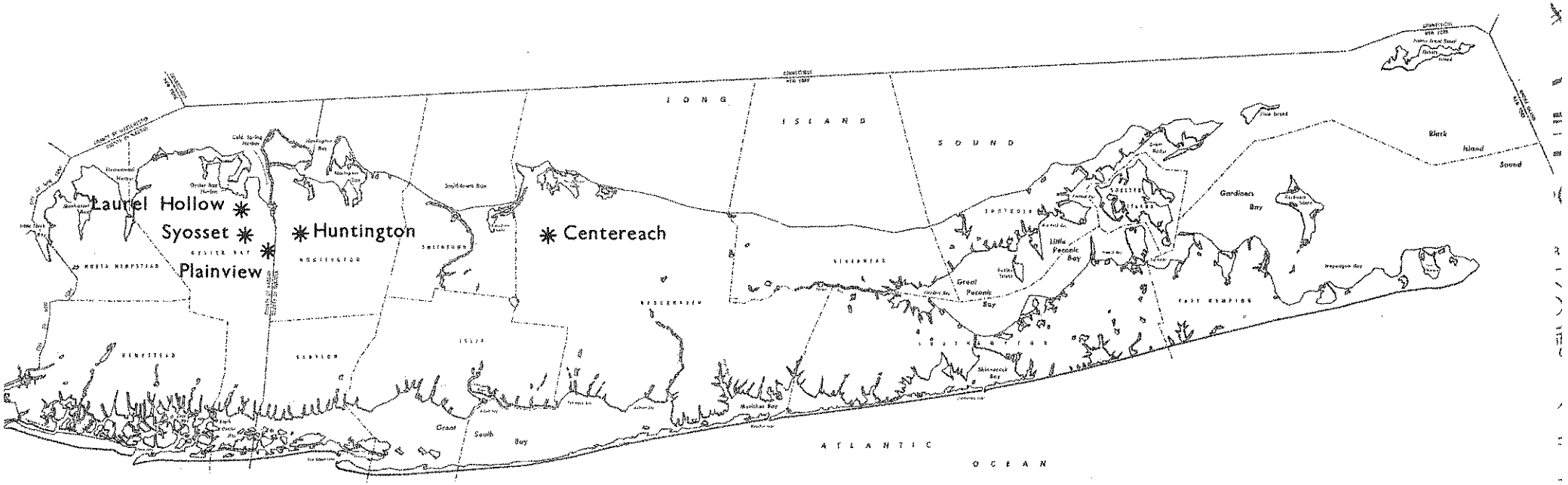
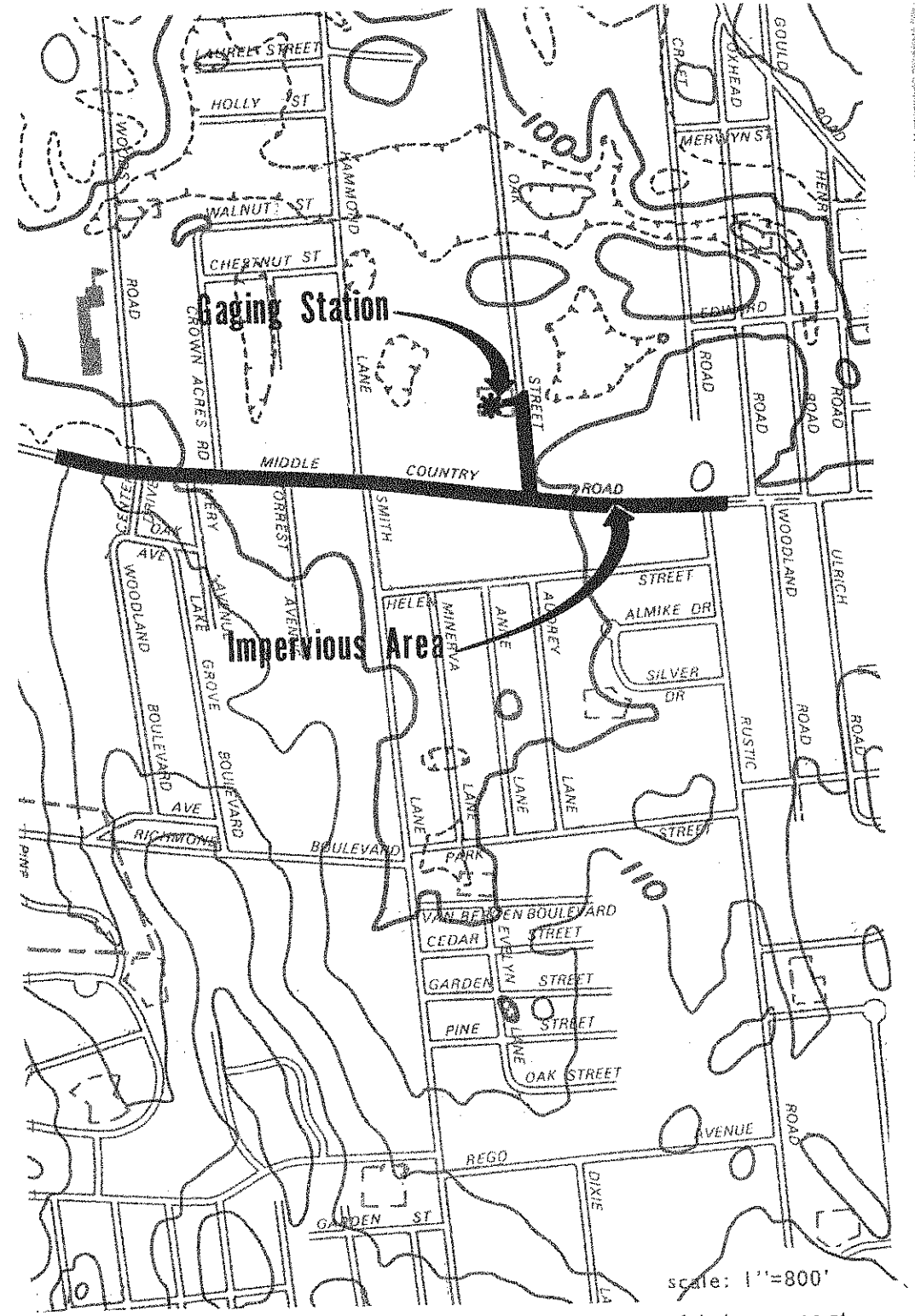


FIGURE 2-2 *Location of recharge basins studied*

Table 2-1
PHYSICAL CHARACTERISTICS OF RECHARGE BASINS STUDIED

Site Location	Land Use	Drainage Area (Acres) Total	Drainage Area (Acres) Impervious	Percent Impervious	Soil Type[a]	Depth To Ground-Water (ft)	Remarks
Centereach	strip commercial	69	4.9	7.1	Dukes sand	39	constructed with impervious liner to hold water at all times
Huntington	shopping mall, parking lot	39	39.0	100.0	Sassafrass loam	66	always contains water
Laurel Hollow	low density residential[b]	100	4.7	4.7	Haven loam	22	basin is newly constructed
Plainview	major highway	190	12.0	6.3	Haven loam	58	heavy vegetation in basin
Syosset	medium density residential[c]	28	6.3	23.0	Hempstead loam	78	

[a] Classification from Lounsbury and others (1928).
[b] 1-acre zoning
[c] 1/4-acre zoning



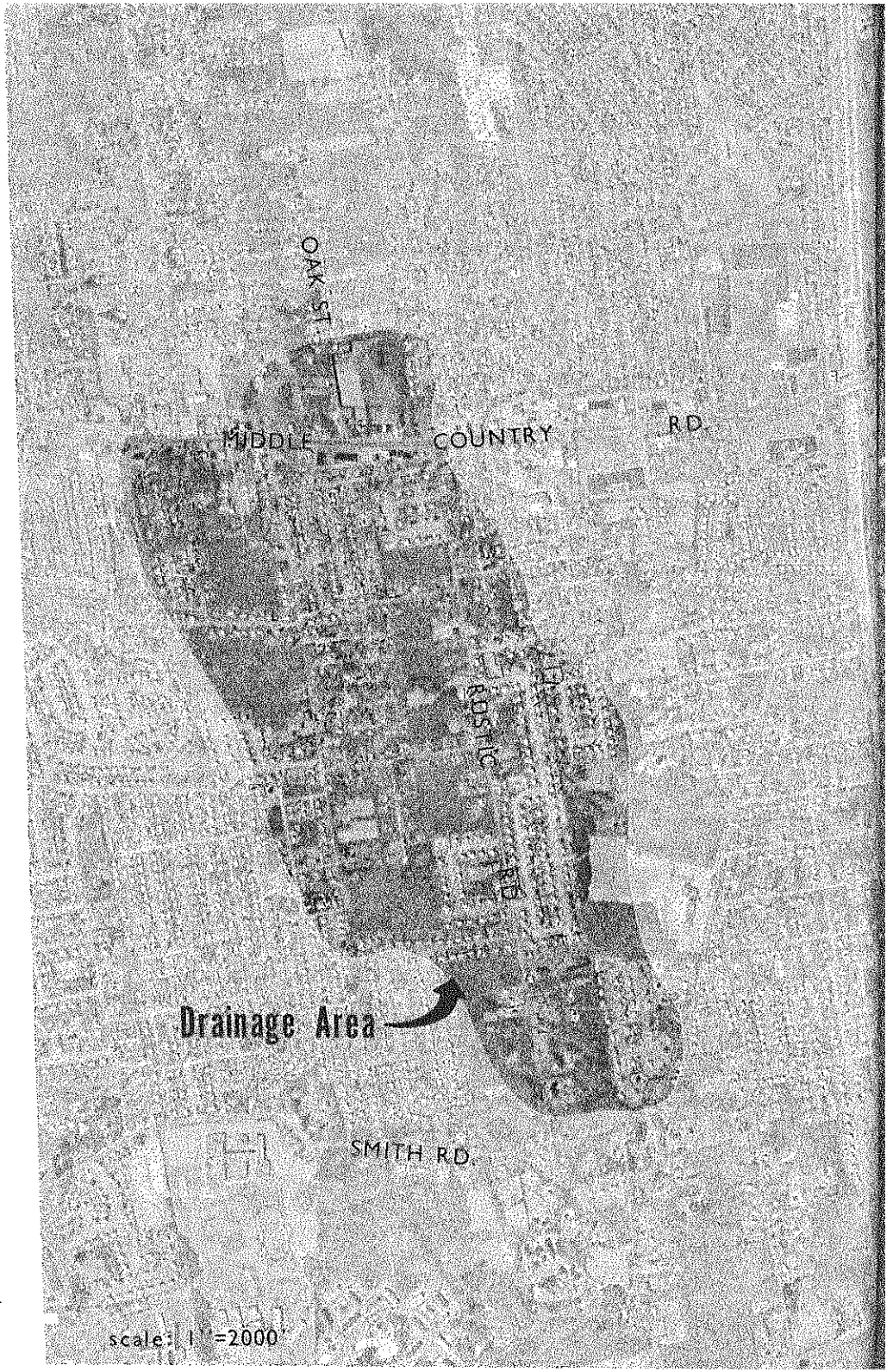
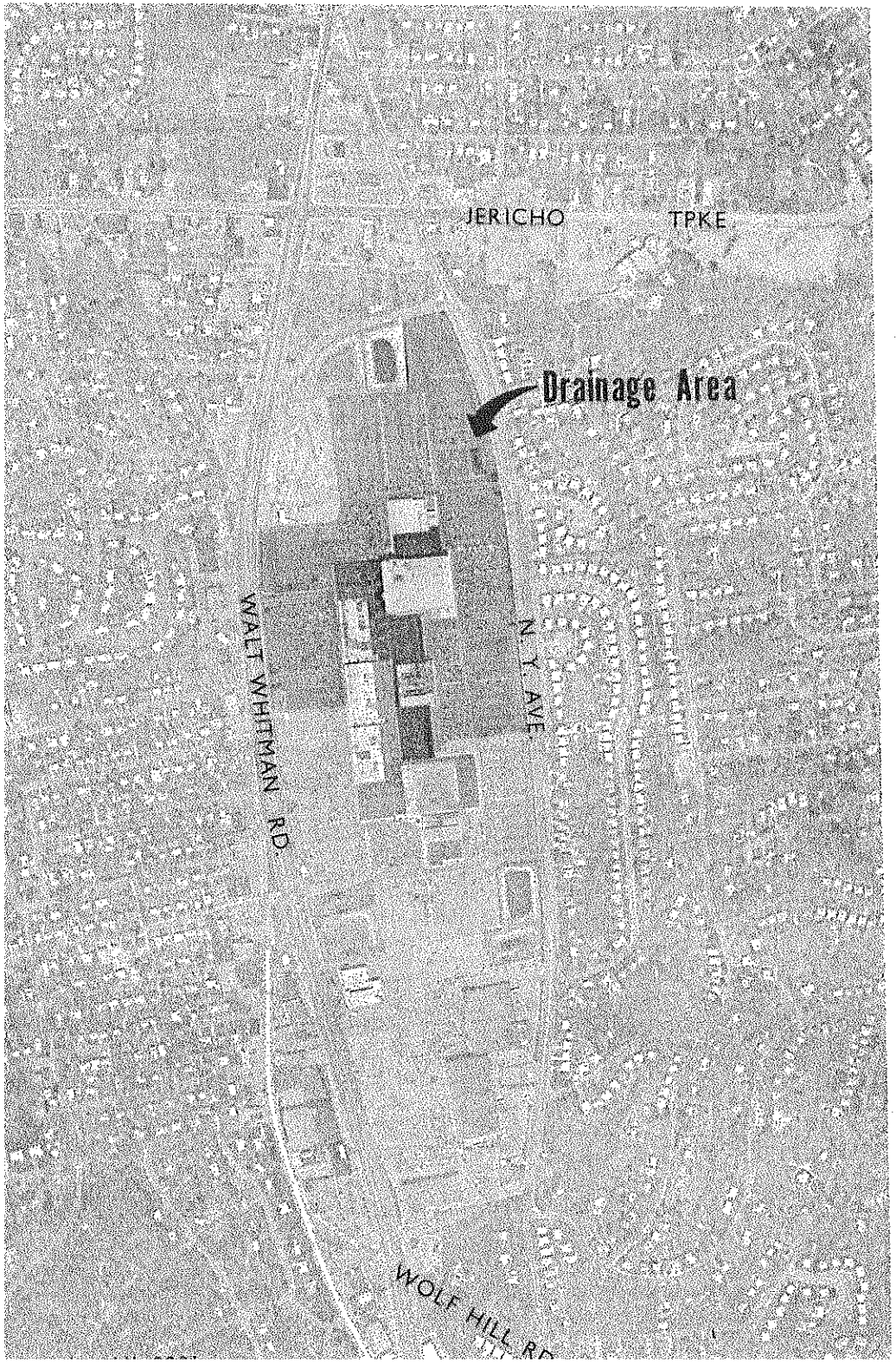


FIGURE 2-3.1 *Topographic map and aerial photograph of drainage area at*



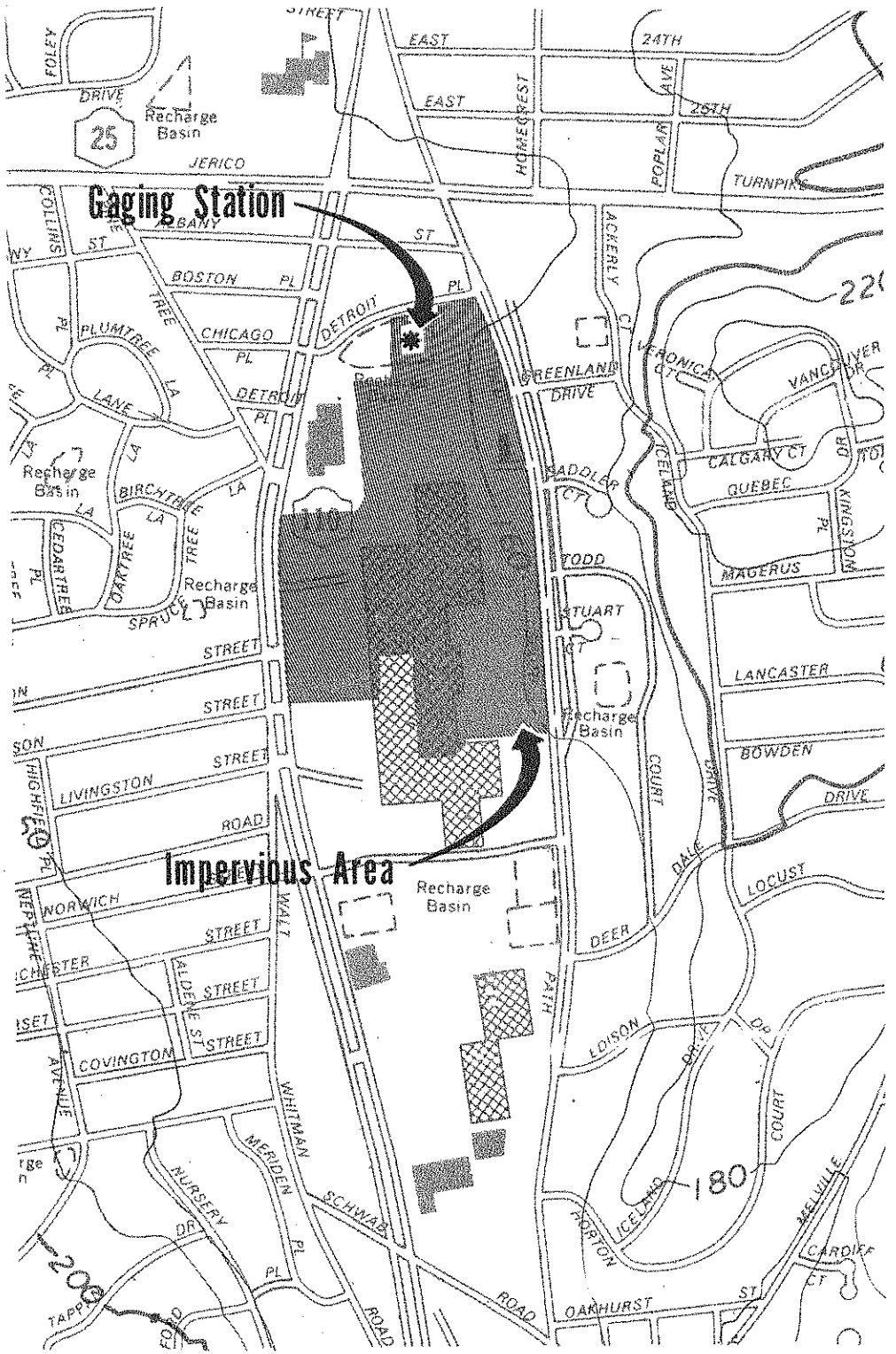
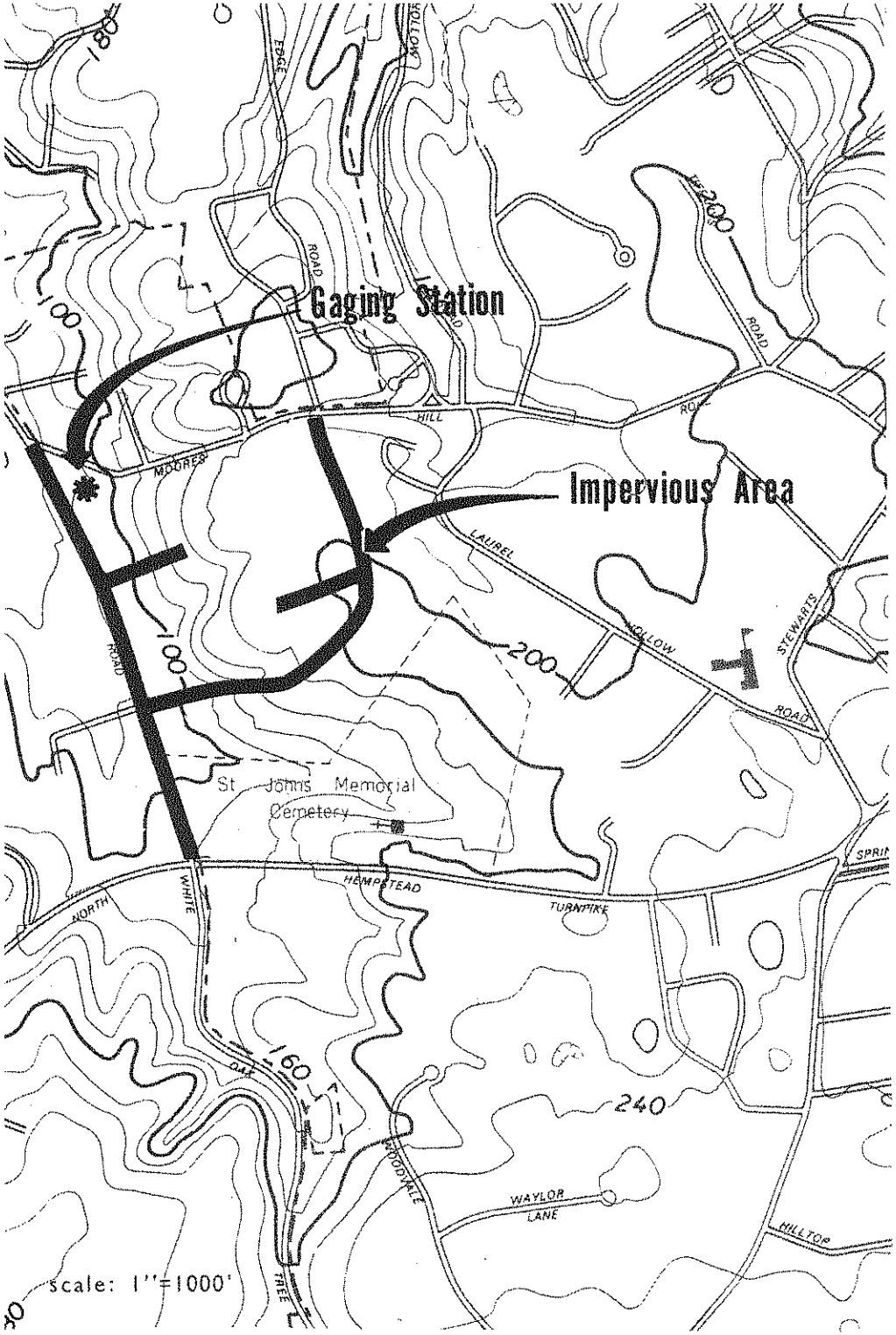


FIGURE 2-3.2 *Topographic map and aerial photograph of drainage area at*



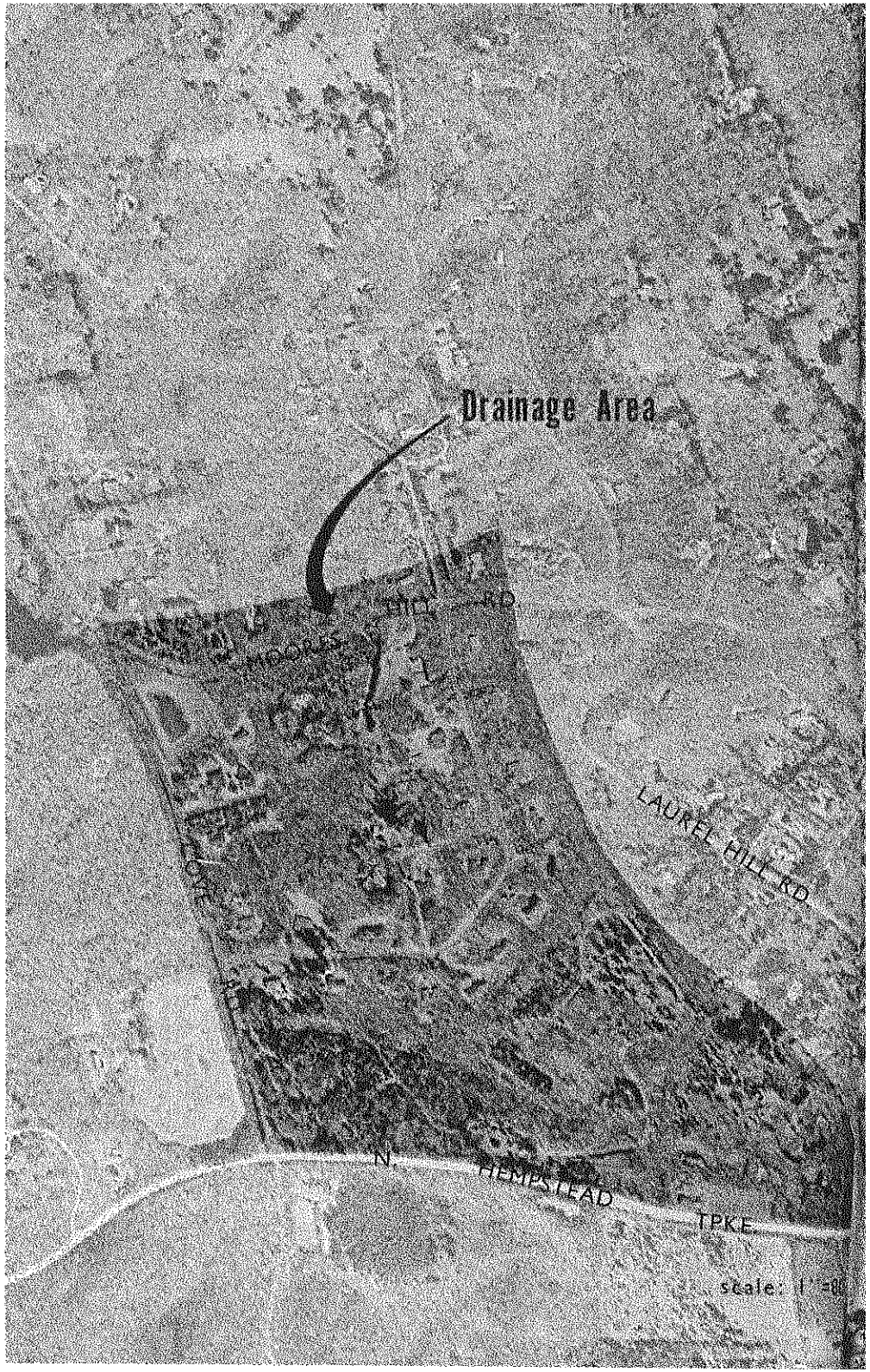
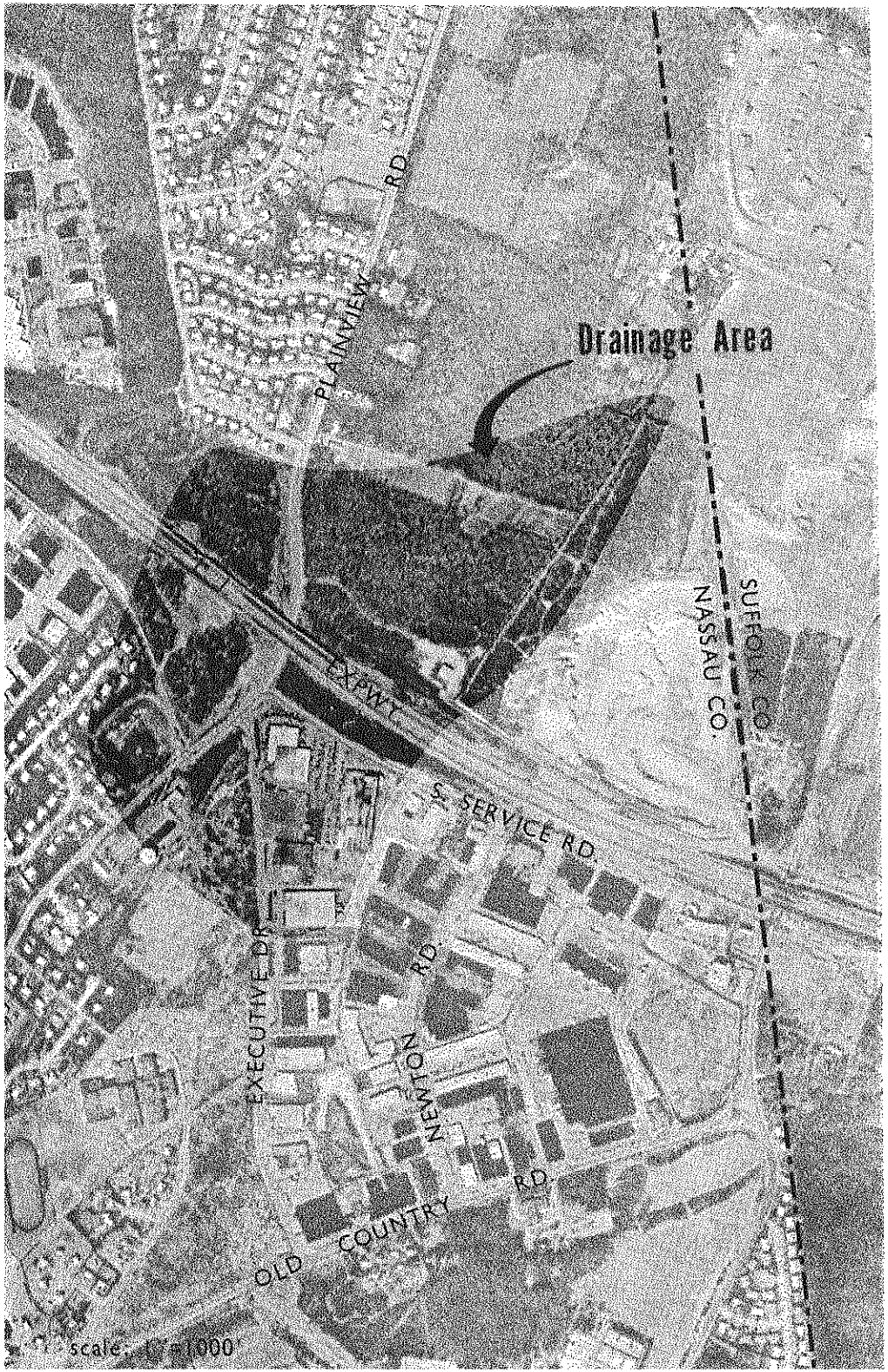


FIGURE 2-3.3 *Topographic map and aerial photograph of drainage area at Laurel Hollow*



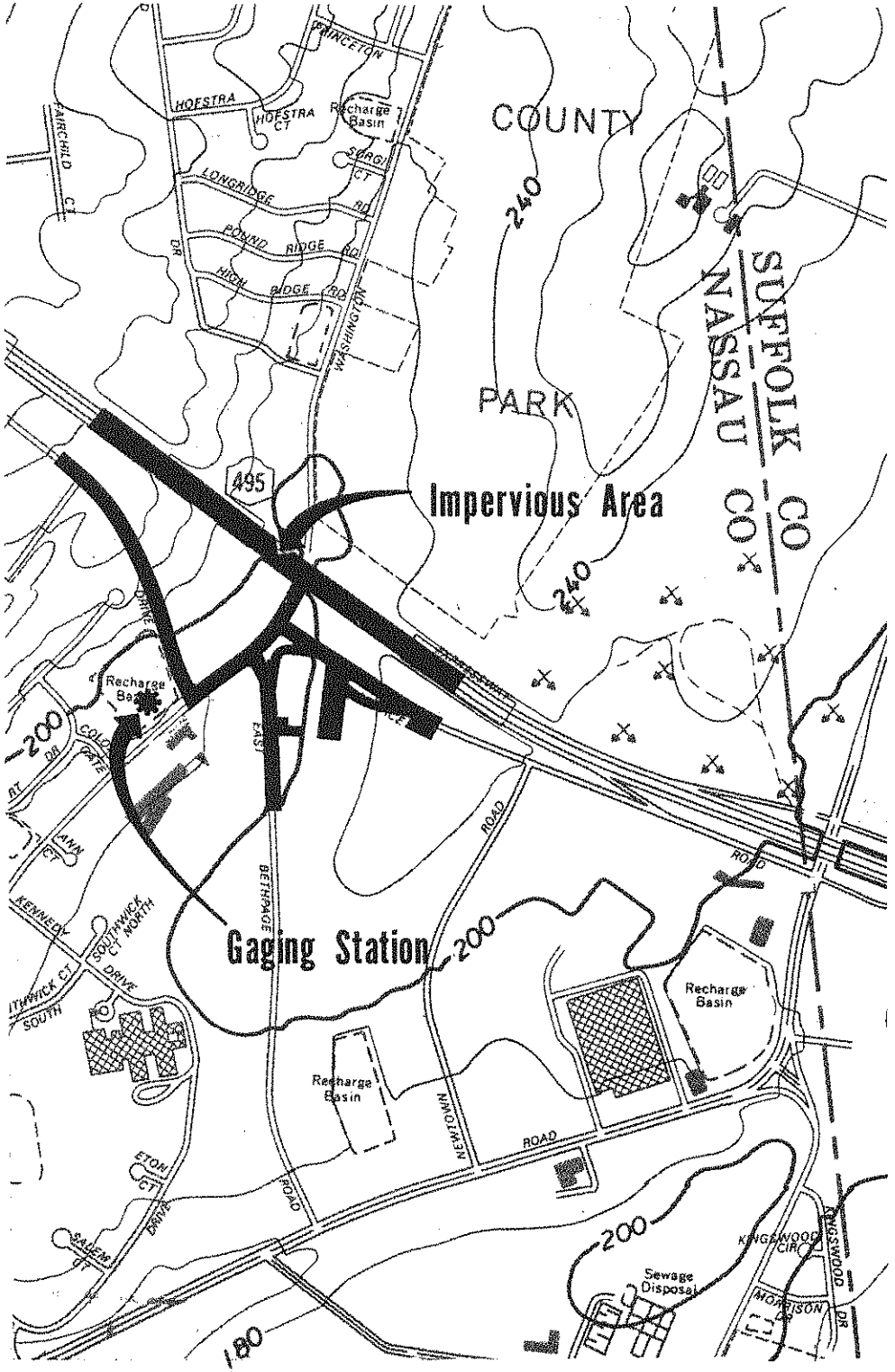
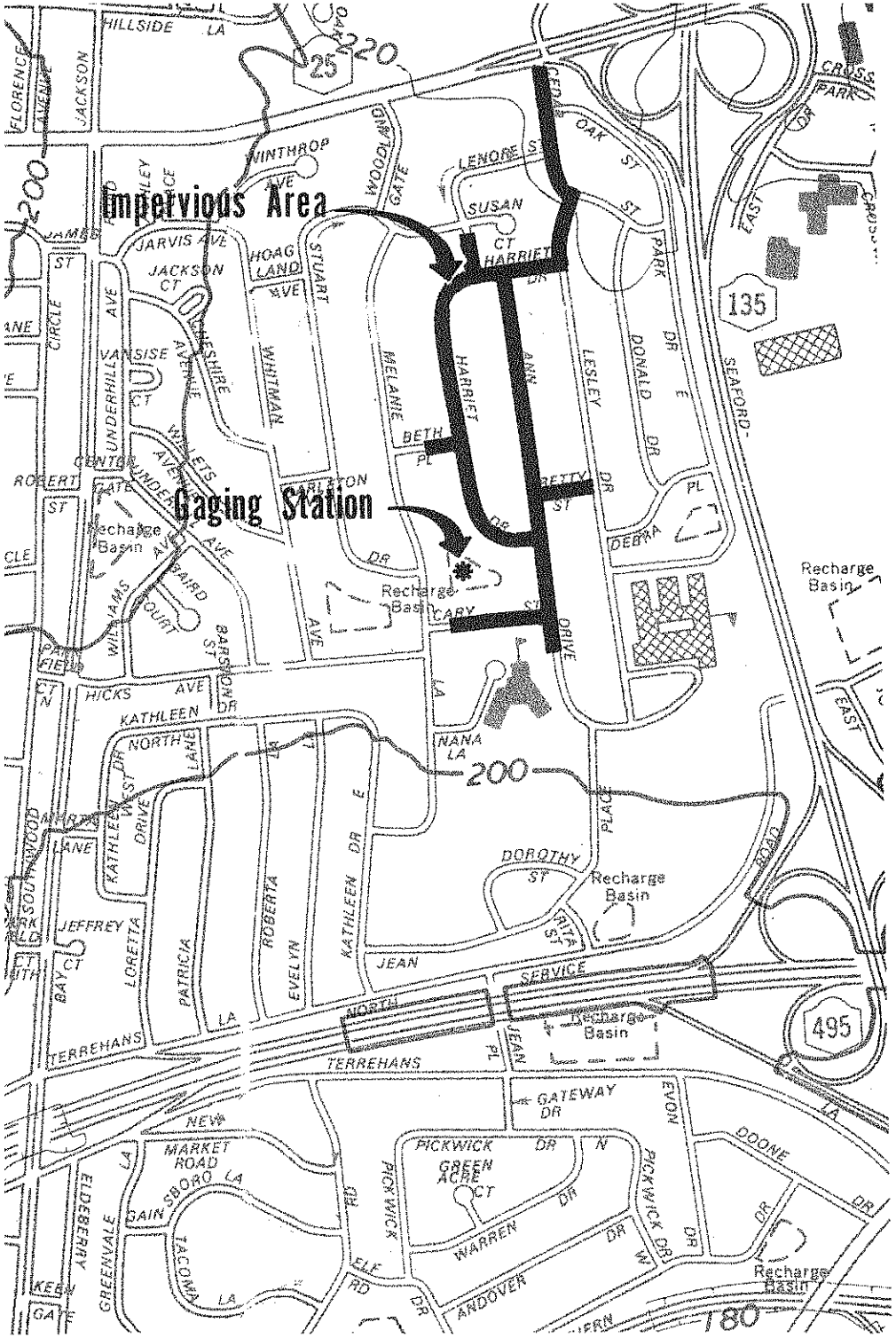


FIGURE 2-3.4 *Topographic map and aerial photograph of drainage area at Plainview*



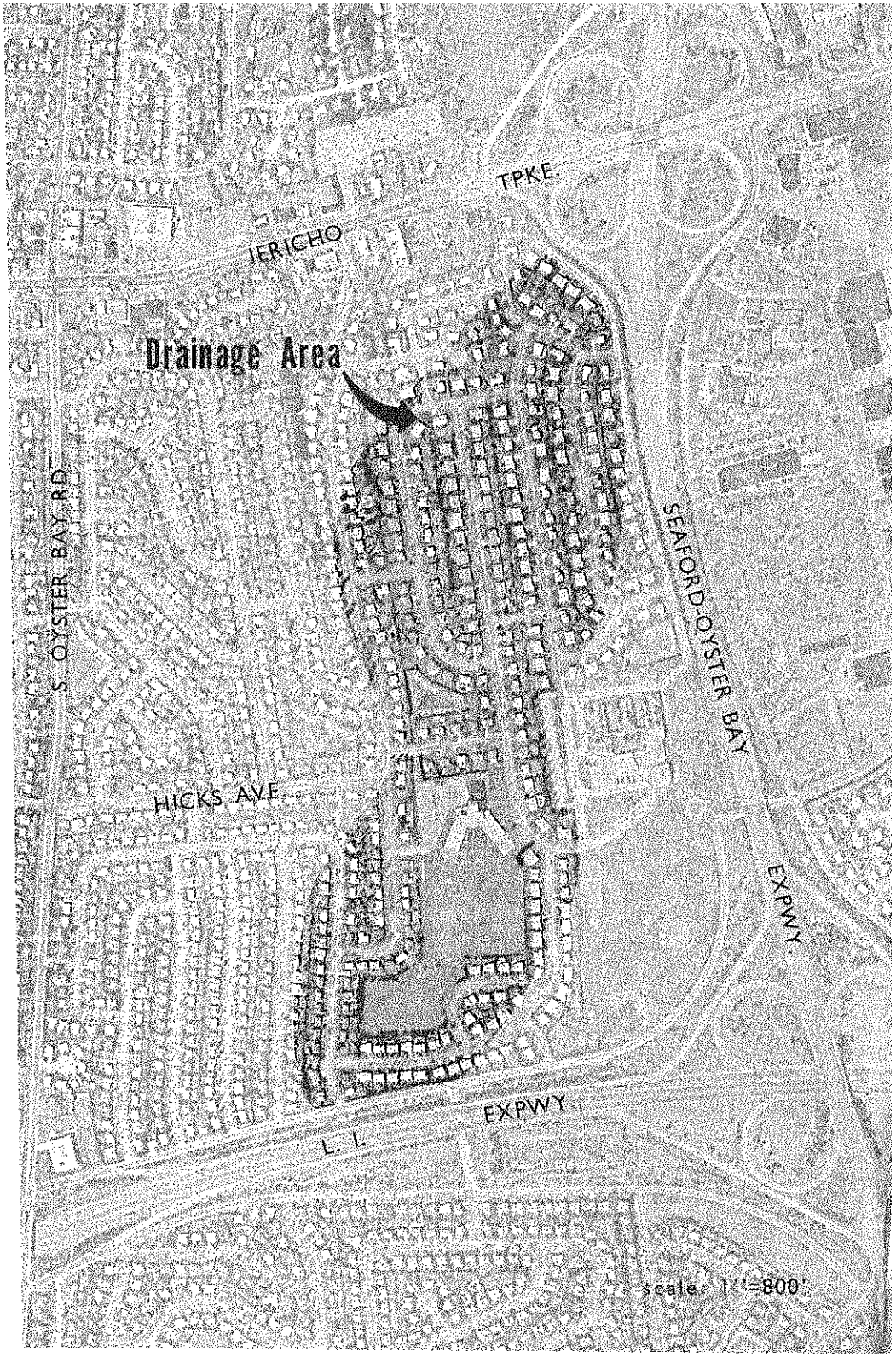


FIGURE 2-3.5 *Topographic map and aerial photograph of drainage area at Syosset*

2.1.2 Huntington. The recharge basin at Huntington (Figure 2-3.2) receives runoff from 39.2 acres of a large shopping center and the adjacent parking lot. The parking lot is paved with asphalt and is curbed. The basin floor occupies about 0.5 acres and is underlain by sand and gravel. Vegetation in this basin is sparser than in the others, consisting mainly of grass and weeds. There is no relief in the drainage area.

Most recharge basins on Long Island do not hold water longer than one to two days after a storm event. However, most basins that drain parking areas become clogged with oil and therefore contain water most, if not all, of the time. Although the basin at Huntington is clogged, stormwater runoff exfiltrates through the walls of the basin above the impermeable layer, enabling the basin to effectively recharge as much runoff as a basin that is not clogged.

2.1.3 Laurel Hollow. The recharge basin at Laurel Hollow (Figure 2-3.3) drains approximately 100 acres of low density residential area. Within this area, newly-constructed one-family houses are situated on lots of one or more acres. The basin was constructed recently (1979) and therefore has a bottom consisting of bare soil underlain by sand and gravel. The basin floor occupies about 0.6 acres.

Roads in the drainage area are two lanes wide, paved with asphalt and curbed in most places. Topographic relief is about 160 feet, which is the greatest relief of the five drainage basins under study.

2.1.4 Plainview. The recharge basin at Plainview (Figure 2-3.4), constructed in 1956, receives runoff from a major highway, the Long Island Expressway, and its service road. Of the 190 acres of topographic drainage area, 11.9 acres is the contributing area, consisting of a six-lane concrete highway, two-lane asphalt service roads, and a few driveways. The highway is curbed on both sides; the service road is not. Topographic relief in the drainage area is about 60 feet.

The basin floor occupies approximately 1 acre. It is underlain by sand and gravel and is covered by thick vegetation including grass, weeds, bushes, and some trees.

2.1.5 Syosset. The recharge basin at Syosset (Figure 2-3.5) drains approximately 28.2 acres of medium density residential area containing single-family houses situated on quarter-acre plots. The basin was constructed in 1957. Its floor occupies about 0.3 acres and is underlain by sand and gravel. Thick vegetation, including weeds, grass, and bushes, is present in the basin.

Roads in the drainage area are two lanes wide, paved with asphalt, and curbed. Topographic relief within the drainage area is less than 20 feet.

2.2 SAMPLING PROGRAM

The Long Island 208 study indicated that recharge basins may furnish an avenue for pollutants in stormwater runoff to reach the groundwater reservoir. The report by Weston (1977) estimated the annual load of pollutants to the groundwater from a limited number of stormwater runoff and groundwater samples. The groundwater component of the Nationwide Urban Runoff Program was designed to collect a large quantity of storm-related data in order to better define the impact of stormwater runoff on the quality of groundwater beneath Long Island's recharge basins. The five recharge basins described in the previous section were instrumented to collect precipitation, stormwater inflow into the basins, and stormwater that infiltrated to the water table to become groundwater.

2.2.1 Equipment. A schematic diagram of the instrumentation at each of the five sites is shown in Figure 2-4.

Precipitation was measured by a tipping bucket rain gage manufactured by Weathertronics, Inc., and recorded on 16 channel digital tape at five-minute intervals by a Stevens recorder. A precipitation sample was collected in a large plastic lined bucket placed outside the instrument housing for the duration of the storm. In this way, information on precipitation quantity, quality, and intensity was collected during each storm event.

Stormwater inflow to the recharge basins was measured by a Marsh-McBirney Velocity-Modified Flow Meter, model 250, and was recorded on 16-channel digital tape at five-minute intervals by a Stevens recorder. The flow rate was also recorded on a seven day circular chart that measures flow as a percentage of a user-determined maximum. This device is an integral part of the flow meter.

The stormwater was sampled from the sewer line by a Manning S-6000 Stationary Discrete Sampler. This sampler draws one liter of water through a vacuum line and discharges it into bottles in an attached refrigerated compartment. The sampler can be programmed to collect samples automatically at predetermined volume or time intervals, or it can be activated manually. This equipment allowed for the collection of data on total flow volume, flow rate, and stormwater quality.

A well adjacent to each recharge basin was equipped with a Stevens Type F water-level recorder that indicated when the stormwater reached the water table. Subsequent pumping and/or bailing of the well provided samples for water quality analysis.

2.2.2 Collection Procedures. The general procedure for collecting stormwater runoff samples for standard chemical analysis (Table 2-2) was as follows. The first sample was collected when flow first appeared in the sewer line and registered on the circular flow chart. Subsequent samples were collected at 10-, 20-, 30-, and 60-minute intervals. Hourly samples were collected thereafter when the flow was continuous. During intermittent flow, an attempt was made to collect samples near hydrograph peaks.

Table 2-10
MEDIAN AND RANGE OF RUNOFF/PRECIPITATION RATIO, IN PERCENT

Basin	Minimum	Median	Maximum
Centereach	57	180	202
Huntington	0.7	11	48
Laurel Hollow	13	24	42
Plainview	5	75	180
Syosset	32	60	114

Table 2-10, however, shows very low ratios for the Huntington basin. This is probably due to two factors: (1) occasional inaccurate flow data caused by reverse flow in the inflow pipe where the electromagnetic flow sensor is located; and (2) possible exfiltration through manholes and storm sewer lines.

If the Huntington basin is not considered, the lowest median runoff/precipitation value (24) is exhibited at Laurel Hollow, the low density residential area. The value is higher (60) at Syosset, the medium density residential area, and still higher (75) at Plainview, the predominantly paved highway area.

The strip commercial area at Centereach exhibits very high runoff/precipitation values. These numbers may be biased by unaccounted for rooftop, parking, and side-steet areas that may drain into the recharge basin. In addition, three of the six storms sampled at Centereach had precipitation in excess of 1.5 inches. (See Table 2-6 for detailed storm characteristics.) During such storms, runoff from pervious surfaces would be significant.

Figure 2-5 is a log-log plot of precipitation versus runoff for each of the five sampling sites. Despite a rather large degree of scatter, it is apparent that the data points tend toward a straight-line relationship. This relationship is especially good for Laurel Hollow and Centereach. The scatter may be due to variables such as seasonal effects, storm duration and intensity, and number of antecedent dry days. The small number of data points also contributes to the poor correlation.

Using one inch of precipitation as an index, the following amounts of runoff are derived from the graphs in Figure 2-5:

Centereach	1.50 inches
Huntington	0.13 inches
Laurel Hollow	0.28 inches
Plainview	0.82 inches
Syosset	0.60 inches

These data correlate well with the median values given in Table 2-10. They show that for one inch of precipitation, all of the runoff (with the exception of the Centereach site, for the reasons outlined above) can be accounted for by the precipitation that falls directly on impervious surfaces.

2.5.2 Stormwater Quality

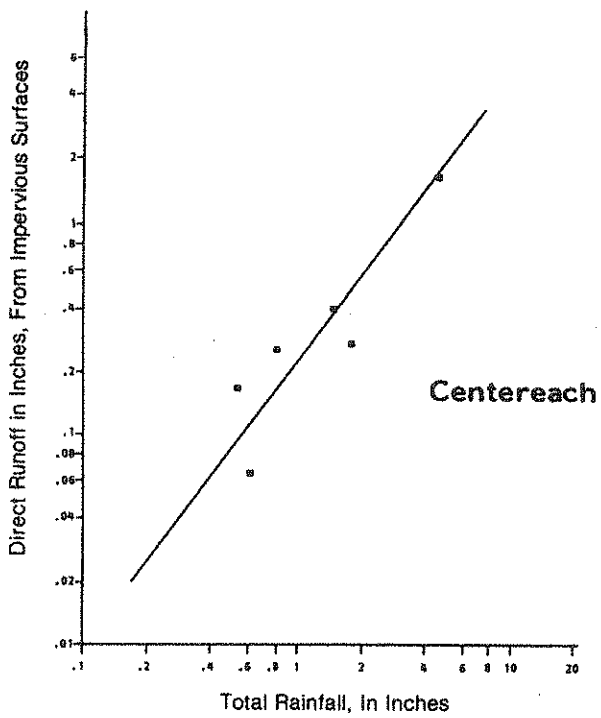
2.5.2.1 Standard Chemical Analysis. During each storm event, stormwater inflow was collected for analysis for the suite of water quality parameters listed in Table 2-2, as well as the three bacterial indicators. These data are stored in the U.S. Geological Survey WATSTORE and EPA STORET computer data bases.

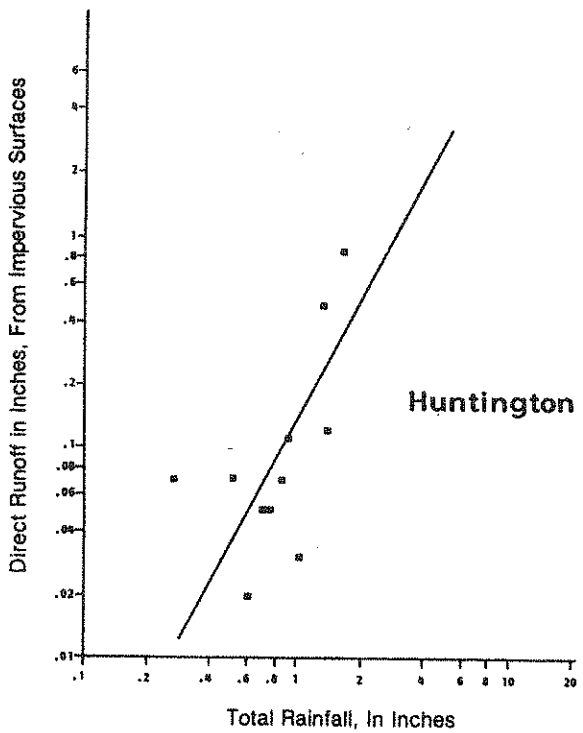
A statistical summary of selected water quality parameters for all storm events during the period of record for each of the five stations is shown in Table 2-11. The data indicate that, in general, concentrations of most of the chemical constituents analyzed for are low. In most cases they fall within the standards for potable water.

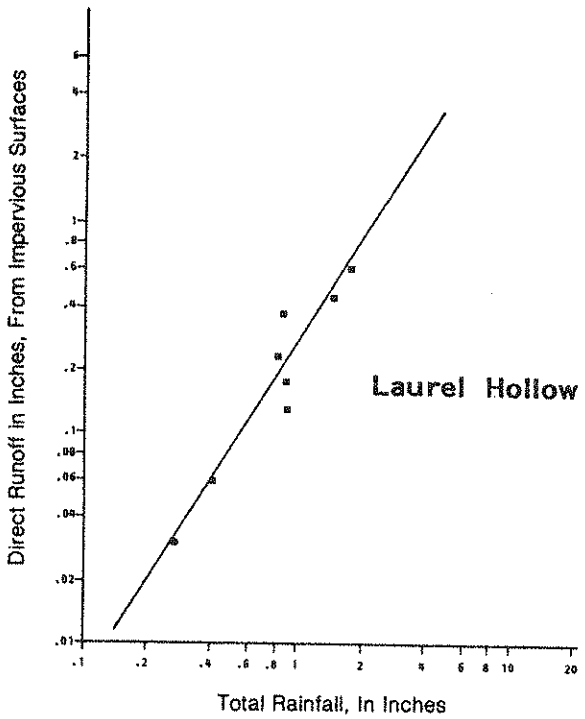
There are several notable exceptions to this generalization that can be related to specific land uses and seasonal effects. For example, the Plainview basin, which receives stormwater runoff from a major highway, shows a median lead concentration of 275 micrograms per liter (μg/l) and a high of 3,300 μg/l. Chloride concentrations were higher during the winter months, ranging up to a maximum of 1,100 mg/l at Huntington, because of the use of salt for road deicing.

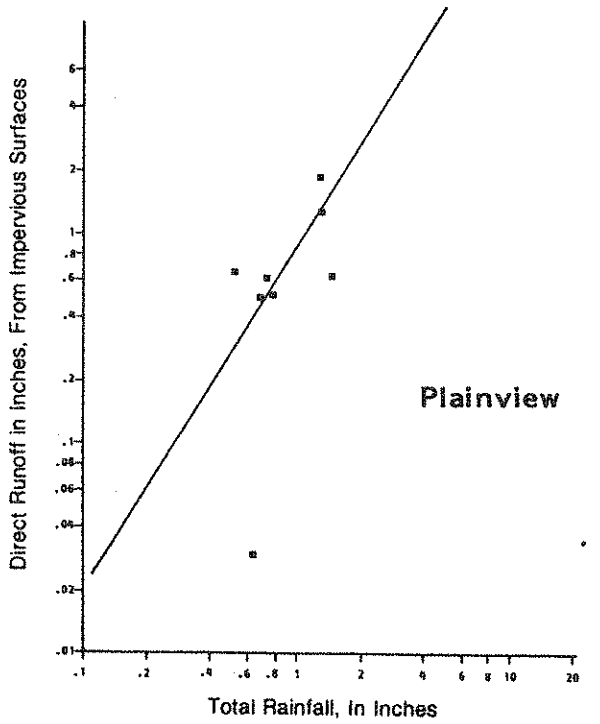
Typical hydrographs (discharge versus time), hyetographs (rainfall versus time), and pollutographs (concentration versus time) for each sampling site are shown in Figures 2-6 through 2-10. These graphs show the near simultaneous nature of the rainfall-runoff response in storm-sewered areas. The pollutographs show that peak constituent concentrations (in this case, lead, chromium, chloride, and total nitrogen) are generally associated with the first runoff peak. Additional peaks in runoff usually do not cause corresponding peaks in constituent concentrations. This is probably due to the near complete removal of pollutants from the streets with the first major surge of water. During a storm of long duration (16 hours) sampled at the Centereach site on June 5, 1982, the water quality of the stormwater runoff gradually approached the quality of the precipitation. Therefore, no attempt was made here to correlate discharge with constituent concentrations, because no physical relationship exists between the two.

2.5.2.2 Priority Pollutants. The results of priority pollutant analysis are summarized in Tables 2-12 and 2-13. Table 2-12 shows the concentrations of the acid and base/neutral compounds that were detected in the stormwater and groundwater samples collected especially for priority pollutant analysis. Table 2-13 shows the concentrations of the volatile compounds, phenols, and cyanide detected. Replicate samples were collected on each sampling day for purposes of quality assurance. These results are also included in the tables, as are occasional analyses of room air (in the analyzing laboratory) and deionized water blanks.









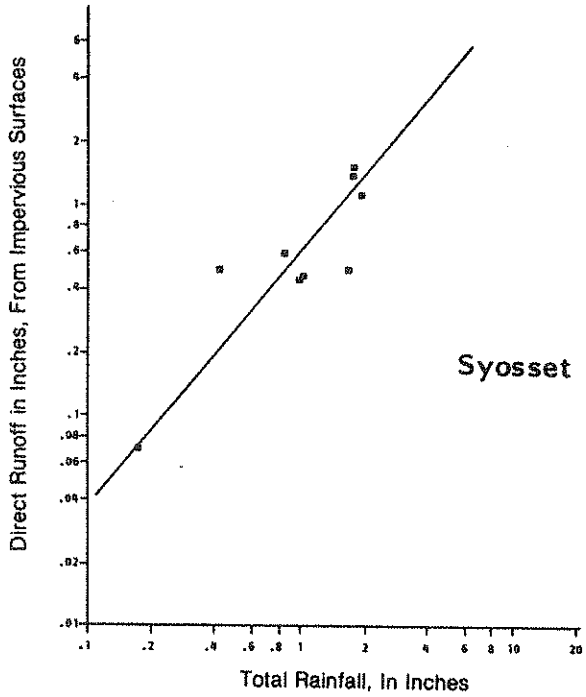


FIGURE 2-5 *Runoff/Precipitation relationship at Centereach, Huntington, Laurel Hollow, Plainview, and Syosset*

Table 2-11
MEDIAN VALUE ALL
STORMWATER (SW), GROUNDWATER (GW), AND PRECIPITATION (PR) DATA

Site and Sample Type	Temperature (C°)	Turbidity (NTU)	Color (Platinum-Cobalt Units)	Specific Conductance (μmhos)	Oxygen, Dissolved (mg/l)	Oxygen Demand, Biochemical, 5 Day (mg/l)	pH (units)	pH Lab (units)	Nitrogen Dissolved (mg/l as N)	Nitrogen, Organic Dissolved (mg/l as N)	Nitrogen, Ammonia Dissolved (mg/l as N)	Nitrogen, Ammonia + Organic Dissolved (mg/l as N)	Nitrogen, NH_4 + Organic Suspended Total (mg/l as N)
Centereach													
SW	5.5	27.0	15.0	55.0	—	—	6.75	6.7	2.9	0.86	0.08	0.965	0.200
GW	—	5.45	2.0	104	—	—	—	6.6	0.91	0.43	0.05	0.5	—
PR	—	2.4	1.5	15	—	—	—	5.85	1.2	0.46	0.08	0.78	0.15
Huntington													
SW	12.0	1.7	5.0	320	—	4.5	6.7	6.7	0.9	0.33	0.15	0.49	0.17
GW	13.0	0.9	1.0	217	—	1.0	5.4	6.1	6.3	0.20	0.020	0.28	0.015
PR	—	0.7	5.0	—	—	—	—	5.7	0.805	0.265	0.13	0.58	0.010
Laurel Hollow													
SW	9.0	13.0	30.0	60	—	7.0	7.0	6.7	1.0	0.44	0.075	0.55	0.7
GW	11.0	0.4	1.0	61	—	2.0	6.1	6.4	1.0	0.17	0.02	0.19	0.23
PR	10.0	0.4	5.0	60	—	—	6.6	5.7	0.29	0.13	0.04	0.155	0.005
Plainview													
SW	7.0	20.0	16.5	120	50.0	10.0	6.9	6.8	1.3	0.58	0.12	0.7	1.35
GW	10	0.4	0.0	200	—	2.5	6.55	6.8	1.3	0.20	0.02	0.24	0
PR	6.5	0.5	1.5	—	—	—	7.1	6.0	0.59	0.095	0.08	0.16	0
Syosset													
SW	19	3.6	15.0	58.5	—	9.0	6.9	6.4	1.35	0.60	0.090	0.76	0.6
GW	14	26.0	.5	104.0	—	1.0	5.1	6.0	2.55	0.38	0.02	0.39	0.035
PR	—	0.9	1.5	42.0	—	—	4.4	5.35	1.20	0.29	0.16	0.66	0.025

— data unavailable

Table 2-11 (Continued)
MEDIAN VALUE ALL
STORMWATER (SW), GROUNDWATER (GW), AND PRECIPITATION (PR) DATA

Site and Sample Type	Nitrogen, Ammonia + Organic Total (mg/l as N)	Nitrogen, NO_2 + NO_3 Dissolved (mg/l as N)	Phosphate, Ortho, Dissolved (mg/l as PO_4)	Phosphorus, Ortho, Dissolved (mg/l as P)	Carbon, Organic Dissolved (mg/l as C)	Carbon, Organic Suspended Total (mg/l as C)	Cyanide Total (mg/l as Cn)	Hardness (mg/l as $CaCO_3$)	Calcium Dissolved (mg/l as Ca)	Magnesium, Dissolved (mg/l as Mg)	Sodium, Dissolved (mg/l as Na)
Centereach											
SW	1.15	0.42	0.06	0.02	6.4	5.6	—	12.0	3.5	0.69	3.5
GW	0.1	0.31	0.11	0.01	2.5	0.6	—	33.0	7.5	1.4	9.5
PR	0.595	0.105	0.09	0.015	2.7	0.7	—	1.0	0.205	0.095	0.3
Huntington											
SW	0.65	0.34	0.09	0.03	3.4	4.0	.011	12.0	3.7	0.7	40.0
GW	0.32	5.8	0.045	0.01	1.3	0.9	0.0	56.0	17.0	3.5	19.0
PR	0.67	0.26	0.09	0.020	3.5	2.0	—	2.5	0.49	0.255	1.75
Laurel Hollow											
SW	1.5	0.44	0.18	0.055	5.8	6.9	.02	14.5	4.3	0.8	3.3
GW	0.41	0.815	0.03	0.01	1.8	1.65	0.0	15.0	4.5	0.9	3.7
PR	0.195	0.16	0.045	0.01	1.05	0.7	—	2.0	0.30	0.10	1.1
Plainview											
SW	2.3	0.495	0.15	0.05	6.90	7.3	0.0	26.0	7.85	1.2	8.5
GW	0.15	0.82	0.03	0.01	2.40	0.90	0.0	40.0	9.0	3.6	27.0
PR	0.32	0.28	0.06	0.02	1.80	1.6	—	2.0	0.4	0.2	0.5
Syosset											
SW	1.35	0.340	0.280	0.090	6.3	5.1	0.0	15.0	3.7	1.25	1.5
GW	0.395	1.60	0.060	0.010	1.1	1.3	0.0	16.5	4.85	1.2	4.25
PR	0.645	0.415	0.090	0.030	2.6	1.6	—	2.0	0.50	0.185	0.95

— data unavailable

Table 2-11 (Continued)
MEDIAN VALUE ALL
STORMWATER (SW), GROUNDWATER (GW), AND PRECIPITATION (PR) DATA

Site and Sample Type	Sodium Adsorption Ratio	Potassium, Dissolved (mg/l as K)	Chloride, Dissolved (mg/l as Cl)	Sulfate Dissolved (mg/l as SO_4)	Fluoride, Dissolved (mg/l as F)	Arsenic Dissolved (µg/l as As)	Arsenic Suspended Total (µg/l as As)	Arsenic Total (µg/l as As)	Cadmium Dissolved (µg/l as Cd)	Cadmium Suspended Recoverable (µg/l as Cd)	Cadmium Total Recoverable (µg/l as Cd)	Chromium Dissolved (µg/l as Cr)
Centereach												
SW	0.5	0.5	3.3	4.0	0.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0
GW	0.8	1.65	8.1	11.0	0.1	1.0	—	1.0	1.0	0.0	1.0	1.0
PR	0.1	0.1	0.85	1.1	0.1	1.0	1.0	1.0	2.0	0.5	3.0	1.0
Huntington												
SW	5.8	0.5	71.5	6.55	0.1	0.0	0.0	0.0	0.0	0.0	1.0	2.0
GW	1.05	3.0	26.0	28.0	0.1	0.0	0.5	0.0	0.0	0.0	1.0	2.0
PR	0.5	0.3	3.0	3.05	0.1	0.0	0.0	0.5	0.0	0.0	1.0	1.5
Laurel Hollow												
SW	0.40	1.6	4.1	4.5	0.1	0.5	1.0	1.0	0.0	0.0	0.0	3.0
GW	0.40	.7	4.3	11.0	0.1	0.0	0.0	0.0	0.0	0.0	1.0	3.0
PR	0.40	0.15	1.70	1.55	0.1	0.0	0.0	0.0	0.0	.5	1.0	2.0
Plainview												
SW	1.1	2.3	10.0	11.0	0.10	1.0	1.0	1.5	1.0	0.0	1.0	2.0
GW	2.1	1.6	46.0	16.0	0.05	0.0	0.5	1.0	1.0	0.0	1.0	0.5
PR	0.3	0.2	2.6	1.65	0.05	0.0	0.0	1.0	0.0	0.0	1.0	1.0
Syosset												
SW	0.1	1.6	2.3	5.45	0.1	1.0	0.0	1.0	1.0	1.0	1.0	1.0
GW	0.5	1.0	7.3	7.05	0.1	0.0	1.0	1.0	2.5	2.5	8.5	1.0
PR	0.3	0.3	1.65	2.65	0.1	0.5	1.0	1.0	1.0	0.5	1.0	1.5

— data unavailable

Table 2-11 (Continued)
MEDIAN VALUE OF ALL STORMWATER (SW), GROUNDWATER (GW), AND PRECIPITATION (PR) DATA

Site and Sample Type	Chromium, Suspended Recoverable (µg/l as Cr)	Chromium, Total Recoverable (µg/l as Cr)	Lead, Dissolved (µg/l as Pb)	Lead Suspended Recoverable (µg/l as Pb)	Lead, Total Recoverable (µg/l as Pb)	Coliform, Confirmed (MPN)	Coliform, Fecal EC Broth (MPN)	Streptotocci, Fecal (MPN)	Potassium Dissolved (Pci/l as K40)	Specific Conductance Lab (µmhos)
Centereach										
SW	5.0	2.0	26.0	83.0	130	4,300	2,100	9,300	—	60
GW	6.0	2.0	4.5	1.5	2	3	3	3	—	106
PR	2.0	4.5	3.5	3.0	13	—	—	—	—	8.5
Huntington										
SW	8.0	11.0	8.0	24.5	33.0	24,000	9,300	60,500	0.4	286
GW	7.5	9.0	3.0	2.0	6.0	3	3	3	2.3	247
PR	5.5	9.5	10.0	9.0	36.0	—	—	—	0.2	28
Laurel Hollow										
SW	10.0	13.0	4.0	15.0	19.0	4,300	930	2,400	1.2	56
GW	9.5	13.0	0.0	1.0	6.0	3	2	2	0.5	57
PR	3.0	5.0	6.5	2.0	8.0	—	—	—	0.1	10
Plainview										
SW	15.0	16.0	35.0	250.0	275	24,000	640	24,000	1.75	106
GW	7.0	7.0	3.5	1.0	4.0	3	3	3	1.2	243
PR	6.0	8.5	11.0	9.0	16.0	—	—	—	0.2	22
Syosset										
SW	11.0	12.0	12.5	18.0	30.0	24,000	2,400	24,000	1.3	54
GW	15.0	13.0	6.0	41.0	47.0	13	3	3	1.4	64
PR	3.0	5.5	6.5	6.0	16	—	—	—	0.2	27

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Section 5 - Findings, Conclusions, and Plan Recommendations

5.0 INTRODUCTION

The investigations conducted as part of the Long Island portion of the Nationwide Urban Runoff Program have provided answers to some old questions, raised new ones, addressed a major concern regarding the role of recharge basins, and lent further credibility to several of the assumptions and findings of the 208 study. The three year study has contributed to a better understanding of runoff, and of the functioning and mitigating effects of control measures already in place. It has demonstrated that there are no quick inexpensive solutions to the problem of runoff-borne coliform contamination of coastal waters.

The following pages present a summary of the more important findings, together with the conclusions to be drawn therefrom. Where appropriate both the findings and conclusions are related to prior statements that were made on the same topic in the *Long Island Waste Treatment Management Plan* (Koppelman, 1978). The findings and conclusions lead to a series of recommendations, including priorities for implementation. Finally, there is a brief discussion of the unanswered questions that require further research.

5.1 FINDINGS AND CONCLUSIONS

5.1.1 Groundwater

Finding 1. In the majority of storm events sampled, the ratio of the total volume of runoff to the volume of precipitation falling on impervious areas was less than one(Section 2.5.1).

Conclusion: *Most of the runoff into recharge basins is derived from rain that falls directly on impervious surfaces, except during storms of high intensity, high volume and/or long duration.*

Finding 2. Stormwater runoff concentrations of most of the inorganic chemical constituents for which analyses were performed were generally low (Section 2.5.2.1). In most cases they fell within the permissible ranges for potable water; however, there were two notable exceptions:

- median lead concentrations in stormwater runoff samples collected at the recharge basin draining a major highway consistently exceed the drinking water standards;
- chloride concentrations generally increased by two orders of magnitude during the winter months.

Conclusion: *In general, with the exception of lead and chloride, the concentrations of inorganic chemicals measured in stormwater runoff do not have the potential to adversely affect groundwater quality.*

Finding 3. In most instances where there was an influx of lead into a recharge basin, there was considerable attenuation before the stormwater runoff reached the water table. The influx of chromium was generally much smaller than that of lead. In 15 out of 23 storm events, the calculated chromium loads in runoff were higher than those in groundwater. There was little or no removal of chloride as the stormwater moved through the unsaturated zone beneath the recharge basin. Owing to the low nitrogen levels in stormwater runoff, as compared to the background levels of nitrogen in groundwater on Long Island, it was impossible to determine the degree of nitrogen removal (Section 2.5.2.4).

Conclusion: *Infiltration through the soil is generally an effective mechanism for reducing lead and probably chromium from runoff on Long Island. Although the NURP findings concerning chromium are not conclusive, data from an industrial spill at Farmingdale indicate attenuation. Chloride is not attenuated. The effect of infiltration on nitrogen is undetermined.*

Finding 4. The number of coliform and fecal streptococcal indicator bacteria in stormwater range from 10^8 MPN to 10^{10} MPN per acre per inch of precipitation. Except in a few cases, these bacteria were not detected in the groundwater beneath the recharge basins studied. Where they were present, they were found in concentrations at or near the analytical detection limit (Section 2.5.2.3).

Conclusion: *Coliform and fecal streptococcal indicator bacteria are removed from stormwater as it infiltrates through soil.*

Finding 5. In the NURP study, the most commonly occurring organic compounds found in stormwater runoff were benzene, bis (2 ethyl hexyl) phthalate, chloroform, methylene chloride, toluene, and 1,1,1-trichloroethane (Section 2.5.2.2). Of these, methylene chloride was consistently found in concentrations greater than 8 μg/l.

Of the 14 samples (5 runoff and 9 groundwater) analyzed for 113 of the EPA-designated priority pollutants, there were four instances, three of them occurring in groundwater, in which a single constituent (not including phenols and cyanide), exceeded the New York State Department of Health guidelines (Section 2.5.2.2) for a single organic constituent in drinking water (Tables 2-12,13). Three of the four instances occurred in stormwater runoff or groundwater derived from the highway drainage area. The constituents detected are not related to normal vehicular traffic, and are most probably attributable to undetermined point sources.

When phenols data were excluded from consideration, the New York State guidelines for total organics in drinking water were exceeded in one of the five runoff samples and in two of the nine groundwater samples unrelated to sampled storm events.

The findings of the 208 Program (Koppelman, 1978) indicated the presence of a number of organic constituents also identified in the NURP study, particularly the halogenated hydrocarbons and phthalates, which are most often associated with industrial solvents and with plastics, respectively. Of the one runoff and eight groundwater samples from three sites (two highway basins and one residential basin) analyzed for up to 58 organic constituents, the stormwater sample and two groundwater samples exceeded New York State Department of Health guidelines for total organics in drinking water. One organic compound in runoff (chloroform) and two in groundwater (trichloroethylene and dibutylphthalate) were found in concentrations greater than 50 μg/l in one or more instances.

Conclusion: *In view of the need to assure groundwater of acceptable quality, further investigations of stormwater runoff as a possible significant source of organic chemicals are essential. In addition, the significance of illegal discharges of organic chemicals that runoff may carry into storm drains or recharge basins cannot be discounted. However, on the basis of the limited runoff data, along with the results of a substantial number of organic chemicals analyses from ongoing Long Island monitoring programs related to water supply, ambient groundwater quality and sources of pollution, it appears that no change in the use of recharge basins is warranted.*

Finding 6. Median values of total recoverable lead in runoff samples ranged from 275 μg/l at the Plainview recharge basin, which drains a major highway, to 19 μg/l at the Laurel Hollow recharge basin, which drains a low density residential area containing only minor roadways. Between these two, in order of decreasing lead concentrations, were Centereach (strip commercial with major roadway), Huntington (parking lot) and Syosset (medium density residential with minor roadways) (Section 2.5.2.1).

Conclusion: *Lead concentrations in runoff entering a recharge basin appear to be directly related to the extent and characteristics of the road network and the type and volume of traffic in the drainage area served by the basin.*

Finding 7. Although the recharge basins at Laurel Hollow and Syosset both serve residential areas, some constituents found in the basin soil at these sites displayed differences that may be explained by the length of time each basin has been in use. In general, soil at the recently constructed Laurel Hollow basin contained lower concentrations of lead and pesticides than did the soil at the Syosset basin, which was constructed in 1957 (Section 2.5.2.4).

Conclusion: *In addition to land use, the length of time that a recharge basin has been in use appears to affect the concentration of some pollutants in the basin soil. The limit of the ability of the soil to adsorb or otherwise retain these constituents is unknown.*

Finding 8. There was no discernible difference in the performance of the Centereach recharge basin that could be attributed to the presence of the permanent liner (Section 2.5).

Conclusion: *Plastic-lined basins with overflow to a recharge structure and unlined recharge basins are equally effective in recharging stormwater to the groundwater reservoir and in attenuating chemical constituents in stormwater.*

Finding 9. Plant growth on a basin floor enhances infiltration because the plant root system keeps the soil layer loose and permeable, and provides channels for infiltrating water (Section 2.5.2.4).

Conclusion: *Removal of basin vegetation is not necessary, and may indeed decrease the infiltration rate.*

5.1.2 Surface Water

A. General Findings and Conclusions.

Finding 1. The load of the chemical constituents in stormwater runoff that were evaluated during this study varied in response to the characteristics unique to individual storm events rather than in response to seasonal changes. The notable exception to this finding was chloride, which increased significantly in winter (Sections 3.1.4.2, 3.2.5.3 and 3.3.4.3ii).

Conclusion: *Any control of chemical constituents in runoff requires awareness of their year-round presence. The use of highway deicing salts in winter explains the high chloride concentrations found in runoff during that season.*

Finding 2. The drying of streambeds because of sewering, as predicted in the streamflow augmentation studies (Lawler, Matusky and Skelly, 1981, and Suffolk County, 1981) was observed during the NURP program. It has been observed in the case of East Meadow Brook.

Conclusion: *The expectation that streams will continue to dry up in response to sewering, coupled with the findings of the groundwater investigations that recharge of stormwater appears to remove indicator bacteria and to attenuate some of the chemical constituents evaluated, leads to the conclusion that the detention and recharge of runoff in dry streambeds may be a beneficial control measure.*

Finding 3. In the course of the streamflow augmentation studies, predictions were made of the amount of drying of streams to be expected (Lawler, Matusky and Skelly, 1981; Suffolk County, 1981). Table 5-1 displays results of the analysis for 16 streams in Nassau County and four streams in Suffolk County.

Conclusion: *The opportunity for the infiltration of runoff in dry streambeds should be included when considering streamflow augmentation. If flow augmentation were not undertaken for the streams in the sewered areas of southern Nassau County and southwest Suffolk County, portions of 20 streambeds would be available for reducing stormwater runoff to the bays by infiltration. In that event, according to the analysis summarized in Table 5-1, a maximum of 35 percent of storm flow in Nassau County streams could be removed, and 21 percent in the four Suffolk County streams affected by base flow reductions. There could also be some degree of bacterial removal. In any event, reductions in flow to the impoundments, where they exist, would be achieved. In some cases, effluent overflow may even cease. This flow reduction would, in turn, cause a corresponding improvement in the ability of the impoundments to reduce bacterial loads.*

Finding 4. Two categories of runoff to estuarine waters have been observed. One category is the upland runoff that enters the freshwater portions of streams, and is conveyed thereby to the bays. The other category is overland runoff that enters the bays, directly or by way of the tidal portions of the streams. Along the South Shore, Merrick Road in Nassau and Montauk Highway in Suffolk (See Figure 4-1) mark the approximate location of the northern boundary of the areas contributing overland runoff (Section 3.4.3.1).

Estimates have been made of the quantities of runoff, and the pollutant loads in each runoff category, for the south shore from the Queens/Nassau border, in the west, to the Connetquot River, in the east. The values input to the computer model, in order to calculate the effect on the areas currently closed to shellfishing, were various fractions of the overland and stream pollutant loads removed. The results, displayed in Table 3-41, show that, if 95 percent of stream runoff is controlled and no overland runoff is controlled, 18 percent of the closed acreage in Nassau County and 14 percent in Suffolk County is reopened. If no stream runoff is controlled, but 95 percent of overland runoff is controlled, only 30 percent of the closed acreage in Nassau County is reopened, and none of the closed acreage in Suffolk County is reopened. Finally, if 95 percent of both overland and stream runoff are controlled, 99 percent of the acreage in Nassau County and 79 percent in Suffolk County could be reopened.

Table 5-1

PERCENT OF RUNOFF EXPECTED TO INFILTRATE IN STREAMS REACHES DRIED BECAUSE OF GROUNDWATER LOWERING CAUSED BY SEWERING[1]

STREAM NAME	Total Contributing Drainage Area (Acres)	Drainage Area Contributing To Dry Stream Length (Acres)	Predicted Stream Drying Length (ft)	Percent of Flow Infiltrated
NASSAU COUNTY				
Pines Brook	4,647	4,594	8,600	19
Mill Creek	2,297	2,297	4,300	19
Powell Creek	748	320	600	6
Parsonage Creek	1,617	659	1,100	7
Baldwin Creek	1,378	0	0	0
Milburn Creek	1,366	729	4,000	19
East Meadow Creek	6,868	6,868	24,200	35
Cedar Swamp Creek (East & West)	1,281	1,218	11,500	65
Newbridge Creek	477	434	4,100	32
Bellmore Creek	344	251	2,700	48
Bellmore Creek East (East Br. & West Br.)	2,192	2,025	21,800	74
Seamans Creek	675	471	5,300	44
Seaford Creek	710	701	7,900	56
Massapequa Creek	3,711	3,439	27,800	65
Unqua River	549	471	1,800	28
Carmen Creek	1,910	654	2,500	10
				35 Overall
SUFFOLK COUNTY				
Amityville Creek	713	314	4000–4500	36
Neguntatogue Creek	566	119	2000–2500	19
Santapogue River (East & West)	2,689	1,102	3000–4000	10
Willets Creek	734	367	5000–5500	50
				21 Overall

[1] Lawler, Matusky and Skelly, 1982

Conclusion: *In order to achieve substantial openings of uncertified shellfishing lands, it would be necessary to control both stream runoff and overland runoff. To control one without the other would yield little benefit.*

Finding 5. Modeling studies (see Appendix F) have indicated that there is a high degree of mixing and flushing in the South Shore Bays of Nassau County. This implies that the control of runoff discharge from any individual stream will not result in sufficient localized improvement in receiving water quality to warrant the reopening of any uncertified shellfishing acreage. Hence, it is almost impossible to obtain an improvement in one specific portion of a bay, unless controls are implemented throughout an extensive tributary drainage area. In Suffolk County, Great South Bay has less tidal mixing and flushing in the nearshore areas, making it possible to achieve site-specific reductions.

Conclusion: *Significant improvement in the bacteriological water quality in the South Shore bays of Nassau County to the east of East Meadow Brook requires the simultaneous control of both the upland and overland flows discharging to the eastern bays. In the Great South Bay, in Suffolk County, certain individual areas can be improved by the control of upland and overland flows associated with selected individual streams.*

Finding 6. In order to obtain an estimate of the costs required to achieve some of the improvements indicated in Table 3-41 and of the benefits to be realized, a series of five alternative plans was selected from a number of alternatives prepared by the consultant (Section 3.4.4). These alternatives, listed in Table 3-42, represent different levels of effort, and are presented according to the anticipated degree of runoff control. Also listed are the acreages of shellfishing lands reopened by the implementation of each plan alternative. Table 5-2 provides a tabulation of the estimated costs to implement each plan. Three caveats are in order: the first is that the estimates were made before further work indicated that once a week street sweeping was of doubtful value in reducing total coliform load; the second is that the assumed existence of sufficient depth to groundwater for the installation and effective operation of leaching catch basins south of Merrick Road – Montauk Highway is also highly doubtful; finally, the degree of bacteria removal in Plan 1 was assumed to be equal to the percentage of the flow infiltrated into the dry streambeds, and this, also, is questionable.

The amount of control associated with each of the Plans is uncertain of achievement. Nevertheless, Table 5-2 is useful in showing the relative magnitude of the costs associated with various possible control programs.

Table 5-2

SUMMARY OF COSTS AND DEGREES OF CONTROL OF PLAN ALTERNATIVES

Control Measure Plans	NASSAU COUNTY Costs for Control Measures ($1000) Capital	Annual[a]	No. of Acres Opened	Cost Per Acre Opened ($)	SUFFOLK COUNTY Costs of Control Measures ($1000) Capital	Annual[a]	No. Acres Opened	Cost Per Acre Opened ($)
1. Minimal Action. Increase infiltration in dry stream beds (use of stop logs)	640	75	996	75	70	8	0	—
2. Plan 1 plus stream control (increased pond storage from Bellmore Creek east; use of gabions and dredging)	800	100	1,642	67	5,000 (750)[b]	786 (114)[b]	1,105	711 (103)[b]
3. Plan 2 plus further stream control (additional pond storage) in Seamans, Seaford, Carmans (sand filter) and Santapogue (new pond) Creeks, and in Carlls River	1,600	204	1,642	124	5,100	798	1,105	722
4. Plan 3 with 50% overland control east of Bellmore Creek (dog ordinances and street sweeping once a week [50% removal assumed] in overland area)	1,600	371	1,642	226	5,100 (980)[b]	1,014 (389)[b]	2,351	431 (166)[b]
5. Control on all streams with 75% overland control throughout (leaching catch basins in overland area)	23,100	3,064	6,873	446	9,000 (4,500)[b]	1,393 (620)[b]	4,519	308 (137)[b]

[a] Capital cost amortized at 10% over 20 years plus operation and maintenance costs.

[b] Plan modified to exclude all expenditures that do not contribute to the opening of additional acreage.

A review of Tables 3-42 and 5-2 shows that in Nassau, Plans 1, 2, and 5 result in reopening of from 9 to 62 percent of the currently uncertified acres at a per acre cost of $75 for Plan One, $67 for Plan Two, and $466 for Plan Five. Plans Three and Four do not result in additional opened acreage above that achieved in Plan Two. Therefore additional expenditures for added control measures in excess of those included in Plan Two are unwarranted unless the maximum possible control is achieved through implementation of Plan Five. In Suffolk County modified versions of Plans Two, Four and Five result in the reopening of from 14 to 56 percent of the currently uncertified acres within the Great South Bay at a per acre cost of $103 for Plan Two, $166 for Plan Four, and $137 for Plan Five.

Table G-1 of Appendix G presents the estimated value of the clam population in place, in certain nodes in the Great South Bay. The estimate is based on the following price ranges:

Little necks:	13¢ to 18¢ per clam
Cherrystones/chowders:	4¢ per 12¢ per clam
Seed clams:	14¢ to 18¢ per clam

On a per acre basis, the total resident clam population, in all three categories, is valued at $1,866 to $2,817. The clam population estimates were made in 1978-9 (USEPA, Region II, 1982), and there is evidence that the population has declined since that time (Regional Marine Resources Council, 1983).

Conclusion: *It is possible that the annual value of the clams that could be harvested from a given acre of reopened shellfish land may compare favorably with the annual cost of reopening that acre. However, the three caveats regarding the feasibility and effectiveness of the control measures, discussed above, together with the imprecision of the clam population data, make it inadvisable to incur large-scale costs for control measures at this time.*

Finding 7. The coastal waters of Long Island receive coliform loads from three types of sources (Section 4.1). These are point sources such as sewage treatment plant outfalls, stream base flow, and stormwater runoff. Table 4-2 lists the percentages that each category contributes to Nassau County receiving waters. Table 4-4 lists the same information for Suffolk County receiving waters. The data presented are for both total and fecal coliforms. In all but one case, runoff contributes at least 93% of total and fecal coliforms.

Conclusion: *Stormwater is the major source of coliform loading to Long Island bays, and the major cause of shellfishing area closures from Bellmore Creek in Nassau County to Connetquot River in Suffolk County. Outside of this area, even if it were possible to control all runoff, certification of all shellfishing lands would still not be achieved, since shellfishing is not permitted within a NYSDEC — specified distance of any sewage treatment plant outfall, regardless of water quality. Furthermore, some of the bays in Suffolk County contain areas where impaired water quality exists for reasons other than stormwater runoff (e.g. localized duck farm discharges).*

Finding 8. Ratios of fecal coliform to fecal streptoccoccal bacteria (FC/FS) found in runoff were low. At the five recharge basin sites, median FC/FS values ranged from 0.05 to 0.20. At three of the sites, maximum values were less than 2.0, the other two being above 5.0. At the Bayville surface water site, FC/FS values ranged from 0.008 to 0.219, and at Unqua Pond, they ranged from 0.002 to 0.86. Finally, at the Central Avenue site, all but two FC/FS values were between 0.040 to 0.690. The others were less than 2.0.

Conclusion: *Ratios of fecal coliform bacteria to fecal streptococci (FC/FS) were less than 1.0 in the overwhelming majority of samples analyzed. FC/FS values greater than 4.0 are generally considered to be of human origin and values less than 0.7 of animal origin. The evidence accumulated in this study strongly supports the belief that fecal coliform loads are derived from a non-human source.*

Estimates indicate that the dog population could be a major source of the fecal coliform load in stormwater runoff (Driscoll, April 1982). However, the estimates had a wide range of uncertainty, and if dogs were indeed the main source, the FC/FS ratio should have been far lower, i.e. 0.002 to 0.02, than most of the values cited above. Dogs and birds are common throughout the study area, but the data are not sufficiently conclusive to permit identification of any individual source or combination of sources.

Finding 9. Local conditions such as the presence of sewage treatment plant outfalls, duck farm waste treatment plants and commercial marine transport activity may negate the effectiveness of reductions in coliform bacteria in achieving the desired reopening of closed shellfishing areas. Much of the land within the drainage areas contributing stormwater runoff to currently certified shellfishing waters is in low density residential or open space use (Section 4.1.3 and 4.2.3). The effect of any future development of portions of this land will depend, to a considerable degree, on the provisions made for the management of runoff (Section 4.1.4 and 4.2.4).

Conclusion: *The information now in hand indicates that, on an areawide basis, the opportunities for preserving the quality of currently certified or certifiable waters far exceed those for improving the quality of conditionally certified or uncertified waters.*

B. Site-Specific Findings and Conclusions.

1. Perry Avenue, Bayville, Nassau County.

Finding 1a): For the Perry Avenue system, calculated long term reductions of stormwater runoff volume due to percolation and storage were determined to be 93.5 and 89 percent, respectively, using the USEPA methodology (Driscoll et al., September, 1982) and Long Island rainfall statistics. The overall flow reduction achieved by the system is a function of both percolation and storage and was determined to be 99.3 percent (Section 3.1.4.3).

Conclusion: *Based upon the above analysis and upon the fact that approximately one hundred storm events occur, on the average, during a given year in the Nassau-Suffolk Region, the in-line storage leaching drainage system can be expected to generate a discharge to estuarine receiving waters once every 1.4 years.*

Finding 1b): In general, the bacteriological quality of the runoff influent flow was comparable to that reported for the other study sites.

For the limited number of events during which there was overflow from the leaching catch basin, increases in mean concentrations were noted for each of the three indicator bacteria groups (Section 3.1.4.2).

Conclusion: *The increase in coliform concentrations in leaching catch basin overflows suggests that the catch basin may provide conditions favorable to coliform proliferation. This, in addition to the need to maintain leaching capability, makes it desirable that such catch basins be regularly cleaned of accumulated sediments and organic materials.*

APPENDIX L

TRAFFIC IMPACT STUDY

TRAFFIC IMPACT STUDY

ST JOHNLAND CONTINUING CARE RETIREMENT COMMUNITY

Kings Park

Town of Smithtown

August 2011

N & P JOB NO. 95124

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APPENDIX

Appendix A: Existing Traffic Volume

Appendix B: Trip Generation

Appendix C: Level of Service Definitions

Appendix D: Capacity Analysis/Level of Service Worksheets & Summary Tables

EXECUTIVE SUMMARY

Nelson & Pope has conducted a traffic impact analyses to identify traffic impacts that may be associated with the proposed Continuing Care Retirement Community (CCRC) development to be located on the southwest quadrant of the intersection of Sunken Meadow Road and Old Dock Road in the Town of Smithtown, Suffolk County, New York. Traffic analyses were also conducted for a permitted use (21 single family homes) under the current zoning.

In order to identify the impacts created by this proposed CCRC project and the 21 single family homes as permitted under the current zoning the following future conditions were analyzed:

Scenario 1- 2014 Build Condition for the proposed CCRC

Scenario 1 presents the analyses and anticipated impacts on the study intersections if the CCRC development is constructed on the site.

Scenario 2 – 2014 Build Condition for a permitted use (21 single family homes) under current zoning

Scenario 2 presents the analyses and anticipated impacts on the study intersections if the 21 single family homes are built on the site.

The following is a summary of the conditions analyzed under Scenarios 1 and 2.

- 2014 Build Scenario 1 Condition – This condition represents the analyses of the study intersections in 2014 assuming the CCRC development is built in the study area. The 2014 Build Scenario 1 traffic volumes were developed by adding the traffic anticipated to be generated by the proposed CCRC development to the 2014 No Build traffic volumes. The 2014 Build Scenario1 Condition analyses when compared to the 2014 No Build condition analyses will identify impact that will be created by the proposed CCRC development.

- 2014 Build Scenario 2 Condition – This condition represents the analyses of the study intersections in 2014 assuming the permitted use (21 single family homes) under the

current zoning is built in the study area. The 2014 Build Scenario 2 traffic volumes were developed by adding the traffic anticipated to be generated by the 21 single family homes to the 2014 No Build volumes. The 2014 Build Scenario 2 Condition analyses when compared to the 2014 No Build condition analyses will identify impacts that could be created by the 21 single family homes.

- A comparison of the 2014 Build Scenario 1 and 2014 Build Scenario 2 results will identify the difference in the impacts that could be created by the CCRC development and the permitted use (21 single family homes) under current zoning.

The following summarize the results of the analyses for the Scenario 1 and Scenario 2 Build Conditions

Signalized Intersections

The results of the capacity analyses indicate that during the No Build Conditions all the signalized intersections studied operate at overall LOS C or better during the weekday AM, weekday PM and Saturday midday peak hours with all the movements operating at LOS D or better with the exception of the westbound left turn movement at the intersection of NYS Route 25A and Pulaski Road that operates at LOS E during the Saturday midday peak hour. With the construction of the proposed CCRC development (Scenario 1), the signalized intersections will continue to operate at No Build conditions with minor or no increases in delay. Therefore, the construction of the proposed CCRC development will not significantly impact the operation of the signalized intersections and roadways in the study area. The results of the analyses conducted for the permitted use under current zoning (21 single family homes) are similar to those of the proposed CCRC.

Unsignalized Intersections

The results of the capacity analyses indicate that during the No Build Conditions all the unsignalized intersections studied operate at LOS B or better during the weekday AM, weekday PM and Saturday midday peak hours. With the construction of the proposed CCRC development (Scenario 1), the unsignalized intersections including the proposed site driveways will continue to operate at LOS B or better. Therefore, the construction of the proposed CCRC development will

not significantly impact the operation of the unsignalized intersections and roadways in the study area. The results of the analyses conducted for the permitted use under current zoning (21 single family homes) are similar to those of the proposed CCRC.

PURPOSE OF STUDY

Senior residents have numerous housing alternatives to choose from when deciding their future, including those targeted to active adults, independence, congregate care, assistance, continuing care and nursing care. Continuing Care Retirement Community, or CCRCs, have recently become a preferred option among senior population, allowing them distinct opportunity to age in place, despite their changing lifestyles and needs over time. Long Island is home to several CCRCs, and several others, including communities in the towns of Hempstead and Brookhaven, are currently planned. The Town of Smithtown has the potential to capture these increasing demands of seniors, allowing residents to remain in Smithtown, near their families and love ones, with the comfort and security of aging in place. The Society of St. Johnland has submitted a change of zone petition to allow for the construction of such a facility on a 50 acre parcel located just south of their existing nursing center. Recognizing the possible need for this type of housing alternative, the Town is proposing a code amendment to the uses permitted by Special Exception in the Retirement Community (RC) zoning district to allow for a CCRC.

Nelson & Pope was retained by the Town of Smithtown to conduct a traffic impact study to identify the potential traffic impacts associated with following development scenarios:

1. Development of the subject parcel with the currently proposed Continuing Care Retirement Community (CCRC)
2. Development of the subject parcel in accordance with the existing zoning (R-43/NYSDEC Residential Zone)

Access to the proposed CCRC will be provided via two full movement driveways; one driveway located on Old Dock Road and the other driveway located on Sunken Meadow Road directly opposite the westerly driveway to the existing St. Johnland nursing center. Figure 1 shows a general area map, and a more specific location map is shown in Figure 2.

This report summarizes the results of a detailed investigation of the traffic impacts associated with each of the development scenarios. The investigation was conducted by reviewing the area's existing roadway characteristics and traffic conditions, estimating the vehicular volume and pattern that each of the development scenarios will generate during peak hours, and analyzing the effect of the additional volume on the surrounding roadway network.

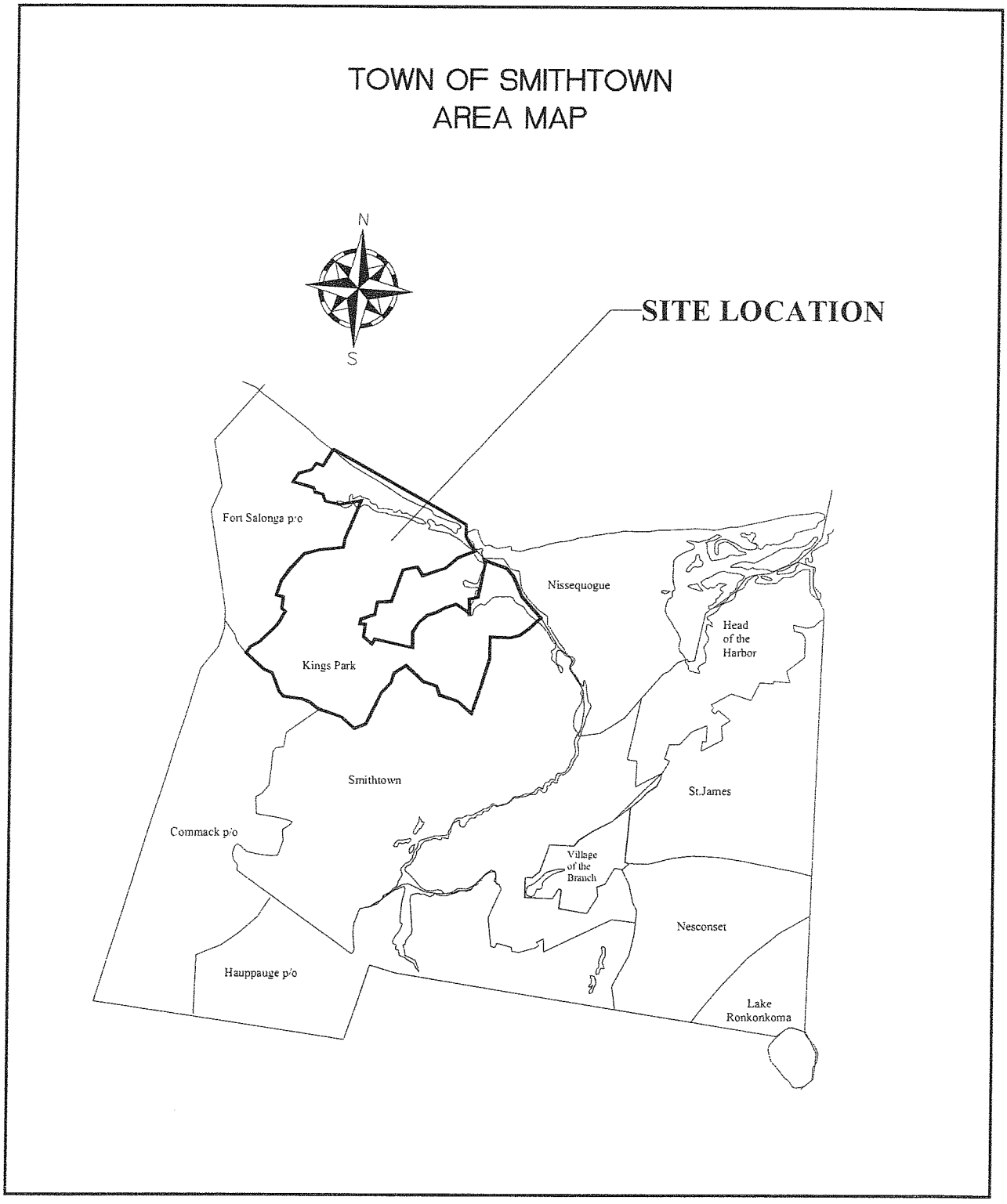
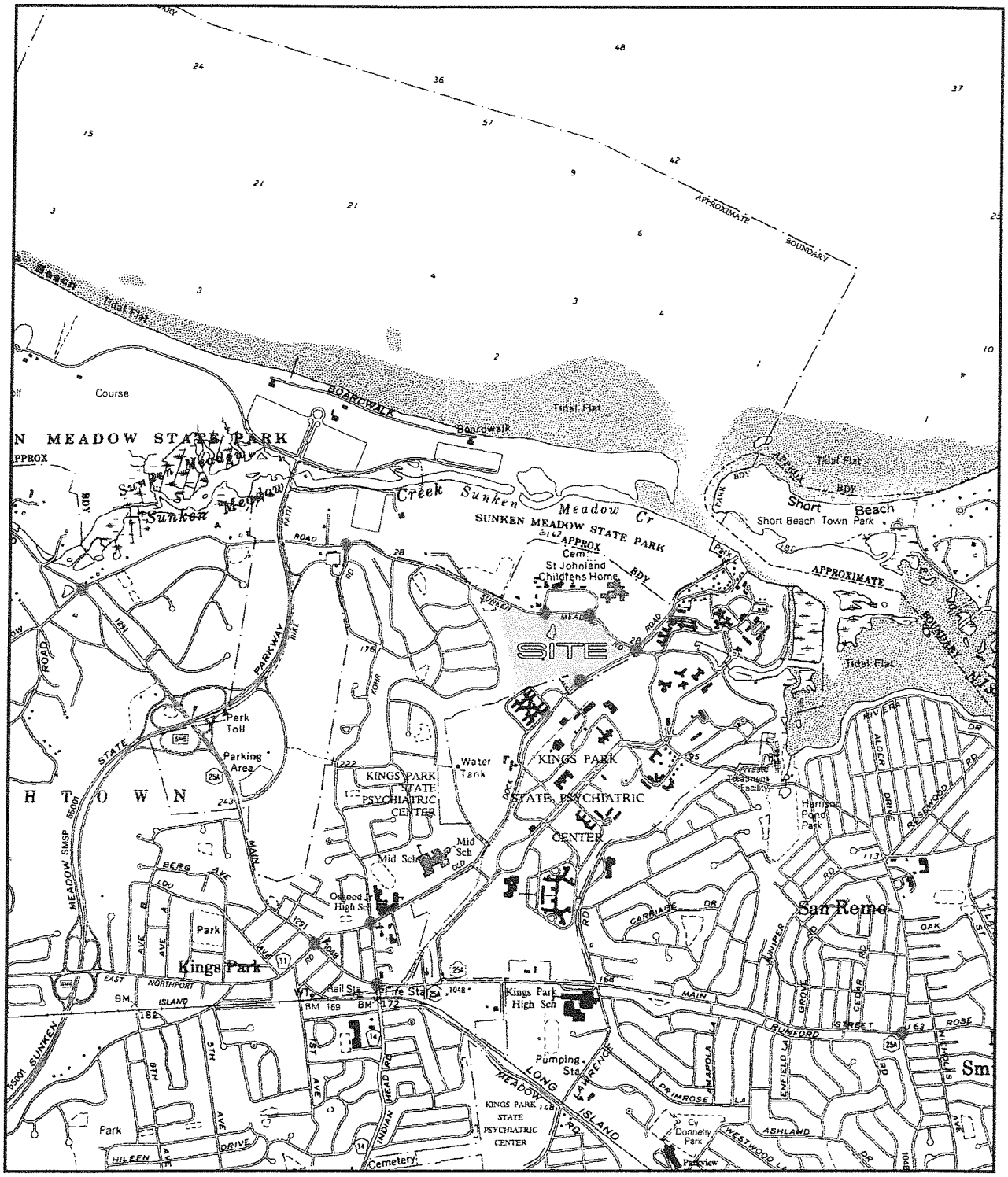


Figure 1: Area Map



SOURCE: USGS NORTHPORT/ST. JAMES 1991

● STUDY INTERSECTIONS

Figure 2: Location Map

STUDY METHODOLOGY

The study assesses the traffic impacts associated with each of the development scenarios and identifies appropriate mitigation, if necessary. In executing the scope of work, the following steps were undertaken.

- A detailed field inspection was conducted to obtain an inventory of existing roadway geometry, location/geometry of existing driveways and intersections along with signing, signal timings, phasings and cycle lengths.

- Hourly traffic volumes collected along NYS Route 25A in the vicinity of the study area were obtained from the New York State Department of Transportation (NYSDOT).

- Turning movement volume counts were conducted during the weekday morning (7:00 AM to 9:00AM), weekday evening (4:00 PM to 7:00 PM) and Saturday midday (11:00 AM to 3:00 PM) peak periods at the following study intersections.

    - NYS Route 25A at Sunken Meadow Road
    - NYS Route 25A at Old Dock Road/Pulaski Road
    - NYS Route 25A at Church Street/Indian Head Road
    - NYS Route 25A at St. Johnland Road
    - Old Dock Road and Church Road/Kohr Road
    - Old Dock Road at St. Johnland Road/Sunken Meadow Road
    - Sunken Meadow Road at St. Johnland Nursing Center Driveway
    - Sunken Meadow Road at the Society of St. Johnland Driveway
    - Sunken Meadow Road at Kohr Road

- The traffic volumes were tabulated, peak hour factors identified and data adjusted for seasonal variations.

- Accident data for the study intersections and roadways in the vicinity of the site was obtained from the NYSDOT and reviewed. The data was tabulated by severity of injury and type of collision.

- An Estimated Time of Completion (ETC) year of 2014 (4 years) is anticipated for this project and was utilized for No Build and Build conditions to determine the impacts that may be created by the construction of each of the development scenarios.

- The Town of Smithtown Planning Department was contacted to obtain information on other planned projects in the vicinity of the study area that may affect the study intersections. At the time of this study, no major planned projects existed in the study area.

- An annual growth factor of 1.1% obtained form the NYSDOT LITP2000 Study was applied to the existing traffic volumes to estimate the increase in background traffic that would occur in 2014. These volumes represent the 2014 No Build Condition volumes since no major planned projects existed in the study area.

- In this Traffic Study, two (2) development scenarios were analyzed. The primary development proposed and one (1) other development scenario.

    1. Development of the subject parcel with the currently proposed Continuing Care Retirement Community (CCRC)- primary development proposal
    2. Development of the subject parcel in accordance with the existing zoning (R-43/NYSDEC Residential Zone)

- Estimates of traffic that would be generated by the primary development proposal and the other development scenario were prepared utilizing trip generation data published by the Institute of Transportation Engineers (ITE) publication, *Trip Generation, Eighth Edition.* Additionally, peak hour traffic counts were conducted at the access to the "Jefferson's Ferry", a Continuing Care Retirement Community located at 1 Jefferson Ferry Drive in South Setauket, New York. This CCRC contains 248 Independent Living Units and 60 Assisted Living Beds and is very similar to the proposed CCRC. The trip generation calculated from the rates developed was compared to the trip generation rate from ITE and the greater of the two rates was utilized to develop the trip generation of the proposed CCRC development. The site-generated traffic volumes were assigned to the adjacent street system based upon the anticipated directional trip distribution forecasted by Nelson & Pope.

- The site traffic volumes for the primary development proposal (CCRC) and the permitted use (21 single family homes) under current zoning were then added to the 2014 No Build traffic volumes to generate the proposed 2014 Build traffic volumes for each of the development scenarios.

- Capacity analyses were performed at the study intersections for the following Conditions:

    - 2010 Existing Condition
    - 2014 No Build Condition
    - 2014 Build Condition for primary development alternative (Scenario 1)
    - 2014 Build Condition for development alternative 2 (Scenario 2)

- The results of the analyses for the 2014 No Build Condition was compared to the 2014 Build Condition for each of the development scenarios to identify any significant impact associated with each of the development scenarios.

- In accordance with the findings of the capacity computations, where appropriate recommendations were made to mitigate the project traffic impacts.

EXISTING CONDITION

Land Use

The proposed site is located on the southwest quadrant of the intersection of Old Dock Road at Sunken Meadow Road in Kings Park, Town of Smithtown, Suffolk County, New York. The site is a vacant parcel currently zoned R-43/NYSDEC Residential

Roadway Conditions

The following is a list of roadways included in the study network surrounding the site. The traffic generated by the proposed developments will be distributed throughout the network. The general descriptions listed here refer only to the sections of the roadways that exist near the site. Their cross-section may vary further away from the site. The Average Annual Daily Traffic (AADT) is listed for each roadway where available in the most recent NYDOT Local Highway Traffic Volumes Report.

NYS Route 25A is an east/west urban principal arterial under the jurisdiction of the New York State Department of Transportation (NYSDOT). NYS Route 25A in the vicinity of the study area provides one lane per travel direction with exclusive turn lanes at key intersections. NYS Route 25A runs through downtown Kings Park. Parking is permitted on some sections of NYS Route 25A in the downtown area of Kings Park. The section of NYS Route 25A, west of Pulaski Road has an average annual daily traffic (AADT) volume of approximately 10,248 vehicles per day (source: NYSDOT Traffic Volume Report 2008) and the section of NYS Route 25A, east of Pulaski Road has an average annual daily traffic (AADT) volume of approximately 16,008 vehicles per day (source: NYSDOT Traffic Volume Report 2008). The posted speed limit is 30 miles per hour. The land uses along this roadway in the vicinity of the site are predominantly commercial.

Old Dock Road is a northeast/southwest roadway under the jurisdiction of the Town of Smithtown that extends from NYS Route 25A to the Nissequogue River, providing one lane per travel direction.

Sunken Meadow Road is an east/west Town roadway that extends from Old Dock Road to Bread and Cheese Hollow Road. This roadway provides one lane per travel direction.

Table 1 summarizes the lane configurations and traffic controls at the study intersections.

Table 1: Intersection Geometry

Intersection	Approach	Lane Designation*	Traffic Control
NYS Route 25A at Sunken Meadow Road	EB	LTR	Traffic Signal
	WB	LTR	
	NB	L-TR	
	SB	L-TR	
NYS Route 25A at Pulaski Road/Old Dock Road	EB	L-TR	Traffic Signal
	WB	L-TR	
	NB	LT-R	
	SB	LTR	
NYS Route 25A at Church Street/Indian Head Road	EB	L-TR	Traffic Signal
	WB	L-TR	
	NB	L-T-R	
	SB	L-T-R	
NYS Route 25A at St. Johnland Road/Rose Street	EB	LT-R	Traffic Signal
	WB	LTR	
	NB	LTR	
	SB	LTR	
Old Dock Road at Church Street/Kohr Road	EB	LTR	Traffic Signal
	WB	LTR	
	NB	LTR	
	SB	LTR	
Old Dock Road at Sunken Meadow Road/ St Johnland Road	EB	LTR	Traffic Signal
	WB	LTR	
	NB	LTR	
	SB	LTR	
Sunken Meadow Road at St. Johnland Nursing Center Driveway	EB	LT	Stop Control on St. Johnland Nursing Center Driveway
	WB	TR	
	SB	LR	
Sunken Meadow Road at The Society of St. Johnland Driveway	EB	LT	Stop Control on The Society of St. Johnland Driveway
	WB	TR	
	SB	LR	
Sunken Meadow Road at Kohr Road	EB	TR	Stop Control on Kohr Road
	WB	LT	
	NB	LR	

** L = Left turn lane; T = through lane; R = Right turn lane*

Traffic Volume Data

Weekday turning movement counts were collected at the study intersections on Tuesday, November 16, 2010 during the weekday AM (7:00-9:00 AM) and PM (4:00-7:00 PM) peak periods. The weekend turning movement counts were collected on Saturday, November 13, 2010 during the Saturday midday peak period (11:00 AM – 2:00 PM). The volume data was tabulated to identify the peak hours at each of the study intersections. In order to perform a conservative analysis the peak hour volumes at each intersection were utilized in this study.

A weekday seasonal adjustment factor of 1.033 and a weekend seasonal adjustment factor of 0.858 for November (months of counts) were obtained from NYSDOT. Applying the weekend normalization factor will increase the existing weekend traffic volumes, therefore the weekend counts were normalized to account for seasonal fluctuation. Applying the weekday normalization factor to the weekday traffic count data collected would reduce the existing peak hour volumes. Therefore to be conservative, the weekday peak hour traffic volumes collected were not normalized. The existing intersection peak hour volumes are shown on Figures 3, 4, and 5 and detailed data are contained in Appendix A.

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DWN. BY:	MCM
CHK'D BY:	CSB/JGP
DATE:	JANUARY 2008
JOB No.:	95594
CADD:	FIGURES.DWG

DRAWING TITLE:

ST. JOHNLAND
2010 EXISTING AM
PEAK HOUR VOLUMES

DRAWING NUMBER:

FIG-3

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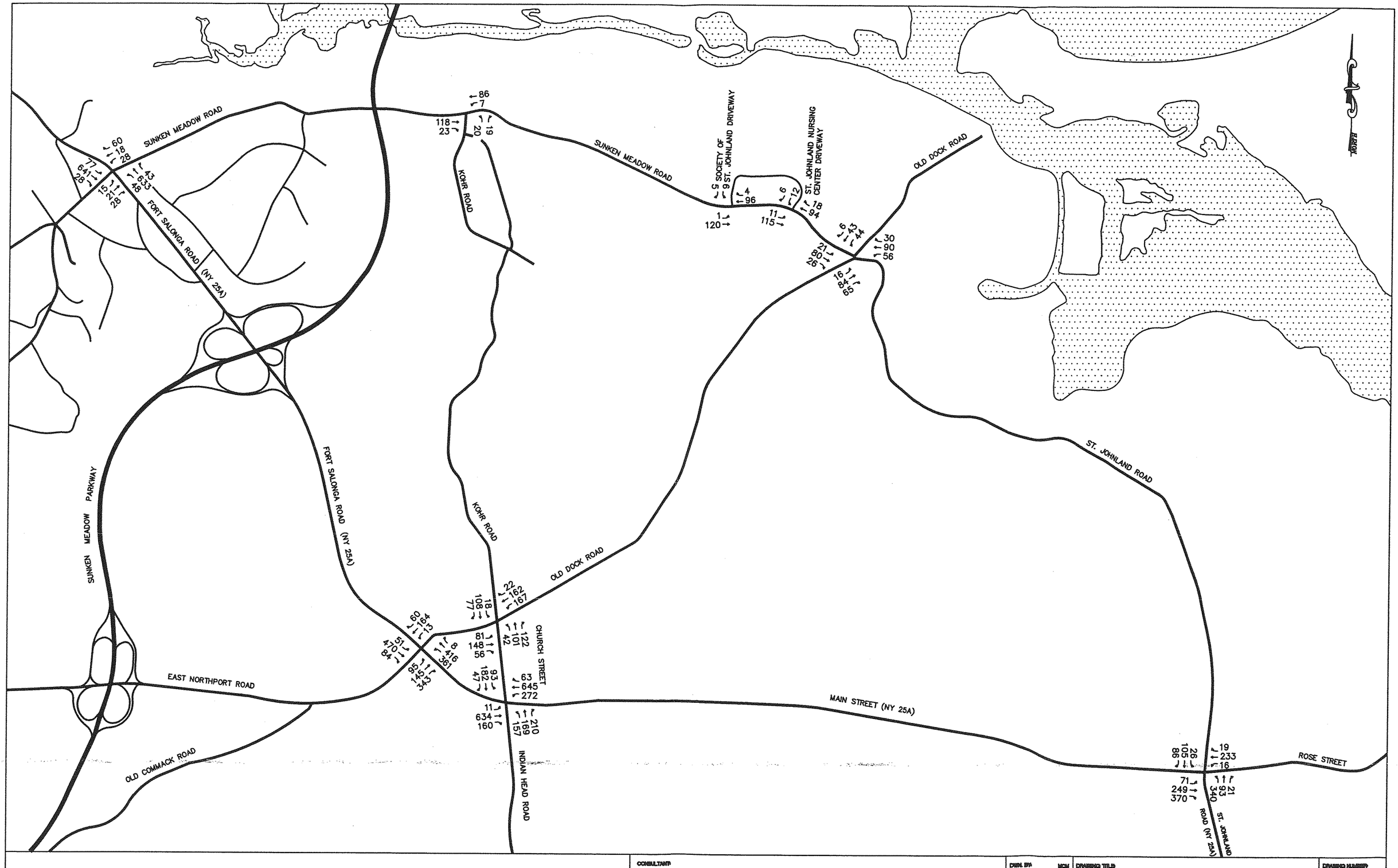
DWN. BY	MCM
CHK'D BY	CSB/JGP
DATE	JANUARY 2010
JOB No.	9524
CADD	FIGURE2.DWG
SCALE	AS SHOWN

DRAWING TITLE

ST. JOHNLAND
2010 EXISTING PM
PEAK HOUR VOLUMES

DRAWING NUMBER

FIG-4



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DWN. BY	MCM
CHK'D BY	CSB/JKP
DATE	JANUARY 2011
JOB No.	6624
CADD FILE/FIELDBK	

DRAWING TITLE

ST. JOHNLAND
2010 EXISTING SATURDAY
PEAK HOUR VOLUMES

DRAWING NUMBER

FIG-5

Accident History

Accident data for the sections of roadways and intersections in the vicinity of the site was obtained from the NYSDOT. The most recent data available was from September 2007 to September 2010. The data was reviewed and summarized in the following tables.

Table 2: Accident Summary by Severity

Location	Accident Severity			
	Fatality	Injury	Property Damage	37 months Total
NYS Route 25A between Hastings Drive and Meadow Road	0	1	0	1
NYS 25A at Sunken Meadow Road	0	2	1	3
NYS Route 25A between Sunken Meadow Road and Pulaski Road	0	1	0	1
NYS Route 25A at Pulaski Road	0	4	9	13
NYS Route 25A between Pulaski Road and Church Street	0	9	12	21
NYS Route 25A at Church Street/Indian Head Road	0	7	8	15
NYS Route 25A between Church Street and Patiky Street	0	2	5	7
NYS Route 25A between Aspen Road St. Johnland Road	0	0	0	0
NYS Route 25A at St. Johnland Road	0	0	3	3
Church Street between NYS Route 25A and Old Dock Road	0	1	0	1
Old Dock Road between NYS Route 25A and Church Street	0	0	3	3
Old Dock Road at Church Street	0	3	2	5
Old Dock Road between Church Street and Sunken Meadow Road	0	3	4	7
Old Dock Road at Sunken Meadow Road/St Johnland Road	0	2	0	2
Pulaski Road between NYS Route 25A and 1st Avenue	0	4	8	12
Sunken Meadow Road between Old Dock Road and St. Johnland Nursing Center Driveway	0	0	1	1
Sunken Meadow Road at St. Johnland Nursing Center Driveway	0	0	0	0
Sunken Meadow Road between St. Johnland Nursing Center Driveway and the Society of St. Johnland Driveway	0	0	0	0
Sunken Meadow Road at the Society of St. Johnland Driveway	0	0	0	0
Sunken Meadow Road between the Society of St. Johnland Driveway and Kohr Road	0	0	0	0
Sunken Meadow Road at Kohr Road	0	0	2	2
Sunken Meadow Road between Kohr Road and NYS Route 25A	0	2	1	3
37 months Total	0 *0%*	41 *41%*	59 *59%*	100 *100%*

Table 2 indicates a total of 100 accidents occurred at or in the vicinity of study intersections during the 37-month analysis period none of which resulted in a fatality. The majority of accidents, 59%, involved property damage only. The locations with the greatest number of

accidents are the section of NYS Route 25A between Pulaski Road and Church Street, the intersection of NYS Route 25A at Church Street, the intersection of NYS Route 25A at Pulaski Road followed by the section of Pulaski Road between NYS Route 25A and 1st Avenue.

Table 3: Accident Summary by Type of Collision

Location	Accident Type										
	Right Angle	Rear End	Head On	Left Turn	Right Turn	Fixed Object	Ped/ Bicycle	Side-Swipe	Over-Taking	Other/ Unknown	Total
NYS Route 25A between Hastings Drive and Meadow Road	0	0	0	0	0	1	0	0	0	0	1
NYS 25A at Sunken Meadow Road	0	2	0	0	0	0	0	0	0	1	3
NYS Route 25A between Sunken Meadow Road and Pulaski Road	0	0	0	0	0	0	0	0	0	1	1
NYS Route 25A at Pulaski Road	1	0	0	3	1	0	2	0	2	4	13
NYS Route 25A between Pulaski Road and Church Street	0	5	0	0	2	0	1	0	1	12	21
NYS Route 25A at Church Street/Indian Head Road	2	3	0	3	0	0	0	1	1	5	15
NYS Route 25A between Church Street and Patiky Street	0	2	0	0	0	1	1	0	0	3	7
NYS Route 25A between Aspen Road St. Johnland Road	0	0	0	0	0	0	0	0	0	0	0
NYS Route 25A at St. Johnland Road	1	1	0	0	0	0	0	0	0	1	3
Church Street between NYS Route 25A and Old Dock Road	0	0	0	0	0	0	1	0	0	0	1
Old Dock Road between NYS Route 25A and Church Street	0	1	0	0	0	0	0	0	1	1	3
Old Dock Road at Church Street	1	1	0	1	0	0	0	0	0	2	5
Old Dock Road between Church Street and Sunken Meadow Road	0	0	0	0	0	6	0	0	0	1	7
Old Dock Road at Sunken Meadow Road/St Johnland Road	0	0	0	0	2	0	0	0	0	0	2

Location	Accident Type										
	Right Angle	Rear End	Head On	Left Turn	Right Turn	Fixed Object	Ped/ Bicycle	Side-Swipe	Over-Taking	Other/ Unknown	Total
Pulaski Road between NYS Route 25A and 1st Avenue	0	2	0	0	0	0	0	0	0	10	12
Sunken Meadow Road between Old Dock Road and St. Johnland Nursing Center Driveway	0	0	0	0	0	0	0	0	0	1	1
Sunken Meadow Road at St. Johnland Nursing Center Driveway	0	0	0	0	0	0	0	0	0	0	0
Sunken Meadow Road between St. Johnland Nursing Center Driveway and the Society of St. Johnland Driveway	0	0	0	0	0	0	0	0	0	0	0
Sunken Meadow Road at the Society of St. Johnland Driveway	0	0	0	0	0	0	0	0	0	0	0
Sunken Meadow Road between the Society of St. Johnland Driveway and Kohr Road	0	0	0	0	0	0	0	0	0	0	0
Sunken Meadow Road at Kohr Road	0	0	0	0	0	2	0	0	0	0	2
Sunken Meadow Road between Kohr Road and NYS Route 25A	0	0	0	0	0	1	0	0	0	2	3
Total	5 *5%*	17 *17%*	0 *0%*	7 *7%*	5 *5%*	11 *11%*	5 *5%*	1 *1%*	5 *5%*	44 *44%*	100 *100%*

A review of Table 3 indicates that a plurality of the accidents (44%) involved accidents that are either unknown or unclassified. The second most frequent accident type was rear-end accidents at 17%.

Level of Service Description

Level of service and capacity analyses for the study intersections were performed using Highway Capacity Software *(HCS+) Release 5.24,* prepared by the Federal Highway Administration. HCS+ is a series of computer programs strictly adhering to the guidelines set forth in *Highway Capacity Manual 2000 (HCM2000). HCM2000* contains procedures and methodologies for estimating capacity and determining level of service for many transportation facilities and modes including signalized and unsignalized intersections.

An intersection's level of service (LOS) describes its quality of traffic flow. It ranges in grade from LOS "A" (relatively congestion-free) to LOS "F" (very congested). The level of service definition, as well as the threshold values for each level, varies according to whether the intersection is controlled by a signal or a stop sign. A brief description is given here and a more detailed definition is found in Appendix C.

The capacity of a signalized intersection is evaluated in terms of the ratio of demand flow rate to capacity (V/C ratio). The capacity for each approach represents the maximum rate of flow (for the subject approach) which may pass through the intersection under prevailing traffic, roadway and signal conditions. The level of service of a signalized intersection is evaluated on the basis of average control-delay measured in seconds per vehicle (sec/veh). The control-delay is calculated using an equation that combines the stopped-delay with the vehicle acceleration/deceleration delay that is caused by the signalized intersection.

The flow at a two-way stop controlled (TWSC) intersection is gauged in terms of LOS and capacity. The capacity of a controlled leg is based on the distribution of gaps in the major street traffic, driver judgment in selecting a gap, and the follow-up time required by each driver in a queue. The LOS for a TWSC intersection is determined by the control-delay, and is defined for each movement rather than for the overall intersection. As with signalized intersections, HCS quantifies only the average control-delay, which is a function of the approach and the degree of saturation for any particular minor movement.

EXISTING CONDITION ANALYSIS

The 2010 existing peak hour traffic volumes depicted in Figures 3, 4, and 5 were used to determine the existing capacity and LOS of the study intersection. Tables 4 and 5 contain the LOS summary for the Existing Condition calculated through the HCS+ software described previously. The detailed analysis worksheets are in Appendix D.

Table 4: Existing Condition LOS Summary (Signalized)

Location (Signalized Intersections)	AM Peak Hour		PM Peak Hour		Saturday Midday Peak Hour	
	LOS	Delay	LOS	Delay	LOS	Delay
NYS Route 25A at Sunken Meadow Road	B	17.0	B	15.5	B	14.7
NYS Route 25A at Pulaski Road/Old Dock Road	C	21.7	C	21.0	C	28.8
NYS Route 25A at Church Street/Indian Head Road	C	24.3	C	23.7	C	26.8
NYS Route 25A at St. Johnland Road/Rose Street	C	22.2	C	24.1	C	25.1
Old Dock Road at Church Street/Kohr Road	B	19.4	B	15.6	C	20.1
Old Dock Road at Sunken Meadow Road/ St Johnland Road	B	12.9	B	12.2	B	12.3

Table 5: Existing Condition LOS Summary (Unsignalized)

Location (Unsignalized Intersections)	Approach	Mov.	AM Peak Hour		PM Peak Hour		Saturday Midday Peak Hour	
			LOS	Delay	LOS	Delay	LOS	Delay
Sunken Meadow Road at St. Johnland Nursing Center	EB	LT	A	7.7	A	7.4	A	7.5
	SB	LR	B	10.0+	B	10.2	A	10.0
Sunken Meadow Road at Society of St. Johnland Driveway	EB	LT	A	7.6	A	7.4	A	7.5
	SB	LR	A	9.4	A	9.5	A	9.7
Sunken Meadow Road at Kohr Road	WB	LT	A	7.8	A	8.1	A	7.6
	NB	LR	B	10.5	B	10.9	B	10.1

Notes: LOS = Level of Service, Delay = seconds/vehicle

NYS Route 25A at Sunken Meadow Road

The signalized intersection of NYS Route 25A at Sunken Meadow Road currently operates at LOS B during the weekday AM, PM and Saturday midday peak hours.

NYS Route 25A at Pulaski Road/Old Dock Road

The signalized intersection of NYS Route 25A at Pulaski Road/Old Dock Road currently operates at LOS C during the weekday AM, PM and Saturday midday peak hours.

NYS Route 25A at Church Street/Indian Head Road

The signalized intersection of NYS Route 25A at Church Street/Indian Head Road currently operates at LOS C during the weekday AM, PM and Saturday midday peak hours.

NYS Route 25A at St. Johnland Road/Rose Street

The signalized intersection of NYS Route 25A at St. Johnland Road/Rose Street currently operates at LOS C during the weekday AM, PM and Saturday midday peak hours.

Old Dock Road at Church Street/Kohr Road

The signalized intersection of Old Dock Road at Church Street/Kohr Road currently operates at LOS B during the weekday AM and PM peak hours and at LOS C during the Saturday midday peak hour.

Old Dock Road at Sunken Meadow Road/St. Johnland Road

The signalized intersection of Old Dock Road at Sunken Meadow Road/St. Johnland Road/currently operates at LOS B during the weekday AM, PM and Saturday midday peak hours.

Sunken Meadow Road at St. Johnland Nursing Center Driveway

Currently the eastbound Sunken Meadow Road approach operates at LOS A during the weekday AM, PM and Saturday midday peak hours. The southbound St. Johnland Nursing Center Driveway approach operates at LOS B during the weekday AM and weekday PM peak hours and operate at LOS A during the Saturday midday peak hour.

Sunken Meadow Road at Society of St. Johnland Driveway

Currently the eastbound Sunken Meadow Road approach operates at LOS A during the weekday AM, PM and Saturday midday peak hours. The southbound Society of St. Johnland Driveway approach operates at LOS A during the weekday AM, PM and Saturday midday peak hours.

Sunken Meadow Road at Kohr Road

Currently the westbound Sunken Meadow Road approach operates at LOS A during the weekday AM, PM and Saturday midday peak hours. The northbound Kohr Road approach operates at LOS B during the weekday AM, PM and Saturday midday peak hours.

FUTURE CONDITIONS

NO BUILD CONDITIONS

The No Build Condition represents traffic conditions expected at the study intersections in the future year 2014 without the construction of the proposed project. The No Build Condition traffic volumes are estimated based on two factors as follows:

- Increases in traffic due to general population growth and developments outside of the immediate project area. This traffic increase is referred to as ambient growth.
- Other planned projects located near the project site that may affect traffic levels and patterns at the study intersections in this report.

Traffic Growth

A 1.1% annual growth factor was obtained from the New York State Department of Transportation (NYSDOT) Long Island Transportation Plan 2000 Study (LITP2000) for the Town of Smithtown. The existing traffic volumes were increased by this factor for a period of four (4) years to project volumes to the year 2014.

Other Planned Projects

"Other Planned Projects" is a term that refers to developments located near the project site that are currently under construction or in the planning stages. Traffic generated by these projects may significantly influence the operations of the study intersections and would not be represented in the field data collected. The Town of Smithtown was contacted to obtain information on any planned projects in the area. At the time this study was conducted, no other planned projects existed in the vicinity of the study area. Therefore the 2014 No Build volumes are equivalent to the 2014 future volumes. The No Build traffic volumes are shown on Figures 6, 7 and 8.

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DWN. BY:	MCM
CHK'D BY:	CSB/JCP
DATE:	JANUARY 2015
JOB No.:	65184
CADD:	FIGURES.DWG
SCALE:	AS SHOWN

DRAWING TITLE:

ST. JOHNLAND
2014 NO BUILD AM
PEAK HOUR VOLUMES

DRAWING NUMBER:

FIG-6

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DRWN BY	MCM
CHK'D BY	CBM/JCP
DATE	JANUARY 2015
JOB No.	5884
CADD FILE/REFERENCE	
SCALE	AS SHOWN

DRAWING TITLE

ST. JOHNLAND
2014 NO BUILD PM
PEAK HOUR VOLUMES

DRAWING NUMBER

FIG-7

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DWN. BY	MCM
CHK'D BY	OSB/JCP
DATE	JANUARY 2015
JOB No.	95524
CADD	FIGURE8.DWG

DRAWING TITLE

ST. JOHNLAND
2014 NO BUILD SATURDAY
PEAK HOUR VOLUMES

DRAWING NUMBER

FIG-8

BUILD CONDITIONS – FUTURE DEVELOPMENTS

Scenario 1- Proposed Continuing Care Retirement Community (CCRC)

Develop the subject parcel as a Continuing Care Retirement Community (CCRC) as currently proposed. The proposed CCRC comprise of 199 units. According the Institute of Transportation Engineer's Trip Generation manual, "Continuing Care Retirement Communities (CCRC) are land uses that provide multiple elements of senior adult living. CCRCs combine aspects of independent living with increased care, as lifestyle needs change with time. Housing options may include various combinations of senior adult (detached), senior adult (attached), congregate care, assisted living and skilled nursing care aimed at allowing the residents to live in one community as their medical needs change". The following table summarizes the proposed unit breakdown as shown on the Master Development plan.

Table 6: Proposed CCRC Unit Breakdown

Unit Type	ITE Land Use	Number of Age-Restricted Units
Townhouse	CCRC (ITE LUC 255)	22
Independent Living	CCRC (ITE LUC 255)	153
Assisted Living	CCRC (ITE LUC 255)	24
Total		**199**

Scenario 2- Existing zoning (R-43/NYSDEC Residential Zone)

Develop the subject parcel in accordance with the existing zoning (R-43/NYSDEC Residential Zone). According to the existing zoning a total of 21 single family homes can be constructed on the site.

Site Access

As depicted on the Master Development plan, access to the developments under both scenarios will be provided via two full movement driveways; one driveway located on Old Dock Road and one driveway located on Sunken Meadow Road.

Parking

403 parking spaces will be provided (269 surface parking spaces, 106 sub-surface parking spaces and 28 garage stalls) and 128 spaces will be landbanked resulting in a total of 531 parking spaces. The parking calculations on the Master Development plan indicate that 531 parking spaces are required based on the Town parking requirement per the draft 2006 CCRC code (2.5 spaces/unit of CCRC and 4 parking spaces per unit of Townhouse). Also indicated on the Master Development plan a parking requirement for the CCRC based on a feasibility study was calculated as 266 parking spaces (1.5 spaces/unit) for the CCRC. In addition to the 88 parking spaces required for the townhouse portion of the project, the proposed CCRC development will require 354 parking spaces (266+ 88) as per the feasibility study. Therefore the 403 parking spaces provided exceed the parking requirement based on the feasibility study and the 531 parking spaces that could be provided (403 spaces + 128 landbanked spaces) will meet the parking requirement based on the draft 2006 CCRC code.

Trip Generation

In order to identify the impacts the proposed CCRC development (Scenario 1) and the permitted use (Scenario 2) will have on the adjacent street system, it is necessary to estimate the magnitude of traffic volume to be generated by both scenarios during the peak hours and to estimate the directional distribution of the site traffic when traveling to and from the subject property. The proposed CCRC development will contain 199 units and if the site is developed according to current zoning it will comprise of 21 single family homes.

Trip generation for CCRC - The trip generation estimates for the proposed CCRC development were prepared for three alternatives:

- Utilizing data found under Land Use Code 255-Continuing Care Retirement Community within the Institute of Transportation Engineers (ITE) publication, *Trip Generation, Eighth Edition*. This publication sets forth trip generation data obtained by traffic counts conducted at sites throughout the country.

- Utilizing data found under ITE Land Use Code 252-Senior Adult Housing Attached for the Independent Living and Townhouse portions of the project and ITE Land Use Code 254 –Assisted Living for the Assisted Living portion of the project.

- Utilizing trip generation rates calculated from peak hour traffic counts conducted at the access to the "Jefferson's Ferry", a Continuing Care Retirement Community located at 1 Jefferson Ferry Drive in South Setauket, New York. This CCRC contains 248 Independent Living Units and 60 Assisted Living Beds and is very similar to the proposed CCRC.

The following Table summarizes the comparison of the trip generation estimates from the three alternatives. Appendix B contains the trip generation worksheets.

Table 7: Trip Generation - CCRC

Time Period	Distribution	199 units – based on ITE LUC 255	199 units based on ITE LUC 252 and ITE LUC 254	199 units based trip generation rates from similar CCRC
Weekday AM Peak Hour	Enter	24	12	32
	Exit	12	15	17
	Total	**36**	**27**	**49**
Weekday PM Peak Hour	Enter	28	22	22
	Exit	30	14	28
	Total	**58**	**36**	**50**
Saturday Midday Peak Hour	Enter	42	30	30
	Exit	36	32	26
	Total	**78**	**62**	**56**

Source: Trip Generation, 7th Edition, published by ITE

As can be seen from Table 7 above, the trip generation for the proposed CCRC obtained from ITE LUC 225 is significantly higher than the one obtained from LUC 252 and 254 and higher than the one calculated from the rates obtained from the similar CCRC development during the PM and Saturday peak hours. The AM trip generation calculated from the similar CCRC is higher. The trip generation rates calculated from the similar CCRC development should be more representative of what is anticipated at the proposed CCRC development since it is located in the same State and County as the proposed and contains similar type and number of units. However, to perform a conservative analysis, the trip generation data from ITE LUC 255 was utilized for

the PM and Saturday peak hours and the rates for the similar CCRS were utilized for the AM peak hour in this study. Therefore the proposed CCRC development is conservatively projected to generate 49 trips (32 entering and 17 exiting) during the weekday AM peak hour, 58 trips (28 entering and 30 exiting) during the weekday PM peak hour and 78 trips (42 entering and 36 exiting) during the Saturday midday peak hour.

Trip generation for Permitted use – Trip generation estimates for the current zoning (R-43/NYSDEC Residential Zone) resulting in a yield of 21 single family homes was developed utilizing data found under Land Use Code 210-Single-Family Detached Housing within the Institute of Transportation Engineers (ITE) publication, *Trip Generation, Eighth Edition*. This publication sets forth trip generation data obtained by traffic counts conducted at sites throughout the country. The following table summarizes the trip generation estimates.

Table 8: Trip Generation (Single Family Homes)

Time Period	Distribution	21 units (Single Family Homes) ITE LUC 210
Weekday AM Peak Hour	Enter	6
	Exit	18
	Total	**24**
Weekday PM Peak Hour	Enter	16
	Exit	10
	Total	**26**
Saturday Midday Peak Hour	Enter	15
	Exit	13
	Total	**28**

Source: Trip Generation, 7th Edition, published by ITE

From the review of Table 8 above, the 21 single family homes will generate 24 trips (6 entering and 18 exiting) during the weekday AM peak hour, 26 trips (16 entering and 10 exiting) during the weekday PM peak hour and 28 trips (15 entering and 13 exiting) during the Saturday midday peak hour.

Trip Distribution and Assignment

The volume of site traffic that would travel through the study intersections during peak hours was distributed and assigned to each movement based on the existing roadway travel patterns. The

nature of the proposed land use and its associated travel patterns were considered as well. Figure 9 depicts the trip distribution for the proposed development. Figures 10, 11 and 12 depict the CCRC development site generated traffic volumes for the weekday AM, PM, and Saturday midday peak hours. Figures 13, 14 and 15 depict the single family homes development site generated traffic volumes for the weekday AM, PM, and Saturday midday peak hours. The site generated traffic volumes for each scenario were then added to the weekday AM, PM and Saturday midday No Build Condition volumes resulting in the Build Condition volumes for Scenario 1 and Scenario 2.

Build Scenario 1 Condition

The Build Scenario 1 Condition represents traffic conditions expected at the study intersections in the future year 2014 assuming the proposed CCRC get built in the study area. The 2014 Build Scenario 1 Condition volumes were developed by adding the CCRC site generated traffic volumes to the AM, PM and Saturday midday No Build traffic volumes. Figures 16, 17 and 18 depict the Build Scenario 1 traffic volumes.

Build Scenario 2 Condition

The Build Scenario 2 Condition represents traffic conditions expected at the study intersections in the future year 2014 assuming that, the current zoning (R-43/NYSDEC Residential Zone) resulting in a yield of 21 single family homes was developed. The 2014 Build Scenario 2 Condition volumes were developed by adding the site generated traffic volumes for the 21 single family homes to the AM, PM and Saturday midday No Build traffic volumes. Figures 19, 20 and 21 depict the Build Scenario 2 traffic volumes.

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CADD:	FIGURE8.DWG

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FIG-9

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ST. JOHNLAND
AM PROJECT VOLUMES
SCENARIO 1

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FIG-10

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SCALE:	AS SHOWN

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PM PROJECT VOLUMES
SCENARIO 1

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FIG-11

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SATURDAY PROJECT VOLUMES
SCENARIO 1

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FIG-12

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CADD:	FIGURES.DWG

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AM PROJECT VOLUMES
SCENARIO 2

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FIG-13

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ST. JOHNLAND
PM PROJECT VOLUMES
SCENARIO 2

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FIG-14

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SATURDAY PROJECT VOLUMES
SCENARIO 2

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FIG-15

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JOB No:	95124
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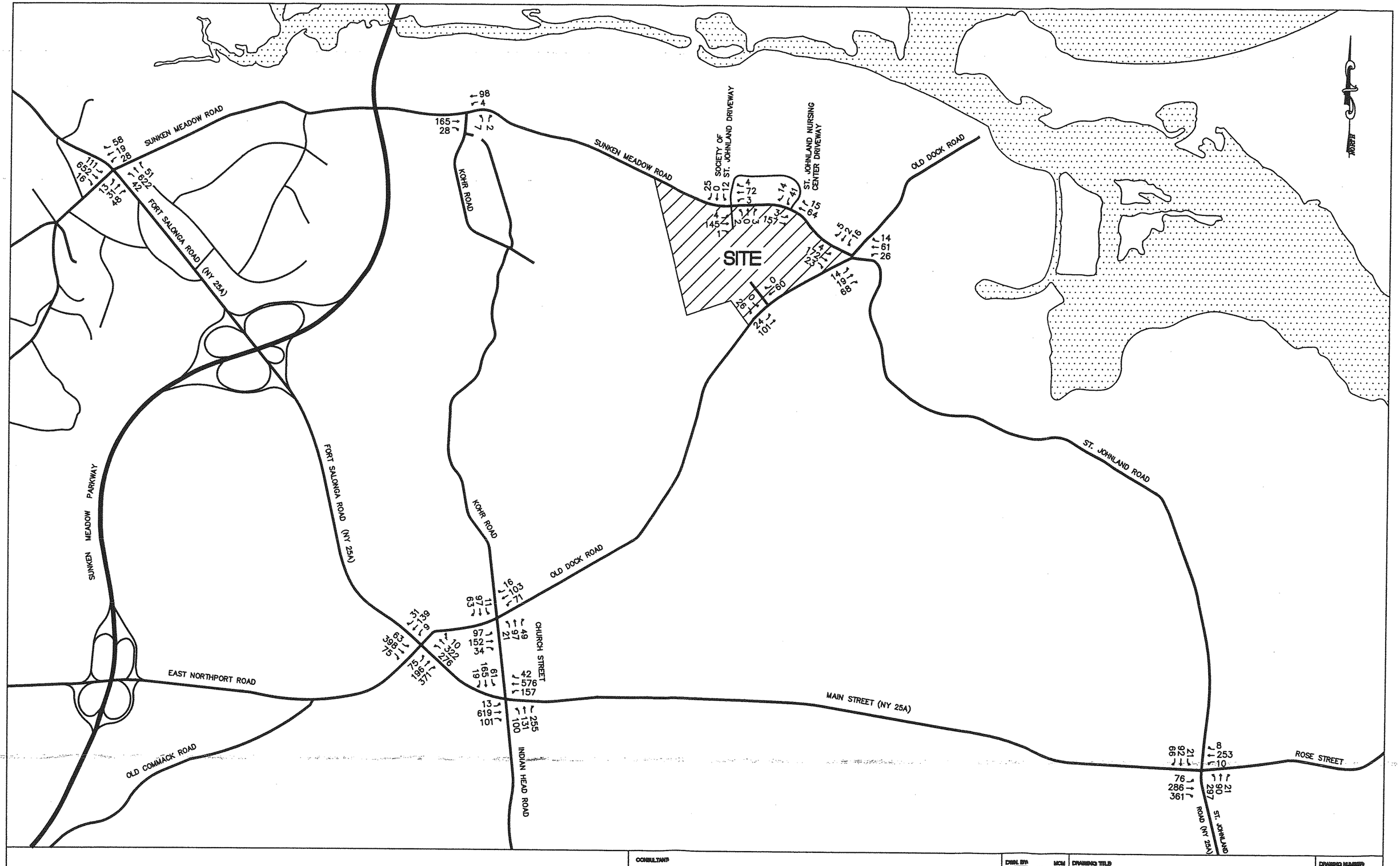
2014 BUILD AM SCENARIO 1
PEAK HOUR VOLUMES

DRAWING NUMBER

FIG-16



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2014 BUILD PM SCENARIO 1
PEAK HOUR VOLUMES

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FIG-17

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2014 BUILD SATURDAY SCENARIO 1
PEAK HOUR VOLUMES

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FIG-18

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CADD	FIG1RES.DWG
SCALE	AS SHOWN

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2014 BUILD AM SCENARIO 2
PEAK HOUR VOLUMES

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FIG-19

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CADD	FIGURE.DWG
SCALE	AS SHOWN

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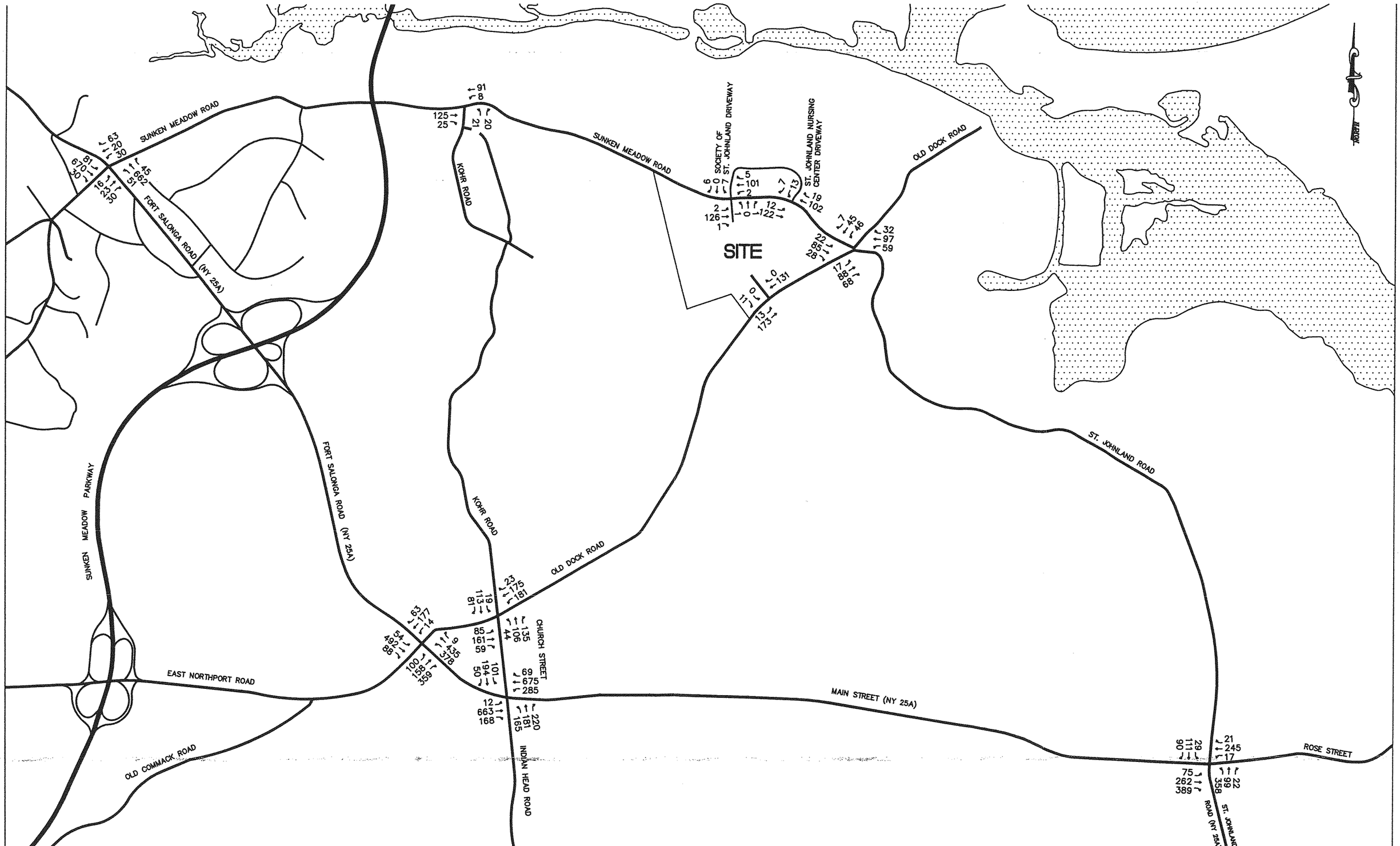
2014 BUILD PM SCENARIO 2
PEAK HOUR VOLUMES

DRAWING NUMBER

FIG-20



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DATE	JANUARY 2015
JOB No.	9984
CADD	FIGURE2.DWG
SCALE	AS SHOWN

DRAWING TITLE

ST. JOHNLAND
2014 BUILD SATURDAY SCENARIO 2
PEAK HOUR VOLUMES

DRAWING NUMBER

FIG-21

ST JOHNLAND CONTINUING CARE RETIREMENT COMMUNITY

KINGS PARK

TOWN OF SMITHTOWN

APPENDIX

August 2011

N & P JOB NO. 95124

Appendix A: Existing Traffic Volume

Nelson & Pope

572 Walt Whitman Road
Melville, NY 11747

N/S NYS Route 25A
E/W Sunken Meadow Road
Kings Park, NY

File Name : NYS 25A and Sunken Meadow Rd wkday
Site Code : 00000000
Start Date : 11/16/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	NYS Route 25A Southbound					Sunken Meadow Road Westbound					NYS Route 25A Northbound					Sunken Meadow Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	2	128	3	0	133	5	4	14	0	23	16	86	8	0	110	1	1	9	0	11	277
07:15 AM	10	144	1	0	155	13	9	18	0	40	22	125	11	0	158	0	2	10	0	12	365
07:30 AM	15	156	0	0	171	16	14	21	0	51	21	133	7	0	161	2	4	14	0	20	403
07:45 AM	7	169	1	0	177	11	14	21	1	47	32	144	11	1	188	1	1	7	1	10	422
Total	34	597	5	0	636	45	41	74	1	161	91	488	37	1	617	4	8	40	1	53	1467
08:00 AM	16	195	2	0	213	9	8	24	1	42	30	119	5	0	154	1	3	8	1	13	422
08:15 AM	5	187	4	0	196	18	21	19	0	58	39	155	2	0	196	0	5	10	0	15	465
08:30 AM	11	167	6	0	184	5	15	8	0	28	12	98	2	0	112	7	8	19	0	34	358
08:45 AM	10	152	2	0	164	8	4	14	0	26	6	79	0	0	85	2	6	9	0	17	292
Total	42	701	14	0	757	40	48	65	1	154	87	451	9	0	547	10	22	46	1	79	1537
*** BREAK ***																					
04:00 PM	18	150	2	0	170	25	3	17	0	45	4	128	10	0	142	2	20	21	1	44	401
04:15 PM	28	155	3	0	186	11	3	12	0	26	11	124	5	0	140	2	9	17	0	28	380
04:30 PM	37	161	5	0	203	9	7	13	1	30	5	123	9	1	138	4	9	15	1	29	400
04:45 PM	33	166	3	0	202	4	5	14	0	23	7	133	7	3	150	5	9	13	0	27	402
Total	116	632	13	0	761	49	18	56	1	124	27	508	31	4	570	13	47	66	2	128	1583
05:00 PM	16	153	5	0	174	7	3	13	0	23	15	169	20	0	204	1	7	11	0	19	420
05:15 PM	20	143	2	0	165	6	1	11	3	21	13	170	8	0	191	2	3	5	0	10	387
05:30 PM	18	122	4	0	144	3	2	7	0	12	12	170	7	0	189	5	6	7	1	19	364
05:45 PM	10	104	5	0	119	2	0	5	2	9	19	155	4	0	178	0	5	3	0	8	314
Total	64	522	16	0	602	18	6	36	5	65	59	664	39	0	762	8	21	26	1	56	1485
Grand Total	256	2452	48	0	2756	152	113	231	8	504	264	2111	116	5	2496	35	98	178	5	316	6072
Apprch %	9.3	89	1.7	0		30.2	22.4	45.8	1.6		10.6	84.6	4.6	0.2		11.1	31	56.3	1.6		
Total %	4.2	40.4	0.8	0	45.4	2.5	1.9	3.8	0.1	8.3	4.3	34.8	1.9	0.1	41.1	0.6	1.6	2.9	0.1	5.2	
cars	247	2399	45	0	2691	149	106	224	8	487	245	2069	114	5	2433	34	96	164	5	299	5910
% cars	96.5	97.8	93.8	0	97.6	98	93.8	97	100	96.6	92.8	98	98.3	100	97.5	97.1	98	92.1	100	94.6	97.3
HV	9	53	3	0	65	3	7	7	0	17	19	41	2	0	62	1	2	14	0	17	161
% HV	3.5	2.2	6.2	0	2.4	2	6.2	3	0	3.4	7.2	1.9	1.7	0	2.5	2.9	2	7.9	0	5.4	2.7
Bank 2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope
572 Walt Whitman Road
Melville, NY 11747

N/S NYS Route 25A
E/W Sunken Meadow Road
Kings Park, NY

File Name : NYS 25A and Sunken Meadow Rd sat
Site Code : 00000000
Start Date : 11/13/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	NYS Route 25A Southbound					Sunken Meadow Road Westbound					NYS Route 25A Northbound					Sunken Meadow Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	16	132	4	0	152	4	2	11	0	17	10	100	4	1	115	2	4	8	0	14	298
11:15 AM	9	151	4	0	164	11	6	21	0	38	8	115	4	1	128	3	1	5	0	9	339
11:30 AM	11	142	3	0	156	10	7	19	0	36	8	131	9	0	148	1	2	10	0	13	353
11:45 AM	9	161	1	1	172	6	4	18	0	28	9	117	3	0	129	3	3	8	0	14	343
Total	45	586	12	1	644	31	19	69	0	119	35	463	20	2	520	9	10	31	0	50	1333
12:00 PM	19	127	7	0	153	3	6	17	0	26	16	109	6	1	132	8	1	5	0	14	325
12:15 PM	16	139	3	0	158	8	2	9	2	21	9	140	8	3	160	4	4	8	0	16	355
12:30 PM	15	139	3	0	157	3	4	11	0	18	15	122	7	0	144	3	5	6	0	14	333
12:45 PM	15	144	7	1	167	6	5	13	0	24	9	139	12	0	160	2	3	5	0	10	361
Total	65	549	20	1	635	20	17	50	2	89	49	510	33	4	596	17	13	24	0	54	1374
01:00 PM	20	128	10	0	158	6	4	15	0	25	8	142	7	0	157	4	6	5	0	15	355
01:15 PM	15	127	4	0	146	9	6	12	0	27	12	119	9	1	141	5	3	6	0	14	328
01:30 PM	13	107	4	0	124	11	1	10	0	22	6	135	7	0	148	1	1	6	1	9	303
01:45 PM	20	121	1	0	142	12	6	18	0	36	15	111	9	0	135	3	4	5	0	12	325
Total	68	483	19	0	570	38	17	55	0	110	41	507	32	1	581	13	14	22	1	50	1311
Grand Total	178	1618	51	2	1849	89	53	174	2	318	125	1480	85	7	1697	39	37	77	1	154	4018
Apprch %	9.6	87.5	2.8	0.1		28	16.7	54.7	0.6		7.4	87.2	5	0.4		25.3	24	50	0.6		
Total %	4.4	40.3	1.3	0	46	2.2	1.3	4.3	0	7.9	3.1	36.8	2.1	0.2	42.2	1	0.9	1.9	0	3.8	
cars	176	1600	48	2	1826	88	52	173	2	315	123	1462	83	7	1675	37	36	75	1	149	3965
% cars	98.9	98.9	94.1	100	98.8	98.9	98.1	99.4	100	99.1	98.4	98.8	97.6	100	98.7	94.9	97.3	97.4	100	96.8	98.7
HV	2	18	3	0	23	1	1	1	0	3	2	18	2	0	22	2	1	2	0	5	53
% HV	1.1	1.1	5.9	0	1.2	1.1	1.9	0.6	0	0.9	1.6	1.2	2.4	0	1.3	5.1	2.7	2.6	0	3.2	1.3
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope

572 Walt Whitman Road
Melville, NY 11747

NB Pulaski Road
SB Old Dock Road
E/W NYS Route 25A
Kings Park, NY

File Name : NYS 25A and Pulaski Old Dock Rd
Site Code : 00000000
Start Date : 11/16/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	Old Dock Road Southbound					NYS Route 25A Westbound					Pulaski Road Northbound					NYS Route 25A Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	56	11	0	67	115	51	0	0	166	6	37	53	0	96	28	53	9	0	90	419
07:15 AM	3	67	21	0	91	113	100	0	0	213	7	48	59	0	114	11	81	11	0	103	521
07:30 AM	1	57	12	0	70	126	95	0	0	221	10	25	30	0	65	10	62	10	0	82	438
07:45 AM	1	53	34	0	88	110	100	1	0	211	9	52	44	0	105	43	61	10	0	114	518
Total	5	233	78	0	316	464	346	1	0	811	32	162	186	0	380	92	257	40	0	389	1896
08:00 AM	3	67	27	0	97	114	85	1	0	200	10	36	58	0	104	29	64	14	0	107	508
08:15 AM	0	60	14	0	74	108	87	1	0	196	19	21	43	0	83	10	72	15	0	97	450
08:30 AM	0	40	10	0	50	103	99	0	0	202	11	29	57	0	97	17	64	19	0	100	449
08:45 AM	2	34	6	0	42	74	67	1	0	142	8	27	52	0	87	14	87	18	0	119	390
Total	5	201	57	0	263	399	338	3	0	740	48	113	210	0	371	70	287	66	0	423	1797
*** BREAK ***																					
04:00 PM	1	45	12	0	58	67	76	1	0	144	13	44	82	0	139	12	91	11	0	114	455
04:15 PM	0	24	11	0	35	73	68	0	0	141	21	47	86	0	154	8	104	17	0	129	459
04:30 PM	0	28	8	0	36	72	78	3	0	153	16	44	93	0	153	15	95	19	0	129	471
04:45 PM	1	42	9	0	52	66	61	0	0	127	10	48	93	0	151	22	83	19	0	124	454
Total	2	139	40	0	181	278	283	4	0	565	60	183	354	0	597	57	373	66	0	496	1839
05:00 PM	3	28	8	0	39	53	63	2	0	118	19	41	71	0	131	12	95	18	0	125	413
05:15 PM	4	23	4	0	31	73	106	4	0	183	26	44	98	0	168	11	107	15	0	133	515
05:30 PM	1	29	8	0	38	61	73	2	0	136	15	43	99	0	157	12	98	24	0	134	465
05:45 PM	3	32	6	0	41	44	73	1	0	118	11	42	86	0	139	23	73	14	0	110	408
Total	11	112	26	0	149	231	315	9	0	555	71	170	354	0	595	58	373	71	0	502	1801
Grand Total	23	685	201	0	909	1372	1282	17	0	2671	211	628	1104	0	1943	277	1290	243	0	1810	7333
Apprch %	2.5	75.4	22.1	0		51.4	48	0.6	0		10.9	32.3	56.8	0		15.3	71.3	13.4	0		
Total %	0.3	9.3	2.7	0	12.4	18.7	17.5	0.2	0	36.4	2.9	8.6	15.1	0	26.5	3.8	17.6	3.3	0	24.7	
cars	23	674	192	0	889	1343	1249	17	0	2609	206	616	1087	0	1909	268	1239	241	0	1748	7155
% cars	100	98.4	95.5	0	97.8	97.9	97.4	100	0	97.7	97.6	98.1	98.5	0	98.3	96.8	96	99.2	0	96.6	97.6
HV	0	11	9	0	20	29	33	0	0	62	5	12	17	0	34	9	51	2	0	62	178
% HV	0	1.6	4.5	0	2.2	2.1	2.6	0	0	2.3	2.4	1.9	1.5	0	1.7	3.2	4	0.8	0	3.4	2.4
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope

572 Walt Whitman Road
Melville, NY 11747

NB Pulaski Road
SB Old Dock Road
N/S NYS Route 25A
Kings Park, NY

File Name : NYS 25A and Pulaski Old Dock Rd sat
Site Code : 00000000
Start Date : 11/13/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	Old Dock Road Southbound					NYS Route 25A Westbound					Pulaski Road Northbound					NYS Route 25A Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	1	30	12	0	43	78	54	1	0	133	18	55	68	0	141	29	89	21	0	139	456
11:15 AM	3	62	25	0	90	66	75	2	0	143	15	48	58	0	121	18	101	26	0	145	499
11:30 AM	3	42	18	0	63	78	83	3	0	164	15	40	56	0	111	13	78	20	0	111	449
11:45 AM	3	40	12	0	55	61	72	1	0	134	23	28	53	0	104	6	92	26	0	124	417
Total	10	174	67	0	251	283	284	7	0	574	71	171	235	0	477	66	360	93	0	519	1821
12:00 PM	3	28	16	0	47	84	101	1	0	186	18	32	78	0	128	12	88	23	0	123	484
12:15 PM	1	41	15	0	57	79	79	1	0	159	17	39	66	0	122	15	115	18	0	148	486
12:30 PM	4	53	9	0	66	85	82	4	0	171	21	29	75	0	125	9	104	14	0	127	489
12:45 PM	3	19	11	0	33	62	95	1	0	158	25	24	75	0	124	8	96	17	0	121	436
Total	11	141	51	0	203	310	357	7	0	674	81	124	294	0	499	44	403	72	0	519	1895
01:00 PM	4	34	12	0	50	68	92	2	0	162	20	37	70	0	127	14	88	20	0	122	461
01:15 PM	3	41	13	0	57	72	84	4	0	160	17	41	79	0	137	9	103	23	0	135	489
01:30 PM	1	25	13	0	39	67	92	4	0	163	21	24	62	0	107	13	83	18	0	114	423
01:45 PM	5	38	11	0	54	63	71	2	0	136	24	39	69	0	132	14	90	21	0	125	447
Total	13	138	49	0	200	270	339	12	0	621	82	141	280	0	503	50	364	82	0	496	1820
Grand Total	34	453	167	0	654	863	980	26	0	1869	234	436	809	0	1479	160	1127	247	0	1534	5536
Apprch %	5.2	69.3	25.5	0		46.2	52.4	1.4	0		15.8	29.5	54.7	0		10.4	73.5	16.1	0		
Total %	0.6	8.2	3	0	11.8	15.6	17.7	0.5	0	33.8	4.2	7.9	14.6	0	26.7	2.9	20.4	4.5	0	27.7	
cars	34	451	167	0	652	853	970	26	0	1849	233	435	800	0	1468	159	1110	246	0	1515	5484
% cars	100	99.6	100	0	99.7	98.8	99	100	0	98.9	99.6	99.8	98.9	0	99.3	99.4	98.5	99.6	0	98.8	99.1
HV	0	2	0	0	2	10	10	0	0	20	1	1	9	0	11	1	17	1	0	19	52
% HV	0	0.4	0	0	0.3	1.2	1	0	0	1.1	0.4	0.2	1.1	0	0.7	0.6	1.5	0.4	0	1.2	0.9
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope

572 Walt Whitman Road
Melville, NY 11747

NB Indianhead Road
SB Church Street
E/W NYS Route 25A
Kings Park, NY

File Name : NYS 25A and Church Street
Site Code : 00000000
Start Date : 11/16/2010
Page No : 1

Groups Printed- Cars - HV - Bank 2

	Church Street Southbound					NYS Route 25A Westbound					Indianhead Road Northbound					NYS Route 25A Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	15	19	3	0	37	34	164	6	0	204	10	14	19	0	43	4	77	10	0	91	375
07:15 AM	12	22	4	0	38	42	180	5	0	227	18	10	15	0	43	3	69	11	0	83	391
07:30 AM	18	26	4	0	48	33	214	8	0	255	25	22	14	3	64	1	75	10	0	86	453
07:45 AM	23	28	4	0	55	36	188	18	0	242	23	27	18	0	68	1	85	8	0	94	459
Total	68	95	15	0	178	145	746	37	0	928	76	73	66	3	218	9	306	39	0	354	1678
08:00 AM	31	38	7	0	76	34	174	6	0	214	15	9	20	0	44	2	97	10	0	109	443
08:15 AM	14	21	2	0	37	42	178	13	0	233	14	11	19	0	44	1	78	10	0	89	403
08:30 AM	16	23	5	0	44	44	165	17	0	226	17	16	13	0	46	1	89	14	0	104	420
08:45 AM	15	24	5	0	44	33	122	11	0	166	21	28	26	0	75	3	101	14	0	118	403
Total	76	106	19	0	201	153	639	47	0	839	67	64	78	0	209	7	365	48	0	420	1669
*** BREAK ***																					
04:00 PM	15	24	4	0	43	63	146	10	0	219	31	29	38	0	98	1	157	30	0	188	548
04:15 PM	6	27	2	0	35	45	130	9	0	184	23	33	43	1	100	2	163	29	0	194	513
04:30 PM	19	40	4	0	63	34	117	5	0	156	22	27	48	0	97	1	157	17	0	175	491
04:45 PM	15	38	1	0	54	49	108	8	0	165	19	40	54	0	113	3	139	21	0	163	495
Total	55	129	11	0	195	191	501	32	0	724	95	129	183	1	408	7	616	97	0	720	2047
05:00 PM	17	40	1	0	58	45	113	12	0	170	27	20	50	0	97	3	159	25	0	187	512
05:15 PM	11	23	4	0	38	39	146	5	0	190	36	35	63	0	134	1	158	29	0	188	550
05:30 PM	13	48	9	0	70	33	148	9	0	190	17	32	62	4	115	6	134	19	0	159	534
05:45 PM	11	39	4	0	54	33	144	8	0	185	15	31	64	1	111	2	141	23	0	166	516
Total	52	150	18	0	220	150	551	34	0	735	95	118	239	5	457	12	592	96	0	700	2112
Grand Total	251	480	63	0	794	639	2437	150	0	3226	333	384	566	9	1292	35	1879	280	0	2194	7506
Apprch %	31.6	60.5	7.9	0		19.8	75.5	4.6	0		25.8	29.7	43.8	0.7		1.6	85.6	12.8	0		
Total %	3.3	6.4	0.8	0	10.6	8.5	32.5	2	0	43	4.4	5.1	7.5	0.1	17.2	0.5	25	3.7	0	29.2	
Cars	251	480	63	0	794	639	2437	150	0	3226	333	384	566	9	1292	35	1879	280	0	2194	7506
% Cars	100	100	100	0	100	100	100	100	0	100	100	100	100	100	100	100	100	100	0	100	100
HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope

572 Walt Whitman Road
Melville, NY 11747

NB Indianhead Road
SB Church Street
E/W NYS Route 25A
Kings Park, NY

File Name : NYS 25A and Church Street sat
Site Code : 00000000
Start Date : 11/13/2010

Groups Printed- cars - HV - Bank 2

	Church Street Southbound					NYS Route 25 A Westbound					Indianhead Road Northbound					NYS Route 25 A Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	17	38	8	0	63	45	120	35	0	200	25	43	36	0	104	5	122	27	0	154	521
11:15 AM	31	60	9	0	100	54	113	17	0	184	25	46	48	0	119	3	114	31	1	149	552
11:30 AM	35	49	8	0	92	72	147	13	0	232	27	21	32	0	80	7	121	26	0	154	558
11:45 AM	30	29	6	0	65	56	122	11	0	189	35	30	38	0	103	4	117	28	0	149	506
Total	113	176	31	0	320	227	502	76	0	805	112	140	154	0	406	19	474	112	1	606	2137
12:00 PM	28	32	7	0	67	65	143	5	0	213	33	44	43	0	120	3	142	29	0	174	574
12:15 PM	17	41	15	0	73	60	135	23	0	218	36	32	48	0	116	4	138	36	0	178	585
12:30 PM	16	46	9	0	71	58	135	16	0	209	28	28	39	1	96	0	142	41	0	183	559
12:45 PM	19	37	9	0	65	50	140	10	0	200	38	41	49	0	128	2	132	31	0	165	558
Total	80	156	40	0	276	233	553	54	0	840	135	145	179	1	460	9	554	137	0	700	2276
01:00 PM	10	33	4	0	47	51	143	11	0	205	27	37	56	0	120	2	103	44	0	149	521
01:15 PM	12	37	3	0	52	52	145	14	0	211	23	31	37	0	91	5	142	41	0	188	542
01:30 PM	21	37	6	0	64	62	143	11	0	216	35	36	45	0	116	9	114	31	1	155	551
01:45 PM	17	39	5	1	62	45	110	7	0	162	24	23	43	0	90	5	115	19	0	139	453
Total	60	146	18	1	225	210	541	43	0	794	109	127	181	0	417	21	474	135	1	631	2067
Grand Total	253	478	89	1	821	670	1596	173	0	2439	356	412	514	1	1283	49	1502	384	2	1937	6480
Apprch %	30.8	58.2	10.8	0.1		27.5	65.4	7.1	0		27.7	32.1	40.1	0.1		2.5	77.5	19.8	0.1		
Total %	3.9	7.4	1.4	0	12.7	10.3	24.6	2.7	0	37.6	5.5	6.4	7.9	0	19.8	0.8	23.2	5.9	0	29.9	
cars	246	475	88	1	810	638	1568	165	0	2371	345	401	483	1	1230	49	1473	375	2	1899	6310
% cars	97.2	99.4	98.9	100	98.7	95.2	98.2	95.4	0	97.2	96.9	97.3	94	100	95.9	100	98.1	97.7	100	98	97.4
HV	1	0	0	0	1	32	28	8	0	68	11	11	31	0	53	0	0	0	0	0	122
% HV	0.4	0	0	0	0.1	4.8	1.8	4.6	0	2.8	3.1	2.7	6	0	4.1	0	0	0	0	0	1.9
Bank 2	6	3	1	0	10	0	0	0	0	0	0	0	0	0	0	0	29	9	0	38	48
% Bank 2	2.4	0.6	1.1	0	1.2	0	0	0	0	0	0	0	0	0	0	0	1.9	2.3	0	2	0.7

Nelson & Pope

572 Walt Whitman Road
Melville, NY 11747

N/S St. Johnland Street
E/W NYS Route 25A
Kings Park, NY

File Name : NYS 25A and St. Johnland Rd sat
Site Code : 00000000
Start Date : 11/13/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	St. Johnland Road Southbound					Rose Street Westbound					St. Johnland Street Northbound					NYS Route 25A Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	7	20	11	0	38	6	45	6	0	57	70	24	5	0	99	9	53	70	0	132	326
11:15 AM	12	18	21	0	51	4	32	11	0	47	62	14	2	0	78	12	55	79	0	146	322
11:30 AM	7	20	14	0	41	0	42	7	0	49	49	18	5	0	72	9	50	79	0	138	300
11:45 AM	5	28	13	0	46	1	38	4	0	43	77	18	8	0	103	16	46	78	0	140	332
Total	31	86	59	0	176	11	157	28	0	196	258	74	20	0	352	46	204	306	0	556	1280
12:00 PM	5	16	7	0	28	5	28	5	0	38	81	20	4	0	105	12	41	84	1	138	309
12:15 PM	1	12	14	0	27	2	34	3	0	39	58	16	6	0	80	9	55	78	0	142	288
12:30 PM	6	21	24	0	51	3	46	1	0	50	78	22	3	0	103	12	61	88	0	161	365
12:45 PM	8	25	14	0	47	3	61	8	0	72	75	17	6	0	98	11	57	88	0	156	373
Total	20	74	59	0	153	13	169	17	0	199	292	75	19	0	386	44	214	338	1	597	1335
01:00 PM	6	23	20	0	49	6	36	3	0	45	77	23	4	0	104	24	49	63	0	136	334
01:15 PM	2	21	16	0	39	2	57	4	0	63	62	18	5	0	85	14	47	78	0	139	326
01:30 PM	5	21	17	0	43	6	50	5	0	61	57	21	2	0	80	21	46	73	0	140	324
Grand Total	64	225	171	0	460	38	469	57	0	564	746	211	50	0	1007	149	560	858	1	1568	3599
Apprch %	13.9	48.9	37.2	0		6.7	83.2	10.1	0		74.1	21	5	0		9.5	35.7	54.7	0.1		
Total %	1.8	6.3	4.8	0	12.8	1.1	13	1.6	0	15.7	20.7	5.9	1.4	0	28	4.1	15.6	23.8	0	43.6	
cars	64	222	169	0	455	37	461	54	0	552	713	208	48	0	969	145	552	817	0	1514	3490
% cars	100	98.7	98.8	0	98.9	97.4	98.3	94.7	0	97.9	95.6	98.6	96	0	96.2	97.3	98.6	95.2	0	96.6	97
HV	0	3	2	0	5	1	8	3	0	12	33	3	2	0	38	4	8	41	1	54	109
% HV	0	1.3	1.2	0	1.1	2.6	1.7	5.3	0	2.1	4.4	1.4	4	0	3.8	2.7	1.4	4.8	100	3.4	3
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope
572 Walt Whitman Road
Melville, NY 11747

N/S St. Johnland Road
E/W NYS Route 25A
Kings Park, NY

File Name : NYS 25A and St. Johnland Rd
Site Code : 00000000
Start Date : 11/16/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	St. Johnland Road Southbound					Rose Street Westbound					St. Johnland Street Northbound					NYS Route 25A Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	1	11	7	0	19	0	22	2	0	24	39	7	1	0	47	1	17	39	0	57	147
07:15 AM	2	18	19	0	39	0	41	0	0	41	83	11	7	0	101	5	45	61	0	111	292
07:30 AM	1	31	16	0	48	0	40	1	0	41	93	12	2	0	107	4	37	80	0	121	317
07:45 AM	2	19	21	0	42	0	40	2	0	42	62	9	0	0	71	3	54	73	0	130	285
Total	6	79	63	0	148	0	143	5	0	148	277	39	10	0	326	13	153	253	0	419	1041
08:00 AM	1	25	11	0	37	4	38	1	0	43	72	11	2	0	85	9	39	67	0	115	280
08:15 AM	7	25	20	0	52	0	38	2	0	40	76	5	2	0	83	8	43	59	0	110	285
08:30 AM	3	31	22	0	56	0	33	1	0	34	62	10	4	0	76	7	53	96	0	156	322
08:45 AM	2	25	19	0	46	1	28	1	0	30	58	6	2	0	66	5	43	55	0	103	245
Total	13	106	72	0	191	5	137	5	0	147	268	32	10	0	310	29	178	277	0	484	1132
*** BREAK ***																					
04:00 PM	7	21	19	0	47	1	67	1	0	69	85	21	4	0	110	16	76	87	0	179	405
04:15 PM	2	29	16	0	47	3	56	4	0	63	59	23	8	0	90	19	62	79	0	160	360
04:30 PM	4	20	14	0	38	5	57	0	0	62	69	26	5	0	100	18	69	76	0	163	363
04:45 PM	5	16	14	0	35	0	61	1	0	62	69	15	3	0	87	19	64	98	0	181	365
Total	18	86	63	0	167	9	241	6	0	256	282	85	20	0	387	72	271	340	0	683	1493
05:00 PM	5	17	13	0	35	5	41	0	0	46	76	18	0	0	94	24	54	85	0	163	338
05:15 PM	3	16	17	0	36	3	52	2	0	57	101	27	2	0	130	13	81	82	0	176	399
05:30 PM	2	17	14	0	33	1	54	1	0	56	77	15	5	0	97	19	59	73	0	151	337
05:45 PM	4	16	11	0	31	2	57	3	0	62	71	22	2	0	95	15	57	64	0	136	324
Total	14	66	55	0	135	11	204	6	0	221	325	82	9	0	416	71	251	304	0	626	1398
Grand Total	51	337	253	0	641	25	725	22	0	772	1152	238	49	0	1439	185	853	1174	0	2212	5064
Apprch %	8	52.6	39.5	0		3.2	93.9	2.8	0		80.1	16.5	3.4	0		8.4	38.6	53.1	0		
Total %	1	6.7	5	0	12.7	0.5	14.3	0.4	0	15.2	22.7	4.7	1	0	28.4	3.7	16.8	23.2	0	43.7	
cars	50	321	251	0	622	23	711	21	0	755	1086	223	46	0	1355	178	833	1115	0	2126	4858
% cars	98	95.3	99.2	0	97	92	98.1	95.5	0	97.8	94.3	93.7	93.9	0	94.2	96.2	97.7	95	0	96.1	95.9
HV	1	16	2	0	19	2	14	1	0	17	66	15	3	0	84	7	20	59	0	86	206
% HV	2	4.7	0.8	0	3	8	1.9	4.5	0	2.2	5.7	6.3	6.1	0	5.8	3.8	2.3	5	0	3.9	4.1
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Traffic Impact Analyses

In order to identify the impacts created by the proposed CCRC development in the study area, capacity analyses were conducted at the study intersections for the No Build and Build Scenario 1 Conditions during the weekday AM, PM and Saturday midday peak hours. The results of the capacity analyses for the No Build and Build Scenario 1 Conditions were compared to determine the impact that will be created on the study intersections by the proposed CCRC development. Capacity analyses were also conducted for the current residential zoning to determine the impacts of the permitted residential use and compare the results to the impacts of the proposed CCRC development. The following tables summarize the results of the capacity analyses for both Build Scenarios.

Table 9: Level of Service Summary at Signalized Intersections
AM Peak Hour

Signalized Intersection	Approach	Movement	2010 No Build Conditions LOS	2010 No Build Conditions Delay (sec.)	2014 Build Condition – Scenario 1 LOS	2014 Build Condition – Scenario 1 Delay (sec.)	2014 Build Condition- Scenario 2 LOS	2014 Build Condition- Scenario 2 Delay (sec.)
NYS Route 25A at Sunken Meadow Road	EB	LTR	C	23.2	C	23.2	C	23.2
	WB	LTR	C	26.2	C	26.3	C	26.3
	NB	L	C	31.0	C	31.0	C	31.0
		TR	B	14.0	B	14.0	B	14.0
	SB	L	A	8.3	A	8.3	A	8.3
		TR	B	18.2	B	18.2	B	18.3
	Overall		**B**	**18.6**	**B**	**18.6**	**B**	**18.6**
NYS 25A at Pulaski Road/Old Dock Road	EB	L	B	17.9	B	17.9	B	17.9
		TR	C	21.0	C	21.0	C	21.0
	WB	L	B	18.3	B	18.3	B	18.3
		TR	A	9.7	A	9.7	A	9.7
	NB	LT	D	36.6	D	37.9	D	36.9
		R	B	18.1	B	18.1	B	18.1
	SB	LTR	D	40.3	D	40.9	D	40.9
	Overall		**C**	**23.0**	**C**	**23.4**	**C**	**23.2**
NYS Route 25A at Church Street/Indian Head Road	EB	LTR	C	25.5	C	25.5	C	25.5
	WB	L	B	11.5	B	11.5	B	11.5
		TR	C	26.5	C	27.1	C	26.6
	NB	L	C	31.1	C	31.1	C	31.2
		T	C	29.1	C	29.3	C	29.2
		R	B	16.4	B	16.4	B	16.4
	SB	L	C	31.1	C	31.3	C	31.3
		T	C	30.6	C	30.8	C	30.8
		R	C	28.0	C	28.0	C	28.0
	Overall		**C**	**25.7**	**C**	**26.0**	**C**	**25.8**
NYS Route 25A at St. Johnland Road/Rose Street	EB	LT	C	27.2	C	27.2	C	27.2
		R	A	5.2	A	5.2	A	5.2
	WB	LTR	C	24.4	C	24.5	C	24.4
	NB	LTR	C	27.7	C	28.1	C	27.8
	SB	LTR	C	32.6	C	32.7	C	32.7
	Overall		**C**	**22.7**	**C**	**22.8**	**C**	**22.7**
Old Dock Road at Church Street/Kohr Road	EB	LTR	B	15.0	B	15.3	B	15.1
	WB	LTR	C	23.7	C	26.8	C	26.1
	NB	LTR	B	19.8	C	20.1	B	19.9
	SB	LTR	C	21.8	C	21.8	C	21.8
	Overall		**C**	**20.3**	**C**	**21.5**	**C**	**21.2**
Old Dock Road at Sunken Meadow Road/St. Johnland Road	EB	LTR	B	11.6	B	11.6	B	11.6
	WB	LTR	B	14.1	B	14.2	B	14.2
	NB	LTR	B	11.6	B	11.6	B	11.6
	SB	LTR	B	11.0	B	11.0	B	11.0
	Overall		**B**	**13.0**	**B**	**13.0**	**B**	**13.0**

Table 10: Level of Service Summary for Unsignalized Intersections
AM Peak Hour

Unsignalized Intersection	Approach	Movement	2010 No Build Conditions		2014 Build – Scenario 1 Condition		2014 Build - Scenario Condition	
			LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)
Sunken Meadow Road at St Johnland Nursing Center Driveway	EB	LT	A	7.7	A	7.7	A	7.7
	SB	LR	B	10.1	B	10.2	B	10.1
Sunken Meadow Road at Society of St Johnland Driveway/Site Driveway	EB	LT	A	7.6	-	-	-	-
	WB	LR	A	9.6	-	-	-	-
	EB	LTR	-	-	A	7.6	A	7.6
	WB	LTR	-	-	A	7.4	A	7.4
	NB	LTR	-	-	A	9.5	A	9.5
	SB	LTR	-	-	A	9.7	A	9.7
Sunken Meadow Road at Kohr Road	WB	LT	A	7.8	A	7.8	A	7.8
	NB	LR	B	10.7	B	10.7	B	10.7
Old Dock Road at Site Driveway	EB	LR	-	-	A	7.5	A	7.4
	NB	L	-	-	A	8.9	A	8.9

Notes: LOS = Level of Service, Delay = seconds/vehicle

Table 11: Level of Service Summary at Signalized Intersections
PM Peak Hour

Signalized Intersection	Approach	Movement	2010 No Build Conditions LOS	2010 No Build Conditions Delay (sec.)	2014 Build Condition – Scenario 1 LOS	2014 Build Condition – Scenario 1 Delay (sec.)	2014 Build Condition- Scenario 2 LOS	2014 Build Condition- Scenario 2 Delay (sec.)
NYS Route 25A at Sunken Meadow Road	EB	LTR	C	23.8	C	23.8	C	23.8
	WB	LTR	C	23.9	C	23.9	C	23.9
	NB	L	A	8.4	A	8.4	A	8.4
		TR	B	16.5	B	16.5	B	16.5
	SB	L	B	12.9	B	12.9	B	12.9
		TR	B	14.8	B	14.8	B	14.8
	Overall		**B**	**16.4**	**B**	**16.4**	**B**	**16.4**
NYS 25A at Pulaski Road/Old Dock Road	EB	L	B	16.7	B	16.7	B	16.7
		TR	C	23.8	C	23.8	C	23.8
	WB	L	B	14.3	B	14.3	B	14.3
		TR	A	9.6	A	9.6	A	9.6
	NB	LT	D	38.8	D	40.8	D	39.5
		R	C	21.9	C	21.9	C	21.9
	SB	LTR	C	31.5	C	31.8	C	31.6
	Overall		**C**	**21.8**	**C**	**22.3**	**C**	**22.0**
NYS Route 25A at Church Street/Indian Head Road	EB	LTR	C	29.3	C	29.3	C	29.3
	WB	L	B	12.5	B	12.5	B	12.5
		TR	B	13.7	B	13.8	B	13.8
	NB	L	D	35.2	D	35.4	D	25.3
		T	C	32.6	C	32.8	C	32.7
		R	C	24.7	C	24.7	C	24.7
	SB	L	C	32.0	C	32.3	C	32.1
		T	C	33.7	C	34.0	C	33.8
		R	C	30.0	C	30.0	C	30.0
	Overall		**C**	**24.5**	**C**	**24.6**	**C**	**24.6**
NYS Route 25A at St. Johnland Road/Rose Street	EB	LT	C	30.5	C	30.6	C	30.6
		R	A	6.6	A	6.7	A	6.7
	WB	LTR	C	22.4	C	22.4	C	22.4
	NB	LTR	D	35.5	D	36.1	D	35.8
	SB	LTR	C	29.5	C	29.6	C	29.5
	Overall		**C**	**25.0**	**C**	**25.3**	**C**	**25.2**
Old Dock Road at Church Street/Kohr Road	EB	LTR	B	1300	B	13.2	B	13.1
	WB	LTR	B	12.5	B	13.0	B	12.7
	NB	LTR	B	19.9	C	20.2	C	20.0
	SB	LTR	C	20.2	C	20.2	C	20.2
	Overall		**B**	**15.8**	**B**	**15.9**	**B**	**15.8**
Old Dock Road at Sunken Meadow Road/St. Johnland Road	EB	LTR	B	13.0	B	13.0	B	13.0
	WB	LTR	B	11.8	B	11.9	B	11.9
	NB	LTR	B	11.8	B	11.8	B	11.8
	SB	LTR	B	11.3	B	11.3	B	11.3
	Overall		**B**	**12.3**	**B**	**12.3**	**B**	**12.3**

Table 12: Level of Service Summary for Unsignalized Intersections
PM Peak Hour

			2010 No Build Conditions		2014 Build – Scenario 1 Condition		2014 Build - Scenario Condition	
Unsignalized Intersection	**Approach**	**Movement**	**LOS**	**Delay (sec.)**	**LOS**	**Delay (sec.)**	**LOS**	**Delay (sec.)**
Sunken Meadow Road at St Johnland Nursing Center Driveway	EB	LT	A	7.4	A	7.4	A	7.4
	SB	LR	B	10.4	B	10.4	B	10.4
Sunken Meadow Road at Society of St Johnland Driveway/Site Driveway	EB	LT	A	7.4	-	-	-	-
	WB	LR	A	9.6	-	-	-	-
	EB	LTR	-	-	A	7.4	A	7.4
	WB	LTR	-	-	A	7.5	A	7.5
	NB	LTR	-	-	A	9.9	B	10.0
	SB	LTR	-	-	A	9.8	A	9.8
Sunken Meadow Road at Kohr Road	WB	LT	A	8.1	A	8.1	A	8.1
	NB	LR	B	11.2	B	11.2	B	11.2
Old Dock Road at Site Driveway	EB	LR	-	-	A	7.4	A	7.4
	NB	L	-	-	A	8.7	A	8.6

Notes: LOS = Level of Service, Delay = seconds/vehicle

Table 13: Level of Service Summary at Signalized Intersections
Saturday Peak Hour

Signalized Intersection	Approach	Movement	2014 No Build Conditions LOS	2014 No Build Conditions Delay (sec.)	2014 Build Condition – Scenario 1 LOS	2014 Build Condition – Scenario 1 Delay (sec.)	2014 Build Condition- Scenario 2 LOS	2014 Build Condition- Scenario 2 Delay (sec.)
NYS Route 25A at Sunken Meadow Road	EB	LTR	C	23.2	C	23.2	C	23.2
	WB	LTR	C	23.9	C	23.9	C	23.9
	NB	L	A	8.4	A	8.4	A	8.4
		TR	B	14.7	B	14.7	B	14.7
	SB	L	A	9.4	A	9.4	A	9.4
		TR	B	14.8	B	14.8	B	14.8
	Overall		**B**	**15.3**	**B**	**15.3**	**B**	**15.3**
NYS 25A at Pulaski Road/Old Dock Road	EB	L	B	18.4	B	18.4	B	18.4
		TR	C	34.8	C	34.8	C	34.8
	WB	L	E	68.3	E	68.3	E	68.3
		TR	B	10.3	B	10.3	B	10.3
	NB	LT	D	47.0	D	54.7	D	49.7
		R	B	17.9	B	17.9	B	17.9
	SB	LTR	C	33.9	D	34.6	C	34.1
	Overall		**C**	**33.8**	**C**	**34.8**	**C**	**34.2**
NYS Route 25A at Church Street/Indian Head Road	EB	LTR	D	36.1	D	36.1	D	36.1
	WB	L	C	23.5	C	23.5	C	23.5
		TR	B	15.4	B	15.7	B	15.5
	NB	L	D	47.5	D	49.7	D	48.3
		T	C	34.9	D	35.2	C	35.0
		R	C	23.0	C	23.0	C	23.0
	SB	L	D	35.2	D	36.4	D	35.8
		T	C	34.7	C	35.0	C	34.8
		R	C	31.5	C	31.5	C	31.5
	Overall		**C**	**28.7**	**C**	**29.0**	**C**	**28.8**
NYS Route 25A at St. Johnland Road/Rose Street	EB	LT	C	35.0	D	35.3	D	35.1
		R	A	5.5	A	5.5	A	5.5
	WB	LTR	C	25.5	C	25.6	C	25.5
	NB	LTR	C	34.8	D	35.7	D	35.1
	SB	LTR	D	35.6	D	35.8	D	35.7
	Overall		**C**	**26.7**	**C**	**27.1**	**C**	**26.8**
Old Dock Road at Church Street/Kohr Road	EB	LTR	B	14.8	B	15.3	B	15.0
	WB	LTR	C	23.6	C	30.9	C	25.7
	NB	LTR	C	25.4	C	26.4	C	25.8
	SB	LTR	C	21.1	C	21.1	C	21.1
	Overall		**C**	**21.2**	**C**	**23.9**	**C**	**22.0**
Old Dock Road at Sunken Meadow Road/St. Johnland Road	EB	LTR	B	12.5	B	12.5	B	12.5
	WB	LTR	B	13.1	B	13.1	B	13.1
	NB	LTR	B	12.1	B	12.1	B	12.1
	SB	LTR	B	11.7	B	11.7	B	11.7
	Overall		**B**	**12.5**	**B**	**12.5**	**B**	**12.5**

Table 14: Level of Service Summary for Unsignalized Intersections
Saturday Peak Hour

			2010 No Build Conditions		2014 Build – Scenario 1 Condition		2014 Build - Scenario Condition	
Unsignalized Intersection	Approach	Movement	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)
Sunken Meadow Road at St Johnland Nursing Center Driveway	EB	LT	A	7.5	A	7.5	A	7.5
	SB	LR	B	10.1	B	10.1	B	10.1
Sunken Meadow Road at Society of St Johnland Driveway/Site Driveway	EB	LT	A	7.5	-	-	-	-
	WB	LR	A	9.8	-	-	-	-
	EB	LTR	-	-	A	7.5	A	7.5
	WB	LTR	-	-	A	7.5	A	7.5
	NB	LTR	-	-	A	9.6	A	9.8
	SB	LTR	-	-	B	10.1	B	10.0
Sunken Meadow Road at Kohr Road	WB	LT	A	7.6	A	7.6	A	7.6
	NB	LR	B	10.2	B	10.2	B	10.2
Old Dock Road at Site Driveway	EB	LR	-	-	A	7.6	A	7.5
	NB	L	-	-	A	9.1	A	9.0

Notes: LOS = Level of Service. Delay = seconds/vehicle

Signalized Intersections

From the review of the tables above, it can be seen that during the No Build Conditions all the signalized intersections studied operate at overall LOS C or better during the weekday AM, weekday PM and Saturday midday peak hours with all the movements operating at LOS D or better with the exception of the westbound left turn movement at the intersection of NYS Route 25A and Pulaski Road that operates at LOS E during the Saturday midday peak hour. With the construction of the proposed CCRC development (Scenario 1), the signalized intersections will continue to operate at No Build conditions with minor or no increases in delay. Therefore, the construction of the proposed CCRC development will not significantly impact the operation of the signalized intersections and roadways in the study area. The results of the analyses conducted for the permitted use under current zoning (21 single family homes) are similar to those of the proposed CCRC.

Unsignalized Intersections

From the review of the tables above, it can be seen that during the No Build Conditions all the unsignalized intersections studied operate at LOS B or better during the weekday AM, weekday PM and Saturday midday peak hours. With the construction of the proposed CCRC development

(Scenario 1), the unsignalized intersections including the proposed site driveways will continue to operate at LOS B or better. Therefore, the construction of the proposed CCRC development will not significantly impact the operation of the unsignalized intersections and roadways in the study area. The results of the analyses conducted for permitted use under current zoning (21 single family homes) are similar to those of the proposed CCRC.

CONCLUSION

Nelson & Pope has investigated the potential traffic impacts associated with the development of the subject site under the following scenarios

1. Development of the subject parcel with the currently proposed Continuing Care Retirement Community (CCRC)
2. Development of the subject parcel in accordance with the existing zoning (R-43/NYSDEC Residential Zone)

The following is a summary of this investigation and the findings thereof:

1. The following intersections were studied:
   - NYS Route 25A at Sunken Meadow Road
   - NYS Route 25A at Old Dock Road/Pulaski Road
   - NYS Route 25A at Church Street/Indian Head Road
   - NYS Route 25A at St. Johnland Road
   - Old Dock Road and Church Road/Kohr Road
   - Old Dock Road at St. Johnland Road/Sunken Meadow Road
   - Sunken Meadow Road at St. Johnland Nursing Center Driveway
   - Sunken Meadow Road at the Society of St. Johnland Driveway
   - Sunken Meadow Road at Kohr Road
   - Old Dock Road and Site Driveway
2. The proposed CCRC development is projected to generate 49 trips during the AM peak hour (32 entering, 17 exiting), 58 trips during the PM peak hour (28 entering, 30 exiting) and 78 trips during the Saturday midday peak hour (42 entering, 36 exiting).
3. The permitted use (21 single family homes) under the current zoning is projected to generate 24 trips during the AM peak hour (6 entering, 18 exiting), 26 trips during the PM peak hour (16 entering, 10 exiting) and 28 trips during the Saturday midday peak hour (15 entering, 13 exiting).

4. As depicted on the Master Development plan, access to the site will be provided via two full movement driveways; one driveway located on Sunken Meadow Road opposite the Society of St. Johnland driveway and one driveway on Old Dock Road.

5. Capacity analyses were conducted at all the study intersections and site access driveways for the 2010 Existing, 2014 No Build, 2014 Build Scenario 1 and 2014 Build Scenario 2 conditions during the weekday AM, weekday PM and Saturday midday peak hours. The Scenario 1 and Scenario 2 analyses conditions are described below:

   - 2014 Build Scenario 1 Condition – This condition represents the analyses of the study intersections in 2014 assuming the proposed CCRC development is built on the site.

   - 2014 Build Scenario 2 Condition – This condition represents the analyses of the study intersections in 2014 assuming 21 single family homes are built on the site under the current zoning.

6. The results of the capacity analyses showed that during the No Build Conditions all the signalized intersections studied operate at overall LOS C or better during the weekday AM, weekday PM and Saturday midday peak hours with all the movements operating at LOS D or better except for the westbound left turn movement at the intersection of NYS Route 25A and Pulaski Road that operates at LOS E during the Saturday midday peak hour. With the construction of the proposed CCRC development (Scenario 1), the signalized intersections will continue to operate at No Build conditions with minor or no increases in delay. Therefore, the construction of the proposed CCRC development will not significantly impact the operation of the signalized intersections and roadways in the study area. The results of the analyses conducted for permitted use under current zoning (21 single family homes) are similar to those of the proposed CCRC.

7. The results of the capacity analyses showed that during the No Build Conditions all the unsignalized intersections studied operate at LOS B or better during the weekday AM, weekday PM and Saturday midday peak hours. With the construction of the proposed CCRC development (Scenario 1), the unsignalized intersections including the proposed site driveways will continue to operate at LOS B or better. Therefore, the construction of the

proposed CCRC development will not significantly impact the operation of the intersections and roadways in the study area. The results of the analyses conducted for permitted use under current zoning (21 single family homes) are similar to those of the proposed CCRC.

Based on the results of the Traffic Impact Study as detailed in the body of this report, it is the professional opinion of Nelson & Pope that, the construction of the proposed CCRC development will not result in an adverse traffic impact at the study intersections.

Nelson & Pope

572 Walt Whitman Road
Melville, NY 11747

N/S Church Street
E/W Old Dock Road
Kings Park, NY

File Name : Old Dock Road and Church Street
Site Code : 00000000
Start Date : 11/16/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	Church Street Southbound					Old Dock Road Westbound					Church Street Northbound					Old Dock Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	7	22	22	0	51	19	44	2	0	65	1	12	17	0	30	5	62	5	0	72	218
07:15 AM	7	36	36	0	79	25	54	3	0	82	2	9	9	0	20	15	50	3	0	68	249
07:30 AM	2	17	28	0	47	16	43	3	0	62	3	17	21	0	41	7	36	2	0	45	195
07:45 AM	17	31	25	0	73	31	56	8	0	95	3	17	30	0	50	10	82	2	0	94	312
Total	33	106	111	0	250	91	197	16	0	304	9	55	77	0	141	37	230	12	0	279	974
08:00 AM	6	24	39	0	69	47	61	10	0	118	1	17	13	0	31	13	54	2	0	69	287
08:15 AM	4	28	36	0	68	7	20	1	0	28	2	11	12	0	25	13	18	1	0	32	153
08:30 AM	2	31	24	0	57	8	21	0	0	29	2	9	12	0	23	11	25	6	0	42	151
08:45 AM	4	25	25	0	54	12	21	2	0	35	3	14	24	0	41	13	28	3	0	44	174
Total	16	108	124	0	248	74	123	13	0	210	8	51	61	0	120	50	125	12	0	187	765
*** BREAK ***																					
04:00 PM	1	22	17	0	40	7	29	3	0	39	5	27	7	0	39	26	26	8	0	60	178
04:15 PM	5	23	11	0	39	13	23	2	0	38	4	23	4	0	31	19	33	3	0	55	163
04:30 PM	0	29	17	0	46	9	13	3	0	25	6	21	9	0	36	23	36	12	0	71	178
04:45 PM	4	18	15	0	37	25	22	7	0	54	5	21	14	0	40	24	39	9	0	72	203
Total	10	92	60	0	162	54	87	15	0	156	20	92	34	0	146	92	134	32	0	258	722
05:00 PM	1	21	13	0	35	10	17	5	0	32	5	29	8	0	42	25	22	8	0	55	164
05:15 PM	0	21	15	0	36	3	16	3	0	22	2	29	3	0	34	28	19	8	0	55	147
05:30 PM	0	16	15	0	31	5	12	0	0	17	3	32	5	0	40	32	20	13	0	65	153
05:45 PM	3	26	12	0	41	3	17	1	0	21	3	32	3	0	38	21	37	11	0	69	169
Total	4	84	55	0	143	21	62	9	0	92	13	122	19	0	154	106	98	40	0	244	633
Grand Total	63	390	350	0	803	240	469	53	0	762	50	320	191	0	561	285	587	96	0	968	3094
Apprch %	7.8	48.6	43.6	0		31.5	61.5	7	0		8.9	57	34	0		29.4	60.6	9.9	0		
Total %	2	12.6	11.3	0	26	7.8	15.2	1.7	0	24.6	1.6	10.3	6.2	0	18.1	9.2	19	3.1	0	31.3	
cars	63	385	344	0	792	236	461	51	0	748	50	316	188	0	554	280	583	95	0	958	3052
% cars	100	98.7	98.3	0	98.6	98.3	98.3	96.2	0	98.2	100	98.8	98.4	0	98.8	98.2	99.3	99	0	99	98.6
HV	0	5	6	0	11	4	8	2	0	14	0	4	3	0	7	5	4	1	0	10	42
% HV	0	1.3	1.7	0	1.4	1.7	1.7	3.8	0	1.8	0	1.2	1.6	0	1.2	1.8	0.7	1	0	1	1.4
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope

572 Walt Whitman Road
Melville, NY 11747

N/S Church Street
E/W Old Dock Road
Kings Park, NY

File Name : Old Dock Road and Church Street sat
Site Code : 00000000
Start Date : 11/13/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	Church Street Southbound					Old Dock Road Westbound					Church Street Northbound					Old Dock Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	6	22	17	0	45	15	14	2	0	31	7	20	51	0	78	13	53	19	0	85	239
11:15 AM	4	24	12	0	40	69	70	7	0	146	15	28	24	0	67	21	36	10	0	67	320
11:30 AM	2	27	20	0	49	35	26	7	0	68	8	20	17	0	45	20	20	15	0	55	217
11:45 AM	3	20	17	0	40	24	29	3	0	56	6	19	13	0	38	15	18	4	0	37	171
Total	15	93	66	0	174	143	139	19	0	301	36	87	105	0	228	69	127	48	0	244	947
12:00 PM	2	36	13	0	51	11	23	3	0	37	3	19	11	0	33	19	36	4	0	59	180
12:15 PM	0	21	18	0	39	13	26	5	0	44	8	28	12	0	48	25	20	11	0	56	187
12:30 PM	1	27	19	0	47	13	25	0	0	38	15	22	13	0	50	17	28	6	0	51	186
12:45 PM	0	30	11	0	41	10	15	1	0	26	4	24	9	0	37	8	25	5	0	38	142
Total	3	114	61	0	178	47	89	9	0	145	30	93	45	0	168	69	109	26	0	204	695
01:00 PM	0	16	19	0	35	10	18	3	0	31	9	22	12	0	43	12	32	11	0	55	164
01:15 PM	4	26	24	0	54	10	25	1	0	36	3	20	15	0	38	21	28	9	0	58	186
01:30 PM	4	24	14	0	42	13	18	2	0	33	3	30	12	0	45	11	27	6	0	44	164
01:45 PM	1	28	26	0	55	8	20	0	0	28	2	12	13	0	27	19	27	11	0	57	167
Total	9	94	83	0	186	41	81	6	0	128	17	84	52	0	153	63	114	37	0	214	681
Grand Total	27	301	210	0	538	231	309	34	0	574	83	264	202	0	549	201	350	111	0	662	2323
Apprch %	5	55.9	39	0		40.2	53.8	5.9	0		15.1	48.1	36.8	0		30.4	52.9	16.8	0		
Total %	1.2	13	9	0	23.2	9.9	13.3	1.5	0	24.7	3.6	11.4	8.7	0	23.6	8.7	15.1	4.8	0	28.5	
cars	27	293	204	0	524	228	308	33	0	569	82	257	198	0	537	196	350	110	0	656	2286
% cars	100	97.3	97.1	0	97.4	98.7	99.7	97.1	0	99.1	98.8	97.3	98	0	97.8	97.5	100	99.1	0	99.1	98.4
HV	0	8	6	0	14	3	1	1	0	5	1	7	4	0	12	5	0	1	0	6	37
% HV	0	2.7	2.9	0	2.6	1.3	0.3	2.9	0	0.9	1.2	2.7	2	0	2.2	2.5	0	0.9	0	0.9	1.6
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope

572 Walt Whitman Road
Melville, NY 11747

N/S Old Dock Road
EB Sunken Meadow Road
WB St. Johnland Road
Kings Park, NY

File Name : Old Dock Road and St. Johnland Rd wkday
Site Code : 00000000
Start Date : 11/16/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	Old Dock Rock Southbound					St. Johnland Road Westbound					Old Dock Rock Northbound					Sunken Meadow Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	1	3	1	1	6	12	19	2	0	33	11	1	5	0	17	1	3	5	0	9	65
07:15 AM	0	5	1	1	7	15	21	3	0	39	13	1	8	1	23	1	5	3	0	9	78
07:30 AM	2	3	1	0	6	10	38	2	0	50	7	3	2	0	12	0	14	7	0	21	89
07:45 AM	4	1	0	0	5	25	44	2	0	71	5	0	6	1	12	2	13	6	0	21	109
Total	7	12	3	2	24	62	122	9	0	193	36	5	21	2	64	4	35	21	0	60	341
08:00 AM	4	4	0	0	8	10	25	3	0	38	4	2	12	2	20	1	9	4	0	14	80
08:15 AM	6	4	1	0	11	12	30	1	0	43	4	4	3	0	11	1	10	1	0	12	77
08:30 AM	3	6	1	0	10	4	15	1	0	20	1	7	6	0	14	1	10	1	0	12	56
08:45 AM	2	7	0	0	9	9	11	1	0	21	8	3	4	0	15	0	10	1	0	11	56
Total	15	21	2	0	38	35	81	6	0	122	17	16	25	2	60	3	39	7	0	49	269
*** BREAK ***																					
04:00 PM	2	3	1	0	6	4	11	1	0	16	2	3	13	0	18	1	45	15	0	61	101
04:15 PM	5	3	1	0	9	10	13	3	0	26	4	5	19	0	28	0	31	2	0	33	96
04:30 PM	1	0	1	0	2	3	12	4	0	19	1	6	21	0	28	0	43	2	0	45	94
04:45 PM	7	5	1	0	13	7	16	5	0	28	5	4	12	0	21	2	40	3	0	45	107
Total	15	11	4	0	30	24	52	13	0	89	12	18	65	0	95	3	159	22	0	184	398
05:00 PM	0	4	0	0	4	4	11	2	0	17	4	5	16	0	25	0	27	3	0	30	76
05:15 PM	0	1	0	0	1	3	11	3	0	17	1	2	14	0	17	2	19	5	0	26	61
05:30 PM	2	1	0	0	3	4	9	0	0	13	0	1	18	0	19	0	27	1	0	28	63
05:45 PM	1	2	0	0	3	4	9	1	0	14	2	5	17	0	24	0	18	2	0	20	61
Total	3	8	0	0	11	15	40	6	0	61	7	13	65	0	85	2	91	11	0	104	261
Grand Total	40	52	9	2	103	136	295	34	0	465	72	52	176	4	304	12	324	61	0	397	1269
Apprch %	38.8	50.5	8.7	1.9		29.2	63.4	7.3	0		23.7	17.1	57.9	1.3		3	81.6	15.4	0		
Total %	3.2	4.1	0.7	0.2	8.1	10.7	23.2	2.7	0	36.6	5.7	4.1	13.9	0.3	24	0.9	25.5	4.8	0	31.3	
cars	38	50	8	2	98	134	290	33	0	457	72	51	173	4	300	11	316	60	0	387	1242
% cars	95	96.2	88.9	100	95.1	98.5	98.3	97.1	0	98.3	100	98.1	98.3	100	98.7	91.7	97.5	98.4	0	97.5	97.9
HV	2	1	0	0	3	2	5	1	0	8	0	1	3	0	4	1	8	1	0	10	25
% HV	5	1.9	0	0	2.9	1.5	1.7	2.9	0	1.7	0	1.9	1.7	0	1.3	8.3	2.5	1.6	0	2.5	2
Bank 2	0	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
% Bank 2	0	1.9	11.1	0	1.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.2

Nelson & Pope
572 Walt Whitman Road
Melville, NY 11747

N/S Old Dock Road
EB Sunken Meadow Road
WB St. Johnland Road
Kings Park, NY

File Name : Old Dock Road and St. Johnland Rd sat
Site Code : 00000000
Start Date : 11/13/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	Old Dock Road Southbound					St. Johnland Road Westbound					Old Dock Road Northbound					Sunken Meadow Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	5	15	1	1	22	9	20	5	3	37	5	12	11	0	28	0	8	1	1	10	97
11:15 AM	11	14	3	1	29	7	20	4	2	33	14	24	14	10	62	1	8	2	1	12	136
11:30 AM	5	9	1	1	16	8	13	5	1	27	2	5	15	6	28	2	15	1	2	20	91
11:45 AM	11	5	1	0	17	30	11	4	0	45	6	7	4	8	25	0	9	3	1	13	100
Total	32	43	6	3	84	54	64	18	6	142	27	48	44	24	143	3	40	7	5	55	424
12:00 PM	2	4	1	1	8	12	18	4	0	34	7	8	12	10	37	3	17	4	0	24	103
12:15 PM	7	12	0	0	19	8	12	3	0	23	3	14	9	6	32	6	17	9	1	33	107
12:30 PM	5	6	3	1	15	8	16	5	2	31	7	10	12	2	31	1	21	0	0	22	99
12:45 PM	9	2	4	4	19	10	10	5	0	25	2	9	16	3	30	1	16	3	1	21	95
Total	23	24	8	6	61	38	56	17	2	113	19	41	49	21	130	11	71	16	2	100	404
01:00 PM	9	10	0	0	19	12	29	4	2	47	0	15	14	5	34	10	17	4	0	31	131
01:15 PM	4	13	0	1	18	19	15	0	1	35	4	18	10	3	35	0	17	5	0	22	110
01:30 PM	13	8	0	1	22	7	16	5	4	32	5	20	6	6	37	2	8	2	1	13	104
01:45 PM	12	6	3	0	21	10	17	7	3	37	5	19	8	4	36	2	11	4	1	18	112
Total	38	37	3	2	80	48	77	16	10	151	14	72	38	18	142	14	53	15	2	84	457
Grand Total	93	104	17	11	225	140	197	51	18	406	60	161	131	63	415	28	164	38	9	239	1285
Apprch %	41.3	46.2	7.6	4.9		34.5	48.5	12.6	4.4		14.5	38.8	31.6	15.2		11.7	68.6	15.9	3.8		
Total %	7.2	8.1	1.3	0.9	17.5	10.9	15.3	4	1.4	31.6	4.7	12.5	10.2	4.9	32.3	2.2	12.8	3	0.7	18.6	
cars	93	103	17	11	224	140	194	48	18	400	59	161	131	63	414	28	162	37	8	235	1273
% cars	100	99	100	100	99.6	100	98.5	94.1	100	98.5	98.3	100	100	100	99.8	100	98.8	97.4	88.9	98.3	99.1
HV	0	1	0	0	1	0	3	3	0	6	1	0	0	0	1	0	2	1	1	4	12
% HV	0	1	0	0	0.4	0	1.5	5.9	0	1.5	1.7	0	0	0	0.2	0	1.2	2.6	11.1	1.7	0.9
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope

572 Walt Whitman Road
Melville, NY 11747

SB Easterly St Johnland Driveway
E/W Sunken Meadow Road
Kings Park, NY

File Name : Sunken Meadow Rd at SJL east driveway wkday
Site Code : 00000000
Start Date : 11/16/2010
Page No : 1

Groups Printed- Cars - HV - Bank 2

	St Johnland Easterly Driveway Southbound					Sunken Meadow Road Westbound					Northbound					Sunken Meadow Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	1	0	0	0	1	0	23	11	0	34	0	0	0	0	0	3	7	0	0	10	45
07:15 AM	4	0	2	0	6	0	31	20	0	51	0	0	0	0	0	5	12	0	0	17	74
07:30 AM	5	0	1	0	6	0	36	7	0	43	0	0	0	0	0	3	13	0	0	16	65
07:45 AM	1	0	4	0	5	0	32	10	0	42	0	0	0	0	0	6	20	0	0	26	73
Total	11	0	7	0	18	0	122	48	0	170	0	0	0	0	0	17	52	0	0	69	257
08:00 AM	3	0	1	0	4	0	25	6	0	31	0	0	0	0	0	3	17	0	0	20	55
08:15 AM	0	0	1	0	1	0	35	5	0	40	0	0	0	0	0	3	11	0	0	14	55
08:30 AM	0	0	0	0	0	0	24	3	0	27	0	0	0	0	0	0	18	0	0	18	45
08:45 AM	0	0	0	0	0	0	15	6	0	21	0	0	0	0	0	0	13	0	0	13	34
Total	3	0	2	0	5	0	99	20	0	119	0	0	0	0	0	6	59	0	0	65	189
*** BREAK ***																					
04:00 PM	18	0	4	0	22	0	12	5	0	17	0	0	0	0	0	0	45	0	0	45	84
04:15 PM	4	0	1	0	5	0	11	4	0	15	0	0	0	0	0	1	31	0	0	32	52
04:30 PM	12	0	7	0	19	0	13	2	0	15	0	0	0	0	0	1	33	0	0	34	68
04:45 PM	5	0	0	0	5	0	19	3	0	22	0	0	0	0	0	0	38	0	0	38	65
Total	39	0	12	0	51	0	55	14	0	69	0	0	0	0	0	2	147	0	0	149	269
05:00 PM	7	0	2	0	9	0	15	3	0	18	0	0	0	0	0	1	23	0	0	24	51
05:15 PM	7	0	1	0	8	0	10	3	0	13	0	0	0	0	0	2	19	0	0	21	42
05:30 PM	3	0	1	0	4	0	8	0	0	8	0	0	0	0	0	0	25	0	0	25	37
05:45 PM	2	0	1	0	3	0	7	4	0	11	0	0	0	0	0	0	18	0	0	18	32
Total	19	0	5	0	24	0	40	10	0	50	0	0	0	0	0	3	85	0	0	88	162
Grand Total	72	0	26	0	98	0	316	92	0	408	0	0	0	0	0	28	343	0	0	371	877
Apprch %	73.5	0	26.5	0		0	77.5	22.5	0		0	0	0	0		7.5	92.5	0	0		
Total %	8.2	0	3	0	11.2	0	36	10.5	0	46.5	0	0	0	0	0	3.2	39.1	0	0	42.3	
Cars	72	0	26	0	98	0	311	92	0	403	0	0	0	0	0	28	335	0	0	363	864
% Cars	100	0	100	0	100	0	98.4	100	0	98.8	0	0	0	0	0	100	97.7	0	0	97.8	98.5
HV	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	0	8	0	0	8	13
% HV	0	0	0	0	0	0	1.6	0	0	1.2	0	0	0	0	0	0	2.3	0	0	2.2	1.5
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope
572 Walt Whitman Road
Melville, NY 11747

SB St. Johnland easterly driveway
E/W Sunken Meadow Road
Kings Park, NY

File Name : Sunken Meadow Rd at SJL east driveway
Site Code : 00000000
Start Date : 11/13/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	St. Johnland easterly driveway Southbound					Sunken Meadow Road Westbound					Northbound					Sunken Meadow Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	0	0	0	0	0	0	14	3	0	17	0	0	0	0	0	0	11	0	0	11	28
11:15 AM	1	2	0	0	3	0	33	6	0	39	0	0	0	0	0	2	15	0	0	17	59
11:30 AM	1	3	2	0	6	0	23	2	0	25	0	0	0	0	0	2	15	0	0	17	48
11:45 AM	3	1	1	0	5	0	17	2	0	19	0	0	0	0	0	3	13	0	0	16	40
Total	5	6	3	0	14	0	87	13	0	100	0	0	0	0	0	7	54	0	0	61	175
12:00 PM	0	0	1	0	1	0	16	8	0	24	0	0	0	0	0	0	22	0	0	22	47
12:15 PM	2	0	1	0	3	0	22	3	0	25	0	0	0	0	0	1	21	0	0	22	50
12:30 PM	3	0	2	0	5	0	16	4	0	20	0	0	0	0	0	1	35	0	0	36	61
12:45 PM	0	0	0	0	0	0	21	6	0	27	0	0	0	0	0	4	14	0	0	18	45
Total	5	0	4	0	9	0	75	21	0	96	0	0	0	0	0	6	92	0	0	98	203
01:00 PM	2	0	3	0	5	0	20	1	0	21	0	0	0	0	0	2	32	0	0	34	60
01:15 PM	5	0	0	0	5	0	24	4	0	28	0	0	0	0	0	2	17	0	0	19	52
01:30 PM	5	0	1	0	6	0	14	5	0	19	0	0	0	0	0	3	14	0	0	17	42
01:45 PM	3	0	3	0	6	0	20	5	0	25	0	0	0	0	0	4	18	0	0	22	53
Total	15	0	7	0	22	0	78	15	0	93	0	0	0	0	0	11	81	0	0	92	207
Grand Total	25	6	14	0	45	0	240	49	0	289	0	0	0	0	0	24	227	0	0	251	585
Apprch %	55.6	13.3	31.1	0		0	83	17	0		0	0	0	0		9.6	90.4	0	0		
Total %	4.3	1	2.4	0	7.7	0	41	8.4	0	49.4	0	0	0	0	0	4.1	38.8	0	0	42.9	
cars	25	6	14	0	45	0	240	49	0	289	0	0	0	0	0	24	227	0	0	251	585
% cars	100	100	100	0	100	0	100	100	0	100	0	0	0	0	0	100	100	0	0	100	100
HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope
572 Walt Whitman Road
Melville, NY 11747

SB St Johnland westerly driveway
E/W Sunken Meadow Road
Kings Park, NY

File Name : Sunken Meadow Rd at SJL west driveway wkday
Site Code : 00000000
Start Date : 11/16/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	St Johnland westerly driveway Southbound					Sunken Meadow Road Westbound					Northbound					Sunken Meadow Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	0	0	0	0	0	19	4	0	23	0	0	0	0	0	2	9	0	0	11	34
07:15 AM	1	0	0	0	1	0	33	5	0	38	0	0	0	0	0	7	16	0	0	23	62
07:30 AM	1	0	6	0	7	0	30	4	0	34	0	0	0	0	0	7	16	0	0	23	64
07:45 AM	0	0	1	0	1	0	28	8	0	36	0	0	0	0	0	8	23	0	0	31	68
Total	2	0	7	0	9	0	110	21	0	131	0	0	0	0	0	24	64	0	0	88	228
08:00 AM	0	0	0	0	0	0	23	3	0	26	0	0	0	0	0	3	21	0	0	24	50
08:15 AM	1	0	0	0	1	0	35	2	0	37	0	0	0	0	0	0	12	0	0	12	50
08:30 AM	1	0	0	0	1	0	22	1	0	23	0	0	0	0	0	2	17	0	0	19	43
08:45 AM	1	0	0	0	1	0	29	2	0	31	0	0	0	0	0	1	14	0	0	15	47
Total	3	0	0	0	3	0	109	8	0	117	0	0	0	0	0	6	64	0	0	70	190
*** BREAK ***																					
04:00 PM	8	0	15	0	23	0	19	0	0	19	0	0	0	0	0	1	40	0	0	41	83
04:15 PM	0	0	2	0	2	0	12	0	0	12	0	0	0	0	0	1	27	0	0	28	42
04:30 PM	1	0	3	0	4	0	20	1	0	21	0	0	0	0	0	1	33	0	0	34	59
04:45 PM	2	0	3	0	5	0	17	2	0	19	0	0	0	0	0	0	36	0	0	36	60
Total	11	0	23	0	34	0	68	3	0	71	0	0	0	0	0	3	136	0	0	139	244
05:00 PM	0	0	1	0	1	0	18	0	0	18	0	0	0	0	0	0	26	0	0	26	45
05:15 PM	0	0	1	0	1	0	11	0	0	11	0	0	0	0	0	0	24	0	0	24	36
05:30 PM	1	0	0	0	1	0	9	0	0	9	0	0	0	0	0	0	20	0	0	20	30
05:45 PM	0	0	0	0	0	0	8	0	0	8	0	0	0	0	0	0	18	0	0	18	26
Total	1	0	2	0	3	0	46	0	0	46	0	0	0	0	0	0	88	0	0	88	137
Grand Total	17	0	32	0	49	0	333	32	0	365	0	0	0	0	0	33	352	0	0	385	799
Apprch %	34.7	0	65.3	0		0	91.2	8.8	0		0	0	0	0		8.6	91.4	0	0		
Total %	2.1	0	4	0	6.1	0	41.7	4	0	45.7	0	0	0	0	0	4.1	44.1	0	0	48.2	
cars	17	0	32	0	49	0	331	32	0	363	0	0	0	0	0	33	352	0	0	385	797
% cars	100	0	100	0	100	0	99.4	100	0	99.5	0	0	0	0	0	100	100	0	0	100	99.7
HV	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2
% HV	0	0	0	0	0	0	0.6	0	0	0.5	0	0	0	0	0	0	0	0	0	0	0.3
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope
572 Walt Whitman Road
Melville, NY 11747

SB St Johnland westerly driveway
E/W Sunken Meadow Road
Kings Park, NY

File Name : Sunken Meadow Rd at SJL west driveway
Site Code : 00000000
Start Date : 11/13/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	St Johnland westerly driveway Southbound					Sunken Meadow Road Westbound					Northbound					Sunken Meadow Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	0	0	0	0	0	0	18	3	0	21	0	0	0	0	0	0	15	0	0	15	36
11:15 AM	0	0	2	0	2	0	29	2	0	31	0	0	0	0	0	1	8	0	0	9	42
11:30 AM	1	0	2	0	3	0	16	2	0	18	0	0	0	0	0	1	19	0	0	20	41
11:45 AM	2	0	0	0	2	0	13	0	0	13	0	0	0	0	0	2	13	0	0	15	30
Total	3	0	4	0	7	0	76	7	0	83	0	0	0	0	0	4	55	0	0	59	149
12:00 PM	3	0	1	0	4	0	21	4	0	25	0	0	0	0	0	0	21	0	0	21	50
12:15 PM	1	0	0	0	1	0	14	1	0	15	0	0	0	0	0	0	31	0	0	31	47
12:30 PM	2	0	0	0	2	0	21	1	0	22	0	0	0	0	0	0	21	0	0	21	45
12:45 PM	0	0	2	0	2	0	17	0	0	17	0	0	0	0	0	1	24	0	0	25	44
Total	6	0	3	0	9	0	73	6	0	79	0	0	0	0	0	1	97	0	0	98	186
01:00 PM	2	0	2	0	4	0	29	1	0	30	0	0	0	0	0	0	27	0	0	27	61
01:15 PM	2	0	2	0	4	0	14	3	0	17	0	0	0	0	0	1	17	0	0	18	39
01:30 PM	1	0	2	0	3	0	12	3	0	15	0	0	0	0	0	0	9	0	0	9	27
01:45 PM	3	0	4	0	7	0	24	2	0	26	0	0	0	0	0	1	19	0	0	20	53
Total	8	0	10	0	18	0	79	9	0	88	0	0	0	0	0	2	72	0	0	74	180
Grand Total	17	0	17	0	34	0	228	22	0	250	0	0	0	0	0	7	224	0	0	231	515
Apprch %	50	0	50	0		0	91.2	8.8	0		0	0	0	0		3	97	0	0		
Total %	3.3	0	3.3	0	6.6	0	44.3	4.3	0	48.5	0	0	0	0	0	1.4	43.5	0	0	44.9	
cars	17	0	16	0	33	0	224	22	0	246	0	0	0	0	0	7	222	0	0	229	508
% cars	100	0	94.1	0	97.1	0	98.2	100	0	98.4	0	0	0	0	0	100	99.1	0	0	99.1	98.6
HV	0	0	1	0	1	0	4	0	0	4	0	0	0	0	0	0	2	0	0	2	7
% HV	0	0	5.9	0	2.9	0	1.8	0	0	1.6	0	0	0	0	0	0	0.9	0	0	0.9	1.4
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nelson & Pope
572 Walt Whitman Road
Melville, NY 11747

NB Kohr Road
E/W Sunken Meadow Road
Kings Park, NY

File Name : Sunken Meadow Rd and Kohr Rd Sat
Site Code : 00000000
Start Date : 11/13/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	Southbound					Sunken Meadow Road Westbound					Kohr Road Northbound					Sunken Meadow Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
11:00 AM	0	0	0	0	0	1	15	1	0	17	5	0	0	0	5	0	14	6	0	20	42
11:15 AM	0	0	0	0	0	1	30	0	0	31	6	0	1	0	7	0	9	3	0	12	50
11:30 AM	0	0	0	0	0	0	17	0	0	17	2	0	1	0	3	0	13	0	0	13	33
11:45 AM	0	0	0	0	0	0	14	0	0	14	6	0	2	0	8	0	9	3	0	12	34
Total	0	0	0	0	0	2	76	1	0	79	19	0	4	0	23	0	45	12	0	57	159
12:00 PM	0	0	0	0	0	5	18	0	0	23	2	0	0	0	2	0	19	5	0	24	49
12:15 PM	0	0	0	0	0	0	13	0	0	13	6	0	3	0	9	0	29	5	0	34	56
12:30 PM	0	0	0	0	0	1	17	0	0	18	2	0	2	0	4	0	21	3	0	24	46
12:45 PM	0	0	0	0	0	2	19	0	0	21	7	0	9	0	16	0	26	7	0	33	70
Total	0	0	0	0	0	8	67	0	0	75	17	0	14	0	31	0	95	20	0	115	221
01:00 PM	0	0	0	0	0	3	25	0	0	28	3	0	2	0	5	0	19	4	0	23	56
01:15 PM	0	0	0	0	0	2	14	0	0	16	3	0	1	0	4	0	24	3	0	27	47
01:30 PM	0	0	0	0	0	2	15	0	0	17	4	0	2	0	6	0	13	6	0	19	42
01:45 PM	0	0	0	0	0	4	28	0	0	32	10	0	2	0	12	0	19	6	0	25	69
Total	0	0	0	0	0	11	82	0	0	93	20	0	7	0	27	0	75	19	0	94	214
Grand Total	0	0	0	0	0	21	225	1	0	247	56	0	25	0	81	0	215	51	0	266	594
Apprch %	0	0	0	0		8.5	91.1	0.4	0		69.1	0	30.9	0		0	80.8	19.2	0		
Total %	0	0	0	0	0	3.5	37.9	0.2	0	41.6	9.4	0	4.2	0	13.6	0	36.2	8.6	0	44.8	
cars	0	0	0	0	0	20	224	1	0	245	55	0	25	0	80	0	214	48	0	262	587
% cars	0	0	0	0	0	95.2	99.6	100	0	99.2	98.2	0	100	0	98.8	0	99.5	94.1	0	98.5	98.8
HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	4	4
% HV	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.5	5.9	0	1.5	0.7
Bank 2	0	0	0	0	0	1	1	0	0	2	1	0	0	0	1	0	0	0	0	0	3
% Bank 2	0	0	0	0	0	4.8	0.4	0	0	0.8	1.8	0	0	0	1.2	0	0	0	0	0	0.5

Nelson & Pope

572 Walt Whitman Road
Melville, NY 11747

NB Kohr Road
E/W Sunken Meadow Road
Kings Park, NY

File Name : Sunken Meadow Rd and Kohr Rd wkdy
Site Code : 00000000
Start Date : 11/16/2010
Page No : 1

Groups Printed- cars - HV - Bank 2

	Southbound					Sunken Meadow Road Westbound					Kohr Road Northbound					Sunken Meadow Road Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	0	0	0	0	0	0	22	0	0	22	3	0	0	0	3	0	10	0	0	10	35
07:15 AM	0	0	0	0	0	0	31	0	0	31	4	0	0	0	4	0	23	2	0	25	60
07:30 AM	0	0	0	0	0	0	41	0	0	41	6	0	2	0	8	0	20	1	0	21	70
07:45 AM	0	0	0	0	0	1	35	0	0	36	13	0	4	0	17	0	25	2	0	27	80
Total	0	0	0	0	0	1	129	0	0	130	26	0	6	0	32	0	78	5	0	83	245
08:00 AM	0	0	0	0	0	2	29	0	0	31	7	0	0	0	7	0	21	2	0	23	61
08:15 AM	0	0	0	0	0	0	41	0	0	41	11	0	1	0	12	0	11	0	0	11	64
08:30 AM	0	0	0	0	0	0	28	0	0	28	4	0	1	0	5	0	16	0	0	16	49
08:45 AM	0	0	0	0	0	0	30	0	0	30	6	0	0	0	6	0	11	2	0	13	49
Total	0	0	0	0	0	2	128	0	0	130	28	0	2	0	30	0	59	4	0	63	223
*** BREAK ***																					
04:00 PM	0	0	0	0	0	1	25	0	0	26	4	0	0	0	4	0	35	4	0	39	69
04:15 PM	0	0	0	0	0	0	21	0	0	21	2	0	1	0	3	0	34	3	0	37	61
04:30 PM	0	0	0	0	0	1	16	0	0	17	2	0	1	0	3	0	49	9	0	58	78
04:45 PM	0	0	0	0	0	1	17	0	0	18	1	0	0	0	1	0	35	10	0	45	64
Total	0	0	0	0	0	3	79	0	0	82	9	0	2	0	11	0	153	26	0	179	272
05:00 PM	0	0	0	0	0	1	13	0	0	14	5	0	0	0	5	0	27	8	0	35	54
05:15 PM	0	0	0	0	0	0	11	0	0	11	1	0	2	0	3	0	26	0	0	26	40
05:30 PM	0	0	0	0	0	1	9	0	0	10	2	0	1	0	3	0	23	5	0	28	41
05:45 PM	0	0	0	0	0	0	11	0	0	11	2	0	2	0	4	0	22	4	0	26	41
Total	0	0	0	0	0	2	44	0	0	46	10	0	5	0	15	0	98	17	0	115	176
Grand Total	0	0	0	0	0	8	380	0	0	388	73	0	15	0	88	0	388	52	0	440	916
Apprch %	0	0	0	0		2.1	97.9	0	0		83	0	17	0		0	88.2	11.8	0		
Total %	0	0	0	0	0	0.9	41.5	0	0	42.4	8	0	1.6	0	9.6	0	42.4	5.7	0	48	
cars	0	0	0	0	0	6	338	0	0	344	62	0	12	0	74	0	340	42	0	382	800
% cars	0	0	0	0	0	75	88.9	0	0	88.7	84.9	0	80	0	84.1	0	87.6	80.8	0	86.8	87.3
HV	0	0	0	0	0	2	42	0	0	44	11	0	3	0	14	0	48	10	0	58	116
% HV	0	0	0	0	0	25	11.1	0	0	11.3	15.1	0	20	0	15.9	0	12.4	19.2	0	13.2	12.7
Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bank 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix B: Trip Generation

Summary of Trip Generation Calculation
For 199 Occupied Units of Continuing Care Retirement Community
July 13, 2011

	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
Avg. Weekday 2-Way Volume	2.81	1.99	1.00	559
7-9 AM Peak Hour Enter	0.12	0.00	1.00	24
7-9 AM Peak Hour Exit	0.06	0.00	1.00	12
7-9 AM Peak Hour Total	0.18	0.43	1.00	36
4-6 PM Peak Hour Enter	0.14	0.00	1.00	28
4-6 PM Peak Hour Exit	0.15	0.00	1.00	30
4-6 PM Peak Hour Total	0.29	0.54	1.00	58
AM Pk Hr, Generator, Enter	0.00	0.00	1.00	0
AM Pk Hr, Generator, Exit	0.00	0.00	1.00	0
AM Pk Hr, Generator, Total	0.00	0.00	1.00	0
PM Pk Hr, Generator, Enter	0.00	0.00	1.00	0
PM Pk Hr, Generator, Exit	0.00	0.00	1.00	0
PM Pk Hr, Generator, Total	0.00	0.00	1.00	0
Saturday 2-Way Volume	3.00	0.00	1.00	597
Saturday Peak Hour Enter	0.21	0.00	1.00	42
Saturday Peak Hour Exit	0.18	0.00	1.00	36
Saturday Peak Hour Total	0.39	0.00	1.00	78
Sunday 2-Way Volume	2.79	0.00	1.00	555
Sunday Peak Hour Enter	0.17	0.00	1.00	34
Sunday Peak Hour Exit	0.15	0.00	1.00	30
Sunday Peak Hour Total	0.32	0.00	1.00	64

Note: A zero indicates no data available.
Source: Institute of Transportation Engineers
Trip Generation, 8th Edition, 2008.

TRIP GENERATION BY MICROTRANS

Summary of Trip Generation Calculation
For 175 Occupied Dwelling Units of Senior Adult Housing - Attached
July 20, 2011

	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
Avg. Weekday 2-Way Volume	3.48	0.00	1.00	609
7-9 AM Peak Hour Enter	0.05	0.00	1.00	9
7-9 AM Peak Hour Exit	0.08	0.00	1.00	14
7-9 AM Peak Hour Total	0.13	0.37	1.00	23
4-6 PM Peak Hour Enter	0.10	0.00	1.00	18
4-6 PM Peak Hour Exit	0.06	0.00	1.00	11
4-6 PM Peak Hour Total	0.16	0.41	1.00	28
AM Pk Hr, Generator, Enter	0.03	0.00	1.00	5
AM Pk Hr, Generator, Exit	0.03	0.00	1.00	5
AM Pk Hr, Generator, Total	0.06	0.27	1.00	11
PM Pk Hr, Generator, Enter	0.06	0.00	1.00	11
PM Pk Hr, Generator, Exit	0.05	0.00	1.00	9
PM Pk Hr, Generator, Total	0.11	0.33	1.00	19
Saturday 2-Way Volume	2.51	0.00	1.00	439
Saturday Peak Hour Enter	0.00	0.00	1.00	0
Saturday Peak Hour Exit	0.00	0.00	1.00	0
Saturday Peak Hour Total	0.30	0.00	1.00	53
Sunday 2-Way Volume	2.70	0.00	1.00	473
Sunday Peak Hour Enter	0.00	0.00	1.00	0
Sunday Peak Hour Exit	0.00	0.00	1.00	0
Sunday Peak Hour Total	0.55	0.00	1.00	96

Note: A zero indicates no data available.
Source: Institute of Transportation Engineers
Trip Generation, 8th Edition, 2008.

TRIP GENERATION BY MICROTRANS

Summary of Trip Generation Calculation
For 24 Occupied Beds of Assisted Living
July 14, 2011

	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
Avg. Weekday 2-Way Volume	2.74	1.75	1.00	66
7-9 AM Peak Hour Enter	0.12	0.00	1.00	3
7-9 AM Peak Hour Exit	0.05	0.00	1.00	1
7-9 AM Peak Hour Total	0.17	0.00	1.00	4
4-6 PM Peak Hour Enter	0.15	0.00	1.00	4
4-6 PM Peak Hour Exit	0.14	0.00	1.00	3
4-6 PM Peak Hour Total	0.29	0.00	1.00	7
AM Pk Hr, Generator, Enter	0.19	0.00	1.00	5
AM Pk Hr, Generator, Exit	0.06	0.00	1.00	1
AM Pk Hr, Generator, Total	0.25	0.00	1.00	6
PM Pk Hr, Generator, Enter	0.14	0.00	1.00	3
PM Pk Hr, Generator, Exit	0.24	0.00	1.00	6
PM Pk Hr, Generator, Total	0.38	0.61	1.00	9
Saturday 2-Way Volume	2.20	1.57	1.00	53
Saturday Peak Hour Enter	0.18	0.00	1.00	4
Saturday Peak Hour Exit	0.18	0.00	1.00	4
Saturday Peak Hour Total	0.36	0.60	1.00	9
Sunday 2-Way Volume	2.44	1.65	1.00	59
Sunday Peak Hour Enter	0.19	0.00	1.00	5
Sunday Peak Hour Exit	0.23	0.00	1.00	6
Sunday Peak Hour Total	0.42	0.65	1.00	10

Note: A zero indicates no data available.
Source: Institute of Transportation Engineers
Trip Generation, 8th Edition, 2008.

TRIP GENERATION BY MICROTRANS

Summary of Trip Generation Calculation
For 21 Dwelling Units of Single Family Detached Housing
July 20, 2011

	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
Avg. Weekday 2-Way Volume	11.78	0.00	1.00	247
7-9 AM Peak Hour Enter	0.29	0.00	1.00	6
7-9 AM Peak Hour Exit	0.87	0.00	1.00	18
7-9 AM Peak Hour Total	1.16	0.00	1.00	24
4-6 PM Peak Hour Enter	0.77	0.00	1.00	16
4-6 PM Peak Hour Exit	0.45	0.00	1.00	10
4-6 PM Peak Hour Total	1.23	0.00	1.00	26
AM Pk Hr, Generator, Enter	0.34	0.00	1.00	7
AM Pk Hr, Generator, Exit	0.95	0.00	1.00	20
AM Pk Hr, Generator, Total	1.29	0.00	1.00	27
PM Pk Hr, Generator, Enter	0.83	0.00	1.00	17
PM Pk Hr, Generator, Exit	0.46	0.00	1.00	10
PM Pk Hr, Generator, Total	1.29	0.00	1.00	27
Saturday 2-Way Volume	11.45	0.00	1.00	240
Saturday Peak Hour Enter	0.71	0.00	1.00	15
Saturday Peak Hour Exit	0.63	0.00	1.00	13
Saturday Peak Hour Total	1.35	0.00	1.00	28
Sunday 2-Way Volume	8.21	0.00	1.00	172
Sunday Peak Hour Enter	0.57	0.00	1.00	12
Sunday Peak Hour Exit	0.51	0.00	1.00	11
Sunday Peak Hour Total	1.08	0.00	1.00	23

Note: À zero indicates no data available.
The above rates were calculated from these equations:

24-Hr. 2-Way Volume:	LN(T) = .92LN(X) + 2.71, R^2 = 0.96
7-9 AM Peak Hr. Total:	T = .7(X) + 9.74
	R^2 = 0.89 , 0.25 Enter, 0.75 Exit
4-6 PM Peak Hr. Total:	LN(T) = .9LN(X) + .51
	R^2 = 0.91 , 0.63 Enter, 0.37 Exit
AM Gen Pk Hr. Total:	T = .7(X) + 12.37
	R^2 = 0.89 , 0.26 Enter, 0.74 Exit
PM Gen Pk Hr. Total:	LN(T) = .88LN(X) + .62
	R^2 = 0.91 , 0.64 Enter, 0.36 Exit
Sat. 2-Way Volume:	LN(T) = .95LN(X) + 2.59, R^2 = 0.92
Sat. Pk Hr. Total:	T = .89(X) + 9.56
	R^2 = 0.91 , 0.53 Enter, 0.47 Exit
Sun. 2-Way Volume:	T = 8.84(X) + -13.31, R^2 = 0.94
Sun. Pk Hr. Total:	LN(T) = .91LN(X) + .35
	R^2 = 0.87 , 0.53 Enter, 0.47 Exit

Source: Institute of Transportation Engineers
Trip Generation, 8th Edition, 2008.

Nelson & Pope
572 Walt Whitman Road
Melville, NY 11747

N/S Wireless Road
WB Jeferson's Ferries Access
Seatuket, NY

File Name : Wireless Blvd at Jeffreson's Ferries access AM
Site Code : 00000000
Start Date : 6/23/2011
Page No : 1

Groups Printed- cars - HV

	Wireless Road Southbound					Jeferson's Ferries Access Westbound					Wireless Road Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
07:00 AM	2	0	0	0	2	2	0	1	1	4	0	0	3	2	5	0	0	0	0	0	11
07:15 AM	9	0	0	0	9	1	0	1	0	2	2	0	3	0	5	0	0	0	0	0	16
07:30 AM	4	0	0	0	4	2	0	4	0	6	0	0	3	0	3	0	0	0	0	0	13
07:45 AM	8	0	1	0	9	2	0	3	0	5	0	0	4	0	4	0	0	0	0	0	18
Total	23	0	1	0	24	7	0	9	1	17	2	0	13	2	17	0	0	0	0	0	58
08:00 AM	8	0	0	0	8	1	0	1	0	2	0	0	4	0	4	0	1	0	0	1	15
08:15 AM	6	0	0	0	6	2	0	4	0	6	0	0	3	0	3	0	0	0	0	0	15
08:30 AM	9	0	1	0	10	1	3	8	1	13	1	0	5	1	7	0	0	3	0	3	33
08:45 AM	7	0	0	0	7	1	0	5	0	6	0	0	5	0	5	0	0	0	0	0	18
Total	30	0	1	0	31	5	3	18	1	27	1	0	17	1	19	0	1	3	0	4	81
*** BREAK ***																					
04:00 PM	3	0	0	0	3	4	0	13	0	17	0	0	3	0	3	0	0	0	0	0	23
04:15 PM	8	0	0	0	8	1	0	4	0	5	0	0	6	0	6	0	0	0	0	0	19
04:30 PM	2	0	0	0	2	1	0	9	0	10	0	0	0	0	0	0	0	0	0	0	12
04:45 PM	5	0	0	0	5	4	0	8	0	12	0	0	7	0	7	0	0	0	0	0	24
Total	18	0	0	0	18	10	0	34	0	44	0	0	16	0	16	0	0	0	0	0	78
05:00 PM	3	0	0	0	3	7	1	12	0	20	0	0	0	0	0	0	0	0	0	0	23
05:15 PM	4	0	0	0	4	5	0	7	0	12	0	0	3	0	3	0	0	0	0	0	19
05:30 PM	1	0	0	0	1	2	0	5	0	7	0	0	1	0	1	0	0	0	0	0	9
05:45 PM	8	0	0	0	8	1	0	7	0	8	0	0	2	0	2	0	0	0	0	0	18
Total	16	0	0	0	16	15	1	31	0	47	0	0	6	0	6	0	0	0	0	0	69
Grand Total	87	0	2	0	89	37	4	92	2	135	3	0	52	3	58	0	1	3	0	4	286
Apprch %	97.8	0	2.2	0		27.4	3	68.1	1.5		5.2	0	89.7	5.2		0	25	75	0		
Total %	30.4	0	0.7	0	31.1	12.9	1.4	32.2	0.7	47.2	1	0	18.2	1	20.3	0	0.3	1	0	1.4	
cars	85	0	2	0	87	36	4	91	2	133	3	0	52	3	58	0	1	3	0	4	282
% cars	97.7	0	100	0	97.8	97.3	100	98.9	100	98.5	100	0	100	100	100	0	100	100	0	100	98.6
HV	2	0	0	0	2	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	4
% HV	2.3	0	0	0	2.2	2.7	0	1.1	0	1.5	0	0	0	0	0	0	0	0	0	0	1.4

Nelson & Pope
572 Walt Whitman Road
Melville, NY 11747

N/S Wireless Road
WB Jefferson's Ferries Access
Setuaket, NY

File Name : Wireless Blvd at Jeffreson's Ferries access sa
Site Code : 00000000
Start Date : 6/18/2011
Page No : 1

Groups Printed- cars - HV

	Wireless Road Southbound					Jefferson's Ferries Access Westbound					Wireless Road Northbound					Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
11:00 AM	9	8	0	0	17	1	0	6	0	7	0	2	2	0	4	0	0	0	1	1	29
11:15 AM	6	0	0	0	6	0	0	5	0	5	0	0	1	0	1	0	0	0	0	0	12
11:30 AM	3	0	0	0	3	1	0	5	0	6	0	0	5	0	5	0	0	0	0	0	14
11:45 AM	6	0	0	0	6	4	0	7	0	11	0	0	4	0	4	0	0	0	0	0	21
Total	24	8	0	0	32	6	0	23	0	29	0	2	12	0	14	0	0	0	1	1	76
12:00 PM	8	0	0	0	8	1	0	3	0	4	0	0	2	0	2	0	0	0	0	0	14
12:15 PM	9	0	0	0	9	1	0	9	0	10	0	0	5	0	5	0	0	0	0	0	24
12:30 PM	8	3	1	0	12	4	0	12	0	16	0	0	4	0	4	0	0	0	0	0	32
12:45 PM	4	0	0	0	4	3	0	6	0	9	0	0	1	0	1	0	0	0	0	0	14
Total	29	3	1	0	33	9	0	30	0	39	0	0	12	0	12	0	0	0	0	0	84
01:00 PM	5	0	0	0	5	2	0	12	0	14	0	0	1	1	2	0	0	0	0	0	21
01:15 PM	4	0	0	0	4	1	0	5	1	7	0	0	4	0	4	0	0	0	1	1	16
01:30 PM	3	0	0	0	3	2	0	4	0	6	0	0	1	0	1	0	0	0	1	1	11
01:45 PM	15	0	0	0	15	2	0	5	0	7	0	0	6	0	6	0	0	0	0	0	28
Total	27	0	0	0	27	7	0	26	1	34	0	0	12	1	13	0	0	0	2	2	76
Grand Total	80	11	1	0	92	22	0	79	1	102	0	2	36	1	39	0	0	0	3	3	236
Apprch %	87	12	1.1	0		21.6	0	77.5	1		0	5.1	92.3	2.6		0	0	0	100		
Total %	33.9	4.7	0.4	0	39	9.3	0	33.5	0.4	43.2	0	0.8	15.3	0.4	16.5	0	0	0	1.3	1.3	
cars	77	11	1	0	89	22	0	77	1	100	0	2	36	1	39	0	0	0	3	3	231
% cars	96.2	100	100	0	96.7	100	0	97.5	100	98	0	100	100	100	100	0	0	0	100	100	97.9
HV	3	0	0	0	3	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	5
% HV	3.8	0	0	0	3.3	0	0	2.5	0	2	0	0	0	0	0	0	0	0	0	0	2.1

Appendix C: Level of Service Definitions

LEVEL OF SERVICE: SIGNALIZED INTERSECTIONS

Level of service for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The levels of service range between level of service A (relatively congestion-free) and level of service F (congested).

The delay experienced by a motorist is made up of a number of factors that relate to control, geometry, traffic, and incidents at an intersection. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during ideal conditions: in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents, and when there are no other vehicles on the road. The portion of the total delay attributed to the control facility is called the control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Control delay may also be referred to as signal delay for signalized intersections.

Level of service criteria for signalized intersections is determined in terms of the average control delay per vehicle. The following average control delays are used to determine approach levels of service:

Level of Service A	$\leq$ 10.0 seconds per vehicle
Level of Service B	> 10.0 and $\leq$ 20.0 seconds per vehicle
Level of Service C	> 20.0 and $\leq$ 35.0 seconds per vehicle
Level of Service D	> 35.0 and $\leq$ 55.0 seconds per vehicle
Level of Service E	> 55.0 and $\leq$ 80.0 seconds per vehicle
Level of Service F	> 80.0 seconds per vehicle

Level of Service A describes operations with very low control delay. This occurs when progression is extremely favorable; most vehicles arrive during the green phase and do not stop at all. Short traffic signal cycles may contribute to low delay.

Level of Service B generally occurs with good progression and/or short traffic signal cycle lengths. More vehicles stop than for level of service A, causing higher average delays.

Level of Service C has higher delays than level of service B. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures, where motorists are required to wait through an entire signal cycle, may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.

Level of Service D At this level, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths or high volume-to-capacity ratios. The proportion of stopping vehicles increases. Individual cycle failures are noticeable.

Level of Service E is considered the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths and high volume-to-capacity ratios. Individual cycle failures occur frequently.

Level of Service F is considered unacceptable to most drivers. This condition often occurs with over saturation, i.e., when arrival flow rates exceed the capacity of the intersection. It may occur at volume to capacity ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

LEVEL OF SERVICE: TWO WAY STOP CONTROLLED INTERSECTIONS

The quality of traffic service at a two-way stop controlled, or "TWSC," intersection is measured according to the level of service and capacity of individual legs. The level of service ranges from LOS A to LOS F, just as with signalized intersections.

The right of way at the TWSC intersection is controlled by stop signs on two opposing legs of an intersection (on one leg of a "T"-type intersection). The capacity of a controlled leg is based on the distribution of gaps in the major street traffic flow, driver judgment in selecting a gap through which to execute the desired maneuver and the follow up time required by each driver in a queue.

The level of service for a TWSC intersection is determined by the computed or measured control delay and is defined for each minor movement. Level of service is not defined for the intersection as a whole. The delay experienced by a motorist is made up of a number of factors that relate to control, geometry, traffic, and incidents. Total delay is the difference between the travel time actually experienced and the reference travel time that would result during conditions with ideal geometry and in the absence of incidents, control, and traffic. This program only quantifies that portion of the total delay attributed to traffic control measures, either traffic signals or stop signs. This delay is called control delay. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration. Average control delay for any particular minor movement is a function of the approach and the degree of saturation.

The expectation is that TWSC intersections are designed to carry smaller traffic volumes than signalized intersections. Therefore, the delay threshold times are lower for the same LOS grades. The following average control delays are used to determine approach levels of service:

Level of Service A	$\leq$ 10 seconds per vehicle
Level of Service B	> 10 and $\leq$ 15 seconds per vehicle
Level of Service C	> 15 and $\leq$ 25 seconds per vehicle
Level of Service D	> 25 and $\leq$ 35 seconds per vehicle
Level of Service E	> 35 and $\leq$ 50 seconds per vehicle
Level of Service F	> 50 seconds per vehicle

Appendix D: Capacity Analysis/Level of Service Worksheets & Summary Tables

Level of Service Summary at Signalized Intersections
AM Peak Hour

Signalized Intersection	Approach	Movement	2010 No Build Conditions LOS	2010 No Build Conditions Delay (sec.)	2014 Build Condition – Scenario 1 LOS	2014 Build Condition – Scenario 1 Delay (sec.)	2014 Build Condition- Scenario 2 LOS	2014 Build Condition- Scenario 2 Delay (sec.)
NYS Route 25A at Sunken Meadow Road	EB	LTR	C	23.2	C	23.2	C	23.2
	WB	LTR	C	26.2	C	26.3	C	26.3
	NB	L	C	31.0	C	31.0	C	31.0
		TR	B	14.0	B	14.0	B	14.0
	SB	L	A	8.3	A	8.3	A	8.3
		TR	B	18.2	B	18.2	B	18.3
	Overall		**B**	**18.6**	**B**	**18.6**	**B**	**18.6**
NYS 25A at Pulaski Road/Old Dock Road	EB	L	B	17.9	B	17.9	B	17.9
		TR	C	21.0	C	21.0	C	21.0
	WB	L	B	18.3	B	18.3	B	18.3
		TR	A	9.7	A	9.7	A	9.7
	NB	LT	D	36.6	D	37.9	D	36.9
		R	B	18.1	B	18.1	B	18.1
	SB	LTR	D	40.3	D	40.9	D	40.9
	Overall		**C**	**23.0**	**C**	**23.4**	**C**	**23.2**
NYS Route 25A at Church Street/Indian Head Road	EB	LTR	C	25.5	C	25.5	C	25.5
	WB	L	B	11.5	B	11.5	B	11.5
		TR	C	26.5	C	27.1	C	26.6
	NB	L	C	31.1	C	31.1	C	31.2
		T	C	29.1	C	29.3	C	29.2
		R	B	16.4	B	16.4	B	16.4
	SB	L	C	31.1	C	31.3	C	31.3
		T	C	30.6	C	30.8	C	30.8
		R	C	28.0	C	28.0	C	28.0
	Overall		**C**	**25.7**	**C**	**26.0**	**C**	**25.8**
NYS Route 25A at St. Johnland Road/Rose Street	EB	LT	C	27.2	C	27.2	C	27.2
		R	A	5.2	A	5.2	A	5.2
	WB	LTR	C	24.4	C	24.5	C	24.4
	NB	LTR	C	27.7	C	28.1	C	27.8
	SB	LTR	C	32.6	C	32.7	C	32.7
	Overall		**C**	**22.7**	**C**	**22.8**	**C**	**22.7**
Old Dock Road at Church Street/Kohr Road	EB	LTR	B	15.0	B	15.3	B	15.1
	WB	LTR	C	23.7	C	26.8	C	26.1
	NB	LTR	B	19.8	C	20.1	B	19.9
	SB	LTR	C	21.8	C	21.8	C	21.8
	Overall		**C**	**20.3**	**C**	**21.5**	**C**	**21.2**
Old Dock Road at Sunken Meadow Road/St. Johnland Road	EB	LTR	B	11.6	B	11.6	B	11.6
	WB	LTR	B	14.1	B	14.2	B	14.2
	NB	LTR	B	11.6	B	11.6	B	11.6
	SB	LTR	B	11.0	B	11.0	B	11.0
	Overall		**B**	**13.0**	**B**	**13.0**	**B**	**13.0**

Level of Service Summary for Unsignalized Intersections
AM Peak Hour

			2010 No Build Conditions		2014 Build – Scenario 1 Condition		2014 Build - Scenario Condition	
Unsignalized Intersection	**Approach**	**Movement**	**LOS**	**Delay (sec.)**	**LOS**	**Delay (sec.)**	**LOS**	**Delay (sec.)**
Sunken Meadow Road at St Johnland Nursing Center Driveway	EB	LT	A	7.7	A	7.7	A	7.7
	SB	LR	B	10.1	B	10.2	B	10.1
Sunken Meadow Road at Society of St Johnland Driveway/Site Driveway	EB	LT	A	7.6	-	-	-	-
	WB	LR	A	9.6	-	-	-	-
	EB	LTR	-	-	A	7.6	A	7.6
	WB	LTR	-	-	A	7.4	A	7.4
	NB	LTR	-	-	A	9.5	A	9.5
	SB	LTR	-	-	A	9.7	A	9.7
Sunken Meadow Road at Kohr Road	WB	LT	A	7.8	A	7.8	A	7.8
	NB	LR	B	10.7	B	10.7	B	10.7
Old Dock Road at Site Driveway	EB	LR	-	-	A	7.5	A	7.4
	NB	L	-	-	A	8.9	A	8.9

Notes: LOS = Level of Service, Delay = seconds/vehicle

Level of Service Summary at Signalized Intersections
PM Peak Hour

Signalized Intersection	Approach	Movement	2010 No Build Conditions LOS	2010 No Build Conditions Delay (sec.)	2014 Build Condition – Scenario 1 LOS	2014 Build Condition – Scenario 1 Delay (sec.)	2014 Build Condition- Scenario 2 LOS	2014 Build Condition- Scenario 2 Delay (sec.)
NYS Route 25A at Sunken Meadow Road	EB	LTR	C	23.8	C	23.8	C	23.8
	WB	LTR	C	23.9	C	23.9	C	23.9
	NB	L	A	8.4	A	8.4	A	8.4
		TR	B	16.5	B	16.5	B	16.5
	SB	L	B	12.9	B	12.9	B	12.9
		TR	B	14.8	B	14.8	B	14.8
	Overall		**B**	**16.4**	**B**	**16.4**	**B**	**16.4**
NYS 25A at Pulaski Road/Old Dock Road	EB	L	B	16.7	B	16.7	B	16.7
		TR	C	23.8	C	23.8	C	23.8
	WB	L	B	14.3	B	14.3	B	14.3
		TR	A	9.6	A	9.6	A	9.6
	NB	LT	D	38.8	D	40.8	D	39.5
		R	C	21.9	C	21.9	C	21.9
	SB	LTR	C	31.5	C	31.8	C	31.6
	Overall		**C**	**21.8**	**C**	**22.3**	**C**	**22.0**
NYS Route 25A at Church Street/Indian Head Road	EB	LTR	C	29.3	C	29.3	C	29.3
	WB	L	B	12.5	B	12.5	B	12.5
		TR	B	13.7	B	13.8	B	13.8
	NB	L	D	35.2	D	35.4	D	25.3
		T	C	32.6	C	32.8	C	32.7
		R	C	24.7	C	24.7	C	24.7
	SB	L	C	32.0	C	32.3	C	32.1
		T	C	33.7	C	34.0	C	33.8
		R	C	30.0	C	30.0	C	30.0
	Overall		**C**	**24.5**	**C**	**24.6**	**C**	**24.6**
NYS Route 25A at St. Johnland Road/Rose Street	EB	LT	C	30.5	C	30.6	C	30.6
		R	A	6.6	A	6.7	A	6.7
	WB	LTR	C	22.4	C	22.4	C	22.4
	NB	LTR	D	35.5	D	36.1	D	35.8
	SB	LTR	C	29.5	C	29.6	C	29.5
	Overall		**C**	**25.0**	**C**	**25.3**	**C**	**25.2**
Old Dock Road at Church Street/Kohr Road	EB	LTR	B	1300	B	13.2	B	13.1
	WB	LTR	B	12.5	B	13.0	B	12.7
	NB	LTR	B	19.9	C	20.2	C	20.0
	SB	LTR	C	20.2	C	20.2	C	20.2
	Overall		**B**	**15.8**	**B**	**15.9**	**B**	**15.8**
Old Dock Road at Sunken Meadow Road/St. Johnland Road	EB	LTR	B	13.0	B	13.0	B	13.0
	WB	LTR	B	11.8	B	11.9	B	11.9
	NB	LTR	B	11.8	B	11.8	B	11.8
	SB	LTR	B	11.3	B	11.3	B	11.3
	Overall		**B**	**12.3**	**B**	**12.3**	**B**	**12.3**

Level of Service Summary for Unsignalized Intersections
PM Peak Hour

Unsignalized Intersection	Approach	Movement	2010 No Build Conditions		2014 Build – Scenario 1 Condition		2014 Build - Scenario Condition	
			LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)
Sunken Meadow Road at St Johnland Nursing Center Driveway	EB	LT	A	7.4	A	7.4	A	7.4
	SB	LR	B	10.4	B	10.4	B	10.4
Sunken Meadow Road at Society of St Johnland Driveway/Site Driveway	EB	LT	A	7.4	-	-	-	-
	WB	LR	A	9.6	-	-	-	-
	EB	LTR	-	-	A	7.4	A	7.4
	WB	LTR	-	-	A	7.5	A	7.5
	NB	LTR	-	-	A	9.9	B	10.0
	SB	LTR	-	-	A	9.8	A	9.8
Sunken Meadow Road at Kohr Road	WB	LT	A	8.1	A	8.1	A	8.1
	NB	LR	B	11.2	B	11.2	B	11.2
Old Dock Road at Site Driveway	EB	LR	-	-	A	7.4	A	7.4
	NB	L	-	-	A	8.7	A	8.6

Notes: LOS = Level of Service, Delay = seconds/vehicle

Level of Service Summary at Signalized Intersections
Saturday Peak Hour

Signalized Intersection	Approach	Movement	2014 No Build Conditions LOS	2014 No Build Conditions Delay (sec.)	2014 Build Condition – Scenario 1 LOS	2014 Build Condition – Scenario 1 Delay (sec.)	2014 Build Condition- Scenario 2 LOS	2014 Build Condition- Scenario 2 Delay (sec.)
NYS Route 25A at Sunken Meadow Road	EB	LTR	C	23.2	C	23.2	C	23.2
	WB	LTR	C	23.9	C	23.9	C	23.9
	NB	L	A	8.4	A	8.4	A	8.4
		TR	B	14.7	B	14.7	B	14.7
	SB	L	A	9.4	A	9.4	A	9.4
		TR	B	14.8	B	14.8	B	14.8
	Overall		**B**	**15.3**	**B**	**15.3**	**B**	**15.3**
NYS 25A at Pulaski Road/Old Dock Road	EB	L	B	18.4	B	18.4	B	18.4
		TR	C	34.8	C	34.8	C	34.8
	WB	L	E	68.3	E	68.3	E	68.3
		TR	B	10.3	B	10.3	B	10.3
	NB	LT	D	47.0	D	54.7	D	49.7
		R	B	17.9	B	17.9	B	17.9
	SB	LTR	C	33.9	D	34.6	C	34.1
	Overall		**C**	**33.8**	**C**	**34.8**	**C**	**34.2**
NYS Route 25A at Church Street/Indian Head Road	EB	LTR	D	36.1	D	36.1	D	36.1
	WB	L	C	23.5	C	23.5	C	23.5
		TR	B	15.4	B	15.7	B	15.5
	NB	L	D	47.5	D	49.7	D	48.3
		T	C	34.9	D	35.2	C	35.0
		R	C	23.0	C	23.0	C	23.0
	SB	L	D	35.2	D	36.4	D	35.8
		T	C	34.7	C	35.0	C	34.8
		R	C	31.5	C	31.5	C	31.5
	Overall		**C**	**28.7**	**C**	**29.0**	**C**	**28.8**
NYS Route 25A at St. Johnland Road/Rose Street	EB	LT	C	35.0	D	35.3	D	35.1
		R	A	5.5	A	5.5	A	5.5
	WB	LTR	C	25.5	C	25.6	C	25.5
	NB	LTR	C	34.8	D	35.7	D	35.1
	SB	LTR	D	35.6	D	35.8	D	35.7
	Overall		**C**	**26.7**	**C**	**27.1**	**C**	**26.8**
Old Dock Road at Church Street/Kohr Road	EB	LTR	B	14.8	B	15.3	B	15.0
	WB	LTR	C	23.6	C	30.9	C	25.7
	NB	LTR	C	25.4	C	26.4	C	25.8
	SB	LTR	C	21.1	C	21.1	C	21.1
	Overall		**C**	**21.2**	**C**	**23.9**	**C**	**22.0**
Old Dock Road at Sunken Meadow Road/St. Johnland Road	EB	LTR	B	12.5	B	12.5	B	12.5
	WB	LTR	B	13.1	B	13.1	B	13.1
	NB	LTR	B	12.1	B	12.1	B	12.1
	SB	LTR	B	11.7	B	11.7	B	11.7
	Overall		**B**	**12.5**	**B**	**12.5**	**B**	**12.5**

Level of Service Summary for Unsignalized Intersections
Saturday Peak Hour

			2010 No Build Conditions		2014 Build – Scenario 1 Condition		2014 Build - Scenario Condition	
Unsignalized Intersection	Approach	Movement	LOS	Delay (sec.)	LOS	Delay (sec.)	LOS	Delay (sec.)
Sunken Meadow Road at St Johnland Nursing Center Driveway	EB	LT	A	7.5	A	7.5	A	7.5
	SB	LR	B	10.1	B	10.1	B	10.1
Sunken Meadow Road at Society of St Johnland Driveway/Site Driveway	EB	LT	A	7.5	-	-	-	-
	WB	LR	A	9.8	-	-	-	-
	EB	LTR	-	-	A	7.5	A	7.5
	WB	LTR	-	-	A	7.5	A	7.5
	NB	LTR	-	-	A	9.6	A	9.8
	SB	LTR	-	-	B	10.1	B	10.0
Sunken Meadow Road at Kohr Road	WB	LT	A	7.6	A	7.6	A	7.6
	NB	LR	B	10.2	B	10.2	B	10.2
Old Dock Road at Site Driveway	EB	LR	-	-	A	7.6	A	7.5
	NB	L	-	-	A	9.1	A	9.0

Notes: LOS = Level of Service, Delay = seconds/vehicle

Existing Capacity Analyses

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road

Inter.: NYS Route 25A at Sunken Meadow
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	4	13	41	54	57	87	122	551	26	43	707	7
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			4			2			1			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0					52.0		
Yellow	4.0					4.0		
All Red	2.0					3.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	557	1855	0.13	0.30	23.1	C	23.1	C
Westbound								
LTR	528	1760	0.44	0.30	26.0	C	26.0	C
Northbound								
L	211	352	0.65	0.60	18.7	B		
TR	1099	1832	0.59	0.60	13.4	B	14.4	B
Southbound								
L	327	545	0.15	0.60	8.1	A		
TR	1104	1840	0.73	0.60	17.0	B	16.5	B

Intersection Delay = 17.0 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road

Inter.: NYS Route 25A at Sunken Meadow
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	12	28	45	26	16	55	40	595	48	106	623	15
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			1			4			4			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	P			
Right	A				Right	P			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	P			
Right	A				Right	P			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	25.0					52.0			
Yellow	4.0					4.0			
All Red	2.0					3.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	575	1917	0.20	0.30	23.6	C	23.6	C
Westbound								
LTR	537	1791	0.21	0.30	23.8	C	23.8	C
Northbound								
L	300	500	0.16	0.60	8.2	A		
TR	1117	1861	0.68	0.60	15.5	B	15.1	B
Southbound								
L	253	421	0.45	0.60	11.2	B		
TR	1114	1857	0.62	0.60	14.1	B	13.7	B

Intersection Delay = 15.5 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road

Inter.: NYS Route 25A at Sunken Meadow
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	15	21	28	28	18	60	48	633	43	77	641	28
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			0			2			3			1

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0				52.0			
Yellow	4.0				4.0			
All Red	2.0				3.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	548	1825	0.14	0.30	23.1	C	23.1	C
Westbound								
LTR	548	1826	0.22	0.30	23.8	C	23.8	C
Northbound								
L	307	511	0.16	0.60	8.2	A		
TR	1120	1866	0.62	0.60	14.0	B	13.7	B
Southbound								
L	302	504	0.26	0.60	9.0	A		
TR	1118	1864	0.62	0.60	14.1	B	13.6	B

Intersection Delay = 14.7 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	93	268	45	463	380	2	36	161	191	8	244	94
Lane Width	11.0	12.0		11.0	12.0			12.0	10.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		A			NB Left	A			
Thru		P			Thru	A			
Right		P			Right	A			
Peds					Peds				
WB Left	A	A			SB Left	A			
Thru	A	P			Thru	A			
Right	A	P			Right	A			
Peds					Peds				
NB Right	A				EB Right				
SB Right					WB Right				
Green	15.0	50.0				30.6			
Yellow	3.0	3.9				3.5			
All Red	0.0	2.0				2.0			

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	423	897	0.25	0.47	17.7	B		
TR	841	1782	0.42	0.47	20.7	C	20.0-	B
Westbound								
L	645	1728	0.75	0.66	15.3	B		
TR	1150	1809	0.35	0.64	9.6	A	12.7	B
Northbound								
LT	411	1409	0.56	0.29	34.8	C	26.5	C
R	700	1463	0.32	0.48	18.0	B		
Southbound								
LTR	554	1898	0.70	0.29	38.7	D	38.7	D

Intersection Delay = 21.7 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	60	380	71	264	308	9	71	177	355	8	121	29
Lane Width	11.0	12.0		11.0	12.0			12.0	10.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		A			NB Left	A			
Thru		P			Thru	A			
Right		P			Right	A			
Peds					Peds				
WB Left	A	A			SB Left	A			
Thru	A	P			Thru	A			
Right	A	P			Right	A			
Peds					Peds				
NB Right	A				EB Right				
SB Right					WB Right				
Green	15.0	50.0				30.6			
Yellow	3.0	3.9				3.5			
All Red	0.0	2.0				2.0			

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	449	952	0.14	0.47	16.6	B		
TR	861	1824	0.55	0.47	23.1	C	22.4	C
Westbound								
L	549	1711	0.60	0.66	12.7	B		
TR	1191	1874	0.33	0.64	9.4	A	10.9	B
Northbound								
LT	437	1497	0.63	0.29	36.8	D	27.7	C
R	713	1492	0.55	0.48	21.3	C		
Southbound								
LTR	574	1966	0.36	0.29	31.2	C	31.2	C

Intersection Delay = 21.0 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	51	470	84	361	416	8	95	145	343	13	164	60
Lane Width	11.0	12.0		11.0	12.0			13.0	12.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		A			NB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Peds				
WB Left	A	A			SB	Left	A			
Thru	A	P				Thru	A			
Right	A	P				Right	A			
Peds						Peds				
NB Right	A				EB	Right				
SB Right					WB	Right				
Green	17.6	47.0					31.0			
Yellow	3.0	3.9					3.5			
All Red	0.0	2.0					2.0			

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	405	910	0.14	0.44	18.3	B		
TR	818	1841	0.77	0.44	32.7	C	31.4	C
Westbound								
L	443	1711	0.90	0.66	44.6	D		
TR	1185	1876	0.39	0.63	10.1	B	26.0	C
Northbound								
LT	343	1161	0.71	0.30	41.5	D	27.4	C
R	808	1599	0.43	0.51	17.6	B		
Southbound								
LTR	582	1971	0.53	0.30	33.3	C	33.3	C

Intersection Delay = 28.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	5	335	38	145	754	45	77	69	74	86	113	17
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			3			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		A			NB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Peds				
WB Left	A	A			SB	Left	A			
Thru	A	P				Thru	A			
Right	A	P				Right	A			
Peds						Peds				
NB Right	A				EB	Right				
SB Right					WB	Right				
Green	15.0	53.0					37.3			
Yellow	3.0	3.5					3.5			
All Red	0.0	2.7					2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	886	1951	0.49	0.45	24.9	C	24.9	C
Westbound								
L	553	1668	0.28	0.63	11.3	B		
TR	1051	1739	0.82	0.60	23.7	C	21.8	C
Northbound								
L	331	1024	0.29	0.32	30.8	C		
T	551	1705	0.15	0.32	29.0	C	25.5	C
R	775	1568	0.11	0.49	16.3	B		
Southbound								
L	402	1244	0.30	0.32	30.9	C		
T	571	1766	0.28	0.32	30.5	C	30.4	C
R	511	1580	0.05	0.32	27.9	C		

Intersection Delay = 24.3 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	12	592	96	150	551	34	95	118	244	52	150	18
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			5			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru		P			Thru	A		
Right		P			Right	A		
Peds					Peds			
WB Left	A	A			SB Left	A		
Thru	A	P			Thru	A		
Right	A	P			Right	A		
Peds					Peds			
NB Right	A				EB Right			
SB Right					WB Right			
Green	10.0	61.0				34.3		
Yellow	3.0	3.5				3.5		
All Red	0.0	2.7				2.0		

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	1011	1941	0.74	0.52	27.5	C	27.5	C
Westbound								
	419	1668	0.37	0.66	12.0	B		
R	1094	1739	0.55	0.63	13.2	B	13.0	B
Northbound								
	275	922	0.41	0.30	34.6	C		
	509	1705	0.27	0.30	32.5	C	28.6	C
	670	1568	0.42	0.43	24.4	C		
Southbound								
	323	1084	0.20	0.30	31.8	C		
	527	1766	0.36	0.30	33.5	C	32.8	C
	471	1580	0.05	0.30	30.0	C		

Intersection Delay = 23.7 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	11	634	160	272	645	63	157	169	210	93	182	47
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			1			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
WB	Left	A	A			SB	Left	A			
	Thru	A	P				Thru	A			
	Right	A	P				Right	A			
	Peds						Peds				
NB	Right	A				EB	Right				
SB	Right					WB	Right				
Green		12.3	60.0					33.0			
Yellow		3.0	3.5					3.5			
All Red		0.0	2.7					2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	1011	1973	0.83	0.51	32.6	C	32.6	C
Westbound								
L	402	1620	0.70	0.67	19.5	B		
TR	1135	1773	0.65	0.64	14.6	B	16.0	B
Northbound								
L	262	913	0.66	0.29	43.9	D		
T	500	1739	0.38	0.29	34.6	C	32.7	C
R	670	1538	0.35	0.44	22.8	C		
Southbound								
L	262	910	0.37	0.29	35.0+	D		
T	523	1818	0.37	0.29	34.5	C	34.2	C
R	495	1723	0.10	0.29	31.4	C		

Intersection Delay = 26.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A/Rose St

Inter.: NYS Route 25A at St Johnland R
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: NYS Route 25A/St Johnland Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	0	1	0	0	1	0
LGConfig		LT	R		LTR			LTR			LTR	
Volume	21	175	281	4	159	4	310	43	11	4	93	67
Lane Width		11.0	11.0		16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
WB Left	A				SB Left		A	
Thru	P				Thru		A	
Right	P				Right		A	
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right			
Green	26.6					30.0	17.0	
Yellow	3.5					3.6	3.5	
All Red	2.0					2.0	1.8	

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	521	1668	0.41	0.31	26.8	C	14.0	B
R	1012	1432	0.30	0.71	5.1	A		
Westbound								
LTR	648	2075	0.27	0.31	24.2	C	24.2	C
Northbound								
LTR	659	1876	0.65	0.35	26.8	C	26.8	C
Southbound								
LTR	401	1940	0.47	0.21	32.3	C	32.3	C

Intersection Delay = 22.2 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A/Rose St

Inter.: NYS Route 25A at St Johnland R
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: NYS Route 25A/St Johnland Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	0	1	0	0	1	0
LGConfig		LT	R		LTR			LTR			LTR	
Volume	72	271	340	9	241	6	280	85	20	18	86	63
Lane Width		11.0	11.0		16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A			
Thru	P					Thru	A			
Right	P					Right	A			
Peds						Peds				
WB Left	A				SB	Left		A		
Thru	P					Thru		A		
Right	P					Right		A		
Peds						Peds				
NB Right					EB	Right	A			
SB Right					WB	Right				
Green	31.6						22.0	20.0		
Yellow	3.5						3.6	3.5		
All Red	2.0						2.0	1.8		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	573	1558	0.64	0.37	28.8	C	17.7	B
R	1003	1487	0.36	0.67	6.5	A		
Westbound								
LTR	760	2067	0.36	0.37	22.1	C	22.1	C
Northbound								
LTR	590	1996	0.74	0.30	33.6	C	33.6	C
Southbound								
LTR	473	1969	0.40	0.24	29.3	C	29.3	C

Intersection Delay = 24.1 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A/Rose St

Inter.: NYS Route 25A at St Johnland R
Area Type: All other areas
Jurisd: NYSDOT
Year : 2010 Existing Conditions
N/S St: NYS Route 25A/St Johnland Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	0	1	0	0	1	0
LGConfig		LT	R		LTR			LTR			LTR	
Volume	71	249	370	16	233	19	340	93	21	26	105	86
Lane Width		11.0	11.0		16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
WB Left	A				SB Left		A	
Thru	P				Thru		A	
Right	P				Right		A	
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right			
Green	30.0					27.0	16.6	
Yellow	3.5					3.6	3.5	
All Red	2.0					2.0	1.8	

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	511	1461	0.68	0.35	32.1	C	17.8	B
R	1067	1501	0.38	0.71	5.4	A		
Westbound								
LTR	710	2030	0.47	0.35	25.0	C	25.0	C
Northbound								
LTR	638	2008	0.76	0.32	32.8	C	32.8	C
Southbound								
LTR	406	2006	0.59	0.20	34.8	C	34.8	C

Intersection Delay = 25.4 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Church St
Area Type: All other areas
Jurisd:
Year : 2010 Existing Conditions
N/S St: Church St

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	45	222	9	119	214	24	9	60	73	32	108	128
Lane Width		14.0			11.0			16.0			16.0	
RTOR Vol			0			0			3			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0				32.0			
Yellow	4.0				4.0			
All Red	2.5				2.5			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	895	1713	0.42	0.52	14.6	B	14.6	B
Westbound								
LTR	684	1310	0.69	0.52	21.6	C	21.6	C
Northbound								
LTR	706	1870	0.28	0.38	19.7	B	19.7	B
Southbound								
LTR	697	1845	0.45	0.38	21.5	C	21.5	C

Intersection Delay = 19.4 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Church St
Area Type: All other areas
Jurisd:
Year : 2010 Existing Conditions
N/S St: Church St

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	92	134	32	54	87	15	20	92	34	10	92	60
Lane Width		14.0			11.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0					32.0		
Yellow	4.0					4.0		
All Red	2.5					2.5		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	826	1581	0.35	0.52	12.8	B	12.8	B
Westbound								
LTR	747	1431	0.29	0.52	12.3	B	12.3	B
Northbound								
LTR	721	1908	0.22	0.38	19.7	B	19.7	B
Southbound								
LTR	742	1965	0.25	0.38	20.0+	C	20.0+	C

Intersection Delay = 15.6 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Church St
Area Type: All other areas
Jurisd:
Year : 2010 Existing Conditions
N/S St: Church St

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	81	148	56	167	162	22	42	101	122	18	108	77
Lane Width		14.0			11.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0				32.0			
Yellow	4.0				4.0			
All Red	2.5				2.5			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	805	1541	0.49	0.52	14.3	B	14.3	B
Westbound								
LTR	603	1154	0.73	0.52	20.9	C	20.9	C
Northbound								
LTR	678	1795	0.54	0.38	24.9	C	24.9	C
Southbound								
LTR	725	1919	0.31	0.38	20.9	C	20.9	C

Intersection Delay = 20.1 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Sunken Meadow
Area Type: All other areas
Jurisd:
Year : 2010 Existing Conditions
N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	4	48	23	60	135	10	31	6	32	10	13	3
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			0			0			4			1

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0					30.0		
Yellow	4.0					4.0		
All Red	1.5					1.5		

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	876	1943	0.11	0.45	11.5	B	11.5	B
Westbound								
LTR	836	1854	0.35	0.45	13.9	B	13.9	B
Northbound								
LTR	799	1773	0.11	0.45	11.5	B	11.5	B
Southbound								
LTR	821	1822	0.04	0.45	11.0	B	11.0	B

Intersection Delay = 12.9 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Sunken Meadow
Area Type: All other areas
Jurisd:
Year : 2010 Existing Conditions
N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	3	161	22	24	55	13	13	18	65	15	11	4
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0					30.0		
Yellow	4.0					4.0		
All Red	1.5					1.5		

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	928	2059	0.26	0.45	12.9	B	12.9	B
Westbound								
LTR	834	1850	0.14	0.45	11.8	B	11.8	B
Northbound								
LTR	833	1849	0.13	0.45	11.7	B	11.7	B
Southbound								
LTR	785	1742	0.07	0.45	11.2	B	11.2	B

Intersection Delay = 12.2 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Sunken Meadow
Area Type: All other areas
Jurisd:
Year : 2010 Existing Conditions
N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	21	80	26	56	90	30	16	84	65	44	43	6
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			2			10			18			2

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0					30.0		
Yellow	4.0					4.0		
All Red	1.5					1.5		

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	884	1961	0.21	0.45	12.4	B	12.4	B
Westbound								
LTR	806	1789	0.26	0.45	12.9	B	12.9	B
Northbound								
LTR	903	2004	0.17	0.45	12.0	B	12.0	B
Southbound								
LTR	809	1795	0.12	0.45	11.6	B	11.6	B

Intersection Delay = 12.3 (sec/veh) Intersection LOS = B

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 1/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Sunken Meadow Road at East Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 Existing Conditions
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: East Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	17	62			126	43
Peak-Hour Factor, PHF	0.76	0.76			0.82	0.82
Hourly Flow Rate, HFR	22	81			153	52
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				13		8
Peak Hour Factor, PHF				0.88		0.88
Hourly Flow Rate, HFR				14		9
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	22						23	
C(m) (vph)	1366						740	
v/c	0.02						0.03	
95% queue length	0.05						0.10	
Control Delay	7.7						10.0+	
LOS	A						B	
Approach Delay							10.0+	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 1/14/2011
Analysis Time Period: PM Peak Hour
Intersection: Sunken Meadow Road at East Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 Existing Conditions
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: East Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	2	147			58	14
Peak-Hour Factor, PHF	0.83	0.83			0.79	0.79
Hourly Flow Rate, HFR	2	177			73	17
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				39		13
Peak Hour Factor, PHF				0.58		0.58
Hourly Flow Rate, HFR				67		22
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	2						89	
C(m) (vph)	1505						775	
v/c	0.00						0.11	
95% queue length	0.00						0.39	
Control Delay	7.4						10.2	
LOS	A						B	
Approach Delay							10.2	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 1/14/2011
Analysis Time Period: Sat Peak Hour
Intersection: Sunken Meadow Road at East Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 Existing Conditions
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: East Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	11	115			94	18
Peak-Hour Factor, PHF	0.74	0.74			0.86	0.86
Hourly Flow Rate, HFR	14	155			109	20
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT				TR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				12		6
Peak Hour Factor, PHF				0.75		0.75
Hourly Flow Rate, HFR				16		8
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	14						24	
C(m) (vph)	1457						750	
v/c	0.01						0.03	
95% queue length	0.03						0.10	
Control Delay	7.5						10.0-	
LOS	A						A	
Approach Delay							10.0-	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 1/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Sunken Meadow Road at West Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 Existing Conditions
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: West Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	77			114	20
Peak-Hour Factor, PHF	0.82	0.82			0.88	0.88
Hourly Flow Rate, HFR	30	93			129	22
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				2		7
Peak Hour Factor, PHF				0.32		0.32
Hourly Flow Rate, HFR				6		21
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	30						27	
C(m) (vph)	1430						846	
v/c	0.02						0.03	
95% queue length	0.06						0.10	
Control Delay	7.6						9.4	
LOS	A						A	
Approach Delay							9.4	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 1/14/2011
Analysis Time Period: PM Peak Hour
Intersection: Sunken Meadow Road at West Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 Existing Conditions
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: West Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	3	138			68	3
Peak-Hour Factor, PHF	0.85	0.85			0.86	0.86
Hourly Flow Rate, HFR	3	162			79	3
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				11		23
Peak Hour Factor, PHF				0.37		0.37
Hourly Flow Rate, HFR				29		62
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	3						91	
C(m) (vph)	1515						888	
v/c	0.00						0.10	
95% queue length	0.01						0.34	
Control Delay	7.4						9.5	
LOS	A						A	
Approach Delay							9.5	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 1/14/2011
Analysis Time Period: Sat Peak Hour
Intersection: Sunken Meadow Road at West Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 Existing Conditions
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: West Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	1	120			96	4
Peak-Hour Factor, PHF	0.84	0.84			0.70	0.70
Hourly Flow Rate, HFR	1	142			137	5
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				6		5
Peak Hour Factor, PHF				0.56		0.56
Hourly Flow Rate, HFR				10		8
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	1						18	
C(m) (vph)	1441						783	
v/c	0.00						0.02	
95% queue length	0.00						0.07	
Control Delay	7.5						9.7	
LOS	A						A	
Approach Delay							9.7	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 1/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Sunken Meadow Road at Kohr Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 Existing Conditions
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: Kohr Road
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		77	5	3	163	
Peak-Hour Factor, PHF		0.76	0.76	0.91	0.91	
Hourly Flow Rate, HFR		101	6	3	179	
Percent Heavy Vehicles		--	--	33	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	35		7			
Peak Hour Factor, PHF	0.65		0.65			
Hourly Flow Rate, HFR	53		10			
Percent Heavy Vehicles	5		28			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration	LR					

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		3		63				
C(m) (vph)		1311		718				
v/c		0.00		0.09				
95% queue length		0.01		0.29				
Control Delay		7.8		10.5				
LOS		A		B				
Approach Delay				10.5				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 1/14/2011
Analysis Time Period: PM Peak Hour
Intersection: Sunken Meadow Road at Kohr Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 Existing Conditions
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: Kohr Road
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		156	26	3	91	
Peak-Hour Factor, PHF		0.77	0.77	0.79	0.79	
Hourly Flow Rate, HFR		202	33	3	115	
Percent Heavy Vehicles		--	--	33	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	6		2			
Peak Hour Factor, PHF	0.69		0.69			
Hourly Flow Rate, HFR	8		2			
Percent Heavy Vehicles	33		50			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		3		10				
C(m) (vph)		1170		617				
v/c		0.00		0.02				
95% queue length		0.01		0.05				
Control Delay		8.1		10.9				
LOS		A		B				
Approach Delay				10.9				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 1/14/2011
Analysis Time Period: Sat Peak Hour
Intersection: Sunken Meadow Road at Kohr Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2010 Existing Conditions
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: Kohr Road
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		118	23	7	86	
Peak-Hour Factor, PHF		0.84	0.84	0.72	0.72	
Hourly Flow Rate, HFR		140	27	9	119	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	20		19			
Peak Hour Factor, PHF	0.53		0.53			
Hourly Flow Rate, HFR	37		35			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		9		72				
C(m) (vph)		1411		779				
v/c		0.01		0.09				
95% queue length		0.02		0.30				
Control Delay		7.6		10.1				
LOS		A		B				
Approach Delay				10.1				
Approach LOS				B				

No Build Capacity Analyses

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/07/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road

Inter.: NYS Route 25A at Sunken Meadow
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	5	14	43	57	60	91	128	576	28	45	739	8
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			4			2			1			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	P			
Right	A				Right	P			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	P			
Right	A				Right	P			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	25.0					52.0			
Yellow	4.0					4.0			
All Red	2.0					3.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	553	1844	0.14	0.30	23.2	C	23.2	C
Westbound								
LTR	527	1756	0.46	0.30	26.2	C	26.2	C
Northbound								
L	187	312	0.77	0.60	31.0	C		
TR	1099	1832	0.62	0.60	14.0	B	17.0	B
Southbound								
L	305	509	0.17	0.60	8.3	A		
TR	1104	1840	0.76	0.60	18.2	B	17.6	B

Intersection Delay = 18.6 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road

Inter.: NYS Route 25A at Sunken Meadow
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	13	30	48	28	17	58	42	622	51	111	652	16
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			1			4			4			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0					52.0		
Yellow	4.0					4.0		
All Red	2.0					3.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	573	1910	0.21	0.30	23.8	C	23.8	C
Westbound								
LTR	533	1778	0.23	0.30	23.9	C	23.9	C
Northbound								
L	277	461	0.18	0.60	8.4	A		
TR	1116	1860	0.71	0.60	16.5	B	16.0	B
Southbound								
L	228	380	0.53	0.60	12.9	B		
TR	1114	1857	0.65	0.60	14.8	B	14.5	B

Intersection Delay = 16.4 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road

Inter.: NYS Route 25A at Sunken Meadow
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	16	22	30	30	19	63	51	662	45	81	670	30
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			0			2			3			1

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A				NB	Left	A			
Thru	A					Thru	P			
Right	A					Right	P			
Peds						Peds				
WB Left	A				SB	Left	A			
Thru	A					Thru	P			
Right	A					Right	P			
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	25.0						52.0			
Yellow	4.0						4.0			
All Red	2.0						3.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	545	1815	0.15	0.30	23.2	C	23.2	C
Westbound								
LTR	546	1821	0.23	0.30	23.9	C	23.9	C
Northbound								
L	283	472	0.19	0.60	8.4	A		
TR	1120	1866	0.65	0.60	14.7	B	14.2	B
Southbound								
L	280	467	0.30	0.60	9.4	A		
TR	1118	1863	0.65	0.60	14.8	B	14.2	B

Intersection Delay = 15.3 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/07/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	98	281	48	484	398	3	38	169	200	9	255	99
Lane Width	11.0	12.0		11.0	12.0			12.0	10.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru		P			Thru	A		
Right		P			Right	A		
Peds					Peds			
WB Left	A	A			SB Left	A		
Thru	A	P			Thru	A		
Right	A	P			Right	A		
Peds					Peds			
NB Right	A				EB Right			
SB Right					WB Right			
Green	15.0	50.0				30.6		
Yellow	3.0	3.9				3.5		
All Red	0.0	2.0				2.0		

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	416	881	0.26	0.47	17.9	B		
TR	841	1782	0.44	0.47	21.0	C	20.3	C
Westbound								
L	630	1728	0.80	0.66	18.3	B		
TR	1149	1808	0.36	0.64	9.7	A	14.4	B
Northbound								
LT	395	1354	0.62	0.29	36.6	D	27.5	C
R	700	1463	0.34	0.48	18.1	B		
Southbound								
LTR	553	1896	0.74	0.29	40.3	D	40.3	D

Intersection Delay = 23.0 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	63	398	75	276	322	10	75	185	371	9	127	31
Lane Width	11.0	12.0		11.0	12.0			12.0	10.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru		P			Thru	A		
Right		P			Right	A		
Peds					Peds			
WB Left	A	A			SB Left	A		
Thru	A	P			Thru	A		
Right	A	P			Right	A		
Peds					Peds			
NB Right	A				EB Right			
SB Right					WB Right			
Green	15.0	50.0				30.6		
Yellow	3.0	3.9				3.5		
All Red	0.0	2.0				2.0		

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	442	936	0.15	0.47	16.7	B		
TR	861	1824	0.57	0.47	23.8	C	22.9	C
Westbound								
L	532	1711	0.65	0.66	14.3	B		
TR	1191	1874	0.35	0.64	9.6	A	11.7	B
Northbound								
LT	425	1458	0.68	0.29	38.8	D	28.8	C
R	713	1492	0.58	0.48	21.9	C		
Southbound								
LTR	573	1962	0.38	0.29	31.5	C	31.5	C

Intersection Delay = 21.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	54	492	88	378	435	9	100	152	359	14	172	63
Lane Width	11.0	12.0		11.0	12.0			13.0	12.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru		P			Thru	A		
Right		P			Right	A		
Peds					Peds			
WB Left	A	A			SB Left	A		
Thru	A	P			Thru	A		
Right	A	P			Right	A		
Peds					Peds			
NB Right	A				EB Right			
SB Right					WB Right			
Green	17.6	47.0			31.0			
Yellow	3.0	3.9			3.5			
All Red	0.0	2.0			2.0			

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	397	892	0.15	0.44	18.4	B		
TR	818	1841	0.81	0.44	34.8	C	33.4	C
Westbound								
L	422	1711	0.98	0.66	68.3	E		
TR	1185	1876	0.41	0.63	10.3	B	36.9	D
Northbound								
LT	329	1112	0.78	0.30	47.0	D	29.9	C
R	808	1599	0.45	0.51	17.9	B		
Southbound								
LTR	581	1968	0.56	0.30	33.9	C	33.9	C

Intersection Delay = 33.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/7/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	6	351	40	152	788	48	81	73	78	90	119	18
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			3			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
WB	Left	A	A			SB	Left	A			
	Thru	A	P				Thru	A			
	Right	A	P				Right	A			
	Peds						Peds				
NB	Right	A				EB	Right				
SB	Right					WB	Right				
Green		15.0	53.0					37.3			
Yellow		3.0	3.5					3.5			
All Red		0.0	2.7					2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	884	1946	0.52	0.45	25.5	C	25.5	C
Westbound								
L	542	1668	0.30	0.63	11.5	B		
TR	1051	1739	0.86	0.60	26.5	C	24.2	C
Northbound								
L	324	1001	0.31	0.32	31.1	C		
T	551	1705	0.16	0.32	29.1	C	25.6	C
R	775	1568	0.12	0.49	16.4	B		
Southbound								
L	398	1230	0.32	0.32	31.1	C		
T	571	1766	0.29	0.32	30.6	C	30.6	C
R	511	1580	0.05	0.32	28.0	C		

Intersection Delay = 25.7 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	13	619	101	157	576	36	100	124	255	55	157	19
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			5			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		A			NB Left	A			
Thru		P			Thru	A			
Right		P			Right	A			
Peds					Peds				
WB Left	A	A			SB Left	A			
Thru	A	P			Thru	A			
Right	A	P			Right	A			
Peds					Peds				
NB Right	A				EB Right				
SB Right					WB Right				
Green	10.0	61.0				34.3			
Yellow	3.0	3.5				3.5			
All Red	0.0	2.7				2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	1009	1938	0.78	0.52	29.3	C	29.3	C
Westbound								
L	407	1668	0.40	0.66	12.5	B		
TR	1094	1739	0.58	0.63	13.7	B	13.5	B
Northbound								
L	268	898	0.44	0.30	35.2	D		
T	509	1705	0.29	0.30	32.6	C	29.0	C
R	670	1568	0.44	0.43	24.7	C		
Southbound								
L	318	1065	0.22	0.30	32.0	C		
T	527	1766	0.38	0.30	33.7	C	33.0	C
R	471	1580	0.05	0.30	30.0	C		

Intersection Delay = 24.5 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	12	663	168	285	675	66	165	177	220	93	191	50
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			1			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
WB	Left	A	A			SB	Left	A			
	Thru	A	P				Thru	A			
	Right	A	P				Right	A			
	Peds						Peds				
NB	Right	A				EB	Right				
SB	Right					WB	Right				
Green		12.3	60.0					33.0			
Yellow		3.0	3.5					3.5			
All Red		0.0	2.7					2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	1008	1967	0.87	0.51	36.1	D	36.1	D
Westbound								
L	390	1620	0.76	0.67	23.5	C		
TR	1135	1773	0.68	0.64	15.4	B	17.7	B
Northbound								
L	256	889	0.71	0.29	47.5	D		
T	500	1739	0.39	0.29	34.9	C	33.9	C
R	670	1538	0.36	0.44	23.0	C		
Southbound								
L	255	886	0.38	0.29	35.2	D		
T	523	1818	0.38	0.29	34.7	C	34.4	C
R	495	1723	0.11	0.29	31.5	C		

Intersection Delay = 28.7 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/07/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A/Rose St

Inter.: NYS Route 25A at St Johnland R
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: NYS Route 25A/St Johnland Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	0	1	0	0	1	0
LGConfig		LT	R		LTR			LTR			LTR	
Volume	22	183	294	5	167	5	324	45	12	5	98	71
Lane Width		11.0	11.0		16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
WB Left	A				SB Left		A	
Thru	P				Thru		A	
Right	P				Right		A	
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right			
Green	26.6					30.0	17.0	
Yellow	3.5					3.6	3.5	
All Red	2.0					2.0	1.8	

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	520	1665	0.43	0.31	27.2	C	14.2	B
R	1012	1432	0.32	0.71	5.2	A		
Westbound								
LTR	647	2071	0.28	0.31	24.4	C	24.4	C
Northbound								
LTR	659	1876	0.68	0.35	27.7	C	27.7	C
Southbound								
LTR	401	1940	0.50	0.21	32.6	C	32.6	C

Intersection Delay = 22.7 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A/Rose St

Inter.: NYS Route 25A at St Johnland R
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: NYS Route 25A/St Johnland Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	0	1	0	0	1	0
LGConfig		LT	R		LTR			LTR			LTR	
Volume	76	284	356	10	252	7	293	89	21	19	90	66
Lane Width		11.0	11.0		16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
WB Left	A				SB Left		A	
Thru	P				Thru		A	
Right	P				Right		A	
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right			
Green	31.6					22.0	20.0	
Yellow	3.5					3.6	3.5	
All Red	2.0					2.0	1.8	

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	563	1531	0.68	0.37	30.5	C	18.6	B
R	1003	1487	0.38	0.67	6.6	A		
Westbound								
LTR	758	2062	0.38	0.37	22.4	C	22.4	C
Northbound								
LTR	590	1996	0.78	0.30	35.5	D	35.5	D
Southbound								
LTR	473	1969	0.41	0.24	29.5	C	29.5	C

Intersection Delay = 25.0 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A/Rose St

Inter.: NYS Route 25A at St Johnland R
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 No Build Conditions
N/S St: NYS Route 25A/St Johnland Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	0	1	0	0	1	0
LGConfig		LT	R		LTR			LTR			LTR	
Volume	75	261	387	17	244	20	356	98	22	28	110	90
Lane Width		11.0	11.0		16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
WB Left	A				SB Left		A	
Thru	P				Thru		A	
Right	P				Right		A	
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right			
Green	30.0					27.0	16.6	
Yellow	3.5					3.6	3.5	
All Red	2.0					2.0	1.8	

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	497	1421	0.74	0.35	35.0-	C	19.2	B
R	1067	1501	0.39	0.71	5.5	A		
Westbound								
LTR	709	2027	0.50	0.35	25.5	C	25.5	C
Northbound								
LTR	638	2008	0.79	0.32	34.8	C	34.8	C
Southbound								
LTR	406	2007	0.62	0.20	35.6	D	35.6	D

Intersection Delay = 26.7 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/7/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Church St
Area Type: All other areas
Jurisd:
Year : 2014 No Build Conditions
N/S St: Church St

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	48	232	10	125	224	26	10	63	77	34	113	134
Lane Width		14.0			11.0			16.0			16.0	
RTOR Vol			0			0			3			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0				32.0			
Yellow	4.0				4.0			
All Red	2.5				2.5			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	890	1705	0.45	0.52	15.0	B	15.0	B
Westbound								
LTR	671	1285	0.73	0.52	23.7	C	23.7	C
Northbound								
LTR	705	1866	0.29	0.38	19.8	B	19.8	B
Southbound								
LTR	695	1840	0.48	0.38	21.8	C	21.8	C

Intersection Delay = 20.3 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Church St
Area Type: All other areas
Jurisd:
Year : 2014 No Build Conditions
N/S St: Church St

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	97	141	34	57	91	16	21	97	36	11	97	63
Lane Width		14.0			11.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0					32.0		
Yellow	4.0					4.0		
All Red	2.5					2.5		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	819	1569	0.37	0.52	13.0	B	13.0	B
Westbound								
LTR	739	1415	0.31	0.52	12.5	B	12.5	B
Northbound								
LTR	719	1904	0.24	0.38	19.9	B	19.9	B
Southbound								
LTR	740	1959	0.26	0.38	20.2	C	20.2	C

Intersection Delay = 15.8 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Church St
Area Type: All other areas
Jurisd:
Year : 2014 No Build Conditions
N/S St: Church St

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	85	155	59	175	170	23	44	106	128	19	113	81
Lane Width		14.0			11.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0					32.0		
Yellow	4.0					4.0		
All Red	2.5					2.5		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	794	1521	0.52	0.52	14.8	B	14.8	B
Westbound								
LTR	594	1138	0.77	0.52	23.6	C	23.6	C
Northbound								
LTR	678	1795	0.56	0.38	25.4	C	25.4	C
Southbound								
LTR	723	1915	0.33	0.38	21.1	C	21.1	C

Intersection Delay = 21.2 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/7/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Sunken Meadow
Area Type: All other areas
Jurisd:
Year : 2014 No Build Conditions
N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	5	51	25	63	142	11	33	7	34	11	14	4
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			0			0			4			1

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0					30.0		
Yellow	4.0					4.0		
All Red	1.5					1.5		

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	870	1931	0.12	0.45	11.6	B	11.6	B
Westbound								
LTR	832	1847	0.37	0.45	14.1	B	14.1	B
Northbound								
LTR	795	1765	0.12	0.45	11.6	B	11.6	B
Southbound								
LTR	814	1805	0.04	0.45	11.0	B	11.0	B

Intersection Delay = 13.0 (sec/veh) Intersection LOS = B

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Sunken Meadow
Area Type: All other areas
Jurisd:
Year : 2014 No Build Conditions
N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	4	169	23	26	58	14	14	19	68	16	12	5
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	P				Thru	P			
Right	P				Right	P			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	P				Thru	P			
Right	P				Right	P			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	30.0					30.0			
Yellow	4.0					4.0			
All Red	1.5					1.5			

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	928	2058	0.28	0.45	13.0	B	13.0	B
Westbound								
LTR	828	1838	0.15	0.45	11.8	B	11.8	B
Northbound								
LTR	832	1846	0.14	0.45	11.8	B	11.8	B
Southbound								
LTR	783	1737	0.07	0.45	11.3	B	11.3	B

Intersection Delay = 12.3 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Sunken Meadow
Area Type: All other areas
Jurisd:
Year : 2014 No Build Conditions
N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	22	84	28	59	95	32	17	88	68	46	45	7
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			2			10			18			2

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A				NB Left	A		
	Thru	P				Thru	P		
	Right	P				Right	P		
	Peds					Peds			
WB	Left	A				SB Left	A		
	Thru	P				Thru	P		
	Right	P				Right	P		
	Peds					Peds			
NB	Right					EB Right			
SB	Right					WB Right			
Green		30.0				30.0			
Yellow		4.0				4.0			
All Red		1.5				1.5			

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	882	1957	0.22	0.45	12.5	B	12.5	B
Westbound								
LTR	802	1779	0.27	0.45	13.1	B	13.1	B
Northbound								
LTR	902	2001	0.18	0.45	12.1	B	12.1	B
Southbound								
LTR	803	1781	0.13	0.45	11.7	B	11.7	B

Intersection Delay = 12.5 (sec/veh) Intersection LOS = B

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Sunken Meadow Road at East Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 No Build Conditions
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: East Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	18	65			132	45
Peak-Hour Factor, PHF	0.76	0.76			0.82	0.82
Hourly Flow Rate, HFR	23	85			160	54
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				14		9
Peak Hour Factor, PHF				0.88		0.88
Hourly Flow Rate, HFR				15		10
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	23						25	
C(m) (vph)	1356						729	
v/c	0.02						0.03	
95% queue length	0.05						0.11	
Control Delay	7.7						10.1	
LOS	A						B	
Approach Delay							10.1	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst:	OSB
Agency/Co.:	Nelson & Pope
Date Performed:	3/14/2011
Analysis Time Period:	PM Peak Hour
Intersection:	Sunken Meadow Road at East Drw
Jurisdiction:	
Units: U. S. Customary	
Analysis Year:	2014 No Build Conditions
Project ID:	St. Johnland Continuing Care Retirement-95124
East/West Street:	Sunken Meadow Road
North/South Street:	East Driveway
Intersection Orientation: EW	Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	3	154			61	15
Peak-Hour Factor, PHF	0.83	0.83			0.79	0.79
Hourly Flow Rate, HFR	3	185			77	18
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				41		14
Peak Hour Factor, PHF				0.58		0.58
Hourly Flow Rate, HFR				70		24
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	3						94	
C(m) (vph)	1499						764	
v/c	0.00						0.12	
95% queue length	0.01						0.42	
Control Delay	7.4						10.4	
LOS	A						B	
Approach Delay							10.4	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst:	OSB
Agency/Co.:	Nelson & Pope
Date Performed:	3/14/2011
Analysis Time Period:	Sat Peak Hour
Intersection:	Sunken Meadow Road at East Drw
Jurisdiction:	
Units: U. S. Customary	
Analysis Year:	2014 No Build Conditions
Project ID:	St. Johnland Continuing Care Retirement-95124
East/West Street:	Sunken Meadow Road
North/South Street:	East Driveway
Intersection Orientation: EW	Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	12	121			100	19
Peak-Hour Factor, PHF	0.74	0.74			0.86	0.86
Hourly Flow Rate, HFR	16	163			116	22
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				13		7
Peak Hour Factor, PHF				0.75		0.75
Hourly Flow Rate, HFR				17		9
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	16						26	
C(m) (vph)	1446						736	
v/c	0.01						0.04	
95% queue length	0.03						0.11	
Control Delay	7.5						10.1	
LOS	A						B	
Approach Delay							10.1	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 1/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Sunken Meadow Road at West Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 No Build Conditions
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: West Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	27	81			120	21
Peak-Hour Factor, PHF	0.82	0.82			0.88	0.88
Hourly Flow Rate, HFR	32	98			136	23
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				3		8
Peak Hour Factor, PHF				0.32		0.32
Hourly Flow Rate, HFR				9		25
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	32						34	
C(m) (vph)	1420						823	
v/c	0.02						0.04	
95% queue length	0.07						0.13	
Control Delay	7.6						9.6	
LOS	A						A	
Approach Delay							9.6	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst:	OSB
Agency/Co.:	Nelson & Pope
Date Performed:	3/14/2011
Analysis Time Period:	PM Peak Hour
Intersection:	Sunken Meadow Road at West Drw
Jurisdiction:	
Units: U. S. Customary	
Analysis Year:	2014 No Build Conditions
Project ID:	St. Johnland Continuing Care Retirement-95124
East/West Street:	Sunken Meadow Road
North/South Street:	West Driveway
Intersection Orientation: EW	Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	145			72	4
Peak-Hour Factor, PHF	0.85	0.85			0.86	0.86
Hourly Flow Rate, HFR	4	170			83	4
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				12		25
Peak Hour Factor, PHF				0.37		0.37
Hourly Flow Rate, HFR				32		67
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	4						99	
C(m) (vph)	1509						876	
v/c	0.00						0.11	
95% queue length	0.01						0.38	
Control Delay	7.4						9.6	
LOS	A						A	
Approach Delay							9.6	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst:	OSB
Agency/Co.:	Nelson & Pope
Date Performed:	3/14/2011
Analysis Time Period:	Sat Peak Hour
Intersection:	Sunken Meadow Road at West Drw
Jurisdiction:	
Units: U. S. Customary	
Analysis Year:	2014 No Build Conditions
Project ID:	St. Johnland Continuing Care Retirement-95124
East/West Street:	Sunken Meadow Road
North/South Street:	West Driveway
Intersection Orientation: EW	Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	2	126			101	5
Peak-Hour Factor, PHF	0.84	0.84			0.70	0.70
Hourly Flow Rate, HFR	2	150			144	7
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				7		6
Peak Hour Factor, PHF				0.56		0.56
Hourly Flow Rate, HFR				12		10
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	2						22	
C(m) (vph)	1430						771	
v/c	0.00						0.03	
95% queue length	0.00						0.09	
Control Delay	7.5						9.8	
LOS	A						A	
Approach Delay							9.8	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst:	OSB
Agency/Co.:	Nelson & Pope
Date Performed:	3/14/2011
Analysis Time Period:	AM Peak Hour
Intersection:	Sunken Meadow Road at Kohr Rd
Jurisdiction:	
Units: U. S. Customary	
Analysis Year:	2014 No Build Conditions
Project ID:	St. Johnland Continuing Care Retirement-95124
East/West Street:	Sunken Meadow Road
North/South Street:	Kohr Road
Intersection Orientation: EW	Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		81	6	4	171	
Peak-Hour Factor, PHF		0.76	0.76	0.91	0.91	
Hourly Flow Rate, HFR		106	7	4	187	
Percent Heavy Vehicles		--	--	33	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	37					
Peak Hour Factor, PHF	0.65		0.65			
Hourly Flow Rate, HFR	56		10			
Percent Heavy Vehicles	5		28			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		4		66				
C(m) (vph)		1304		703				
v/c		0.00		0.09				
95% queue length		0.01		0.31				
Control Delay		7.8		10.7				
LOS		A		B				
Approach Delay				10.7				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst:	OSB
Agency/Co.:	Nelson & Pope
Date Performed:	3/14/2011
Analysis Time Period:	PM Peak Hour
Intersection:	Sunken Meadow Road at Kohr Rd
Jurisdiction:	
Units: U. S. Customary	
Analysis Year:	2014 No Build Conditions
Project ID:	St. Johnland Continuing Care Retirement-95124
East/West Street:	Sunken Meadow Road
North/South Street:	Kohr Road
Intersection Orientation: EW	Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		164	28	4	96	
Peak-Hour Factor, PHF		0.77	0.77	0.79	0.79	
Hourly Flow Rate, HFR		212	36	5	121	
Percent Heavy Vehicles		--	--	33	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes		1 0		0 1		
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	7		2			
Peak Hour Factor, PHF	0.69		0.69			
Hourly Flow Rate, HFR	10		2			
Percent Heavy Vehicles	33		50			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		5		12				
C(m) (vph)		1157		596				
v/c		0.00		0.02				
95% queue length		0.01		0.06				
Control Delay		8.1		11.2				
LOS		A		B				
Approach Delay				11.2				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst:	OSB
Agency/Co.:	Nelson & Pope
Date Performed:	3/14/2011
Analysis Time Period:	Sat Peak Hour
Intersection:	Sunken Meadow Road at Kohr Rd
Jurisdiction:	
Units: U. S. Customary	
Analysis Year:	2014 No Build Conditions
Project ID:	St. Johnland Continuing Care Retirement-95124
East/West Street:	Sunken Meadow Road
North/South Street:	Kohr Road
Intersection Orientation:	EW
Study period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		124	25	8	90	
Peak-Hour Factor, PHF		0.84	0.84	0.72	0.72	
Hourly Flow Rate, HFR		147	29	11	124	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	21		20			
Peak Hour Factor, PHF	0.53		0.53			
Hourly Flow Rate, HFR	39		37			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		11		76				
C(m) (vph)		1400		765				
v/c		0.01		0.10				
95% queue length		0.02		0.33				
Control Delay		7.6		10.2				
LOS		A		B				
Approach Delay				10.2				
Approach LOS				B				

Build Capacity Analyses Scenario 1

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/07/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road

Inter.: NYS Route 25A at Sunken Meadow
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce 1
N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	5	16	43	57	61	91	128	576	28	45	739	8
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			4			2			1			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0				52.0			
Yellow	4.0				4.0			
All Red	2.0				3.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	554	1846	0.15	0.30	23.2	C	23.2	C
Westbound								
LTR	527	1755	0.46	0.30	26.3	C	26.3	C
Northbound								
L	187	312	0.77	0.60	31.0	C		
TR	1099	1832	0.62	0.60	14.0	B	17.0	B
Southbound								
L	305	509	0.17	0.60	8.3	A		
TR	1104	1840	0.76	0.60	18.2	B	17.6	B

Intersection Delay = 18.6 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road

Inter.: NYS Route 25A at Sunken Meadow
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce 1
N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	13	31	48	28	19	58	42	622	51	111	652	16
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			1			4			4			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0				52.0			
Yellow	4.0				4.0			
All Red	2.0				3.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	574	1912	0.22	0.30	23.8	C	23.8	C
Westbound								
LTR	535	1783	0.23	0.30	23.9	C	23.9	C
Northbound								
L	277	461	0.18	0.60	8.4	A		
TR	1116	1860	0.71	0.60	16.5	B	16.0	B
Southbound								
L	228	380	0.53	0.60	12.9	B		
TR	1114	1857	0.65	0.60	14.8	B	14.5	B

Intersection Delay = 16.4 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 1/13/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road

Inter. : NYS Route 25A at Sunken Meadow
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce 1
N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	16	24	30	30	21	63	51	662	45	81	670	30
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			0			2			3			1

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0					52.0		
Yellow	4.0					4.0		
All Red	2.0					3.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	546	1821	0.15	0.30	23.2	C	23.2	C
Westbound								
LTR	548	1825	0.23	0.30	23.9	C	23.9	C
Northbound								
L	283	472	0.19	0.60	8.4	A		
TR	1120	1866	0.65	0.60	14.7	B	14.2	B
Southbound								
L	280	467	0.30	0.60	9.4	A		
TR	1118	1863	0.65	0.60	14.8	B	14.2	B

Intersection Delay = 15.3 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/07/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions - Sce 1
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	98	281	48	484	398	3	38	182	200	9	262	99
Lane Width	11.0	12.0		11.0	12.0			12.0	10.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
WB	Left	A	A			SB	Left	A			
	Thru	A	P				Thru	A			
	Right	A	P				Right	A			
	Peds						Peds				
NB	Right	A				EB	Right				
SB	Right					WB	Right				
Green		15.0	50.0					30.6			
Yellow		3.0	3.9					3.5			
All Red		0.0	2.0					2.0			

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	416	881	0.26	0.47	17.9	B		
TR	841	1782	0.44	0.47	21.0	C	20.3	C
Westbound								
L	630	1728	0.80	0.66	18.3	B		
TR	1149	1808	0.36	0.64	9.7	A	14.4	B
Northbound								
LT	397	1359	0.65	0.29	37.9	D	28.5	C
R	700	1463	0.34	0.48	18.1	B		
Southbound								
LTR	554	1897	0.75	0.29	40.9	D	40.9	D

Intersection Delay = 23.4 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce1
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	63	398	75	276	322	10	75	196	371	9	139	31
Lane Width	11.0	12.0		11.0	12.0			12.0	10.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		A			NB Left	A			
Thru		P			Thru	A			
Right		P			Right	A			
Peds					Peds				
WB Left	A	A			SB Left	A			
Thru	A	P			Thru	A			
Right	A	P			Right	A			
Peds					Peds				
NB Right	A				EB Right				
SB Right					WB Right				
Green	15.0	50.0				30.6			
Yellow	3.0	3.9				3.5			
All Red	0.0	2.0				2.0			

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	442	936	0.15	0.47	16.7	B		
TR	861	1824	0.57	0.47	23.8	C	22.9	C
Westbound								
L	532	1711	0.65	0.66	14.3	B		
TR	1191	1874	0.35	0.64	9.6	A	11.7	B
Northbound								
LT	419	1435	0.72	0.29	40.8	D	29.8	C
R	713	1492	0.58	0.48	21.9	C		
Southbound								
LTR	574	1966	0.41	0.29	31.8	C	31.8	C

Intersection Delay = 22.3 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions - Sce 1
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	54	492	88	378	435	9	100	169	359	14	186	63
Lane Width	11.0	12.0		11.0	12.0			13.0	12.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
WB	Left	A	A			SB	Left	A			
	Thru	A	P				Thru	A			
	Right	A	P				Right	A			
	Peds						Peds				
NB	Right	A				EB	Right				
SB	Right					WB	Right				
Green		17.6	47.0					31.0			
Yellow		3.0	3.9					3.5			
All Red		0.0	2.0					2.0			

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	397	892	0.15	0.44	18.4	B		
TR	818	1841	0.81	0.44	34.8	C	33.4	C
Westbound								
L	422	1711	0.98	0.66	68.3	E		
TR	1185	1876	0.41	0.63	10.3	B	36.9	D
Northbound								
LT	324	1095	0.85	0.30	54.7	D	33.6	C
R	808	1599	0.45	0.51	17.9	B		
Southbound								
LTR	583	1973	0.59	0.30	34.6	C	34.6	C

Intersection Delay = 34.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/7/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions- Sce1
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	6	351	40	152	788	54	81	81	78	93	123	18
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			3			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		A			NB Left	A			
Thru		P			Thru	A			
Right		P			Right	A			
Peds					Peds				
WB Left	A	A			SB Left	A			
Thru	A	P			Thru	A			
Right	A	P			Right	A			
Peds					Peds				
NB Right	A				EB Right				
SB Right					WB Right				
Green	15.0	53.0				37.3			
Yellow	3.0	3.5				3.5			
All Red	0.0	2.7				2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	883	1944	0.49	0.45	24.9	C	24.9	C
Westbound								
L	555	1668	0.30	0.63	11.3	B		
TR	1050	1738	0.87	0.60	28.1	C	25.5	C
Northbound								
L	351	1087	0.25	0.32	30.3	C		
T	551	1705	0.16	0.32	29.1	C	25.4	C
R	775	1568	0.11	0.49	16.3	B		
Southbound								
L	400	1236	0.25	0.32	30.2	C		
T	571	1766	0.23	0.32	29.9	C	29.9	C
R	511	1580	0.04	0.32	27.9	C		

Intersection Delay = 25.9 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions - Sce 1
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	13	619	101	157	576	42	100	131	255	61	165	19
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			5			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left	A		
Thru		P			Thru	A		
Right		P			Right	A		
Peds					Peds			
WB Left	A	A			SB Left	A		
Thru	A	P			Thru	A		
Right	A	P			Right	A		
Peds					Peds			
NB Right	A				EB Right			
SB Right					WB Right			
Green	10.0	61.0			34.3			
Yellow	3.0	3.5			3.5			
All Red	0.0	2.7			2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	1009	1938	0.78	0.52	29.3	C	29.3	C
Westbound								
L	407	1668	0.40	0.66	12.5	B		
TR	1093	1737	0.58	0.63	13.8	B	13.6	B
Northbound								
L	260	872	0.45	0.30	35.4	D		
T	509	1705	0.30	0.30	32.8	C	29.1	C
R	670	1568	0.44	0.43	24.7	C		
Southbound								
L	311	1042	0.25	0.30	32.3	C		
T	527	1766	0.40	0.30	34.0	C	33.3	C
R	471	1580	0.05	0.30	30.0	C		

Intersection Delay = 24.6 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce 1
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	12	663	168	285	675	74	165	188	220	105	200	50
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			1			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left A			
Thru		P			Thru A			
Right		P			Right A			
Peds					Peds			
WB Left	A	A			SB Left A			
Thru	A	P			Thru A			
Right	A	P			Right A			
Peds					Peds			
NB Right	A				EB Right			
SB Right					WB Right			
Green	12.3	60.0			33.0			
Yellow	3.0	3.5			3.5			
All Red	0.0	2.7			2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	1008	1967	0.87	0.51	36.1	D	36.1	D
Westbound								
L	390	1620	0.76	0.67	23.5	C		
TR	1133	1771	0.69	0.64	15.7	B	17.8	B
Northbound								
L	248	861	0.74	0.29	49.7	D		
T	500	1739	0.42	0.29	35.2	D	34.7	C
R	670	1538	0.36	0.44	23.0	C		
Southbound								
L	245	853	0.45	0.29	36.4	D		
T	523	1818	0.40	0.29	35.0-	C	34.9	C
R	495	1723	0.11	0.29	31.5	C		

Intersection Delay = 29.0 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/07/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A/Rose St

Inter.: NYS Route 25A at St Johnland R
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce1
N/S St: NYS Route 25A/St Johnland Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	0	1	0	0	1	0
LGConfig		LT	R		LTR			LTR			LTR	
Volume	22	184	297	5	169	7	329	47	12	6	99	71
Lane Width		11.0	11.0		16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	P					Thru	A			
	Right	P					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left		A		
	Thru	P					Thru		A		
	Right	P					Right		A		
	Peds						Peds				
NB	Right					EB	Right	A			
SB	Right					WB	Right				
Green		26.6						30.0	17.0		
Yellow		3.5						3.6	3.5		
All Red		2.0						2.0	1.8		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	520	1665	0.43	0.31	27.2	C	14.2	B
R	1012	1432	0.32	0.71	5.2	A		
Westbound								
LTR	646	2069	0.29	0.31	24.5	C	24.5	C
Northbound								
LTR	659	1876	0.69	0.35	28.1	C	28.1	C
Southbound								
LTR	401	1940	0.51	0.21	32.7	C	32.7	C

Intersection Delay = 22.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A/Rose St

Inter.: NYS Route 25A at St Johnland R
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce1
N/S St: NYS Route 25A/St Johnland Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	0	1	0	0	1	0
LGConfig		LT	R		LTR			LTR			LTR	
Volume	76	286	361	10	253	8	297	90	21	21	92	66
Lane Width		11.0	11.0		16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
WB	Left		A			SB	Left		A		
	Thru		P				Thru		A		
	Right		P				Right		A		
	Peds						Peds				
NB	Right					EB	Right	A			
SB	Right					WB	Right				
Green			31.6					22.0	20.0		
Yellow			3.5					3.6	3.5		
All Red			2.0					2.0	1.8		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	563	1530	0.68	0.37	30.6	C	18.7	B
R	1003	1487	0.38	0.67	6.7	A		
Westbound								
LTR	758	2061	0.39	0.37	22.4	C	22.4	C
Northbound								
LTR	590	1996	0.79	0.30	36.1	D	36.1	D
Southbound								
LTR	473	1970	0.42	0.24	29.6	C	29.6	C

Intersection Delay = 25.3 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A/Rose St

Inter.: NYS Route 25A at St Johnland R
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce 1
N/S St: NYS Route 25A/St Johnland Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	0	1	0	0	1	0
LGConfig		LT	R		LTR			LTR			LTR	
Volume	75	263	392	17	246	22	362	100	22	30	112	90
Lane Width		11.0	11.0		16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	P					Thru	A			
	Right	P					Right	A			
	Peds						Peds				
WB	Left	A				SB	Left		A		
	Thru	P					Thru		A		
	Right	P					Right		A		
	Peds						Peds				
NB	Right					EB	Right	A			
SB	Right					WB	Right				
Green		30.0						27.0	16.6		
Yellow		3.5						3.6	3.5		
All Red		2.0						2.0	1.8		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	496	1417	0.74	0.35	35.3	D	19.3	B
R	1067	1501	0.40	0.71	5.5	A		
Westbound								
LTR	709	2026	0.50	0.35	25.6	C	25.6	C
Northbound								
LTR	638	2008	0.81	0.32	35.7	D	35.7	D
Southbound								
LTR	406	2008	0.63	0.20	35.9	D	35.9	D

Intersection Delay = 27.1 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/7/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Church St
Area Type: All other areas
Jurisd:
Year : 2014 Build Conditions -Sce 1
N/S St: Church St

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	48	245	10	133	231	26	10	63	91	34	113	134
Lane Width		14.0			11.0			16.0			16.0	
RTOR Vol			0			0			3			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0				32.0			
Yellow	4.0				4.0			
All Red	2.5				2.5			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	894	1711	0.47	0.52	15.3	B	15.3	B
Westbound								
LTR	651	1247	0.79	0.52	26.8	C	26.8	C
Northbound								
LTR	703	1860	0.32	0.38	20.1	C	20.1	C
Southbound								
LTR	693	1835	0.48	0.38	21.8	C	21.8	C

Intersection Delay = 21.5 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Church St
Area Type: All other areas
Jurisd:
Year : 2014 Build Conditions -Sce 1
N/S St: Church St

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	97	152	34	71	103	16	21	97	49	11	97	63
Lane Width		14.0			11.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	A					Thru	P			
	Right	A					Right	P			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	A					Thru	P			
	Right	A					Right	P			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		45.0						32.0			
Yellow		4.0						4.0			
All Red		2.5						2.5			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	815	1561	0.39	0.52	13.2	B	13.2	B
Westbound								
LTR	720	1379	0.37	0.52	13.0	B	13.0	B
Northbound								
LTR	716	1894	0.26	0.38	20.2	C	20.2	C
Southbound								
LTR	739	1957	0.26	0.38	20.2	C	20.2	C

Intersection Delay = 15.9 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Church St
Area Type: All other areas
Jurisd:
Year : 2014 Build Conditions -Sce 1
N/S St: Church St

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	85	172	59	191	184	23	44	106	147	19	113	81
Lane Width		14.0			11.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0					32.0		
Yellow	4.0					4.0		
All Red	2.5					2.5		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	795	1522	0.55	0.52	15.3	B	15.3	B
Westbound								
LTR	580	1111	0.86	0.52	30.9	C	30.9	C
Northbound								
LTR	678	1795	0.60	0.38	26.4	C	26.4	C
Southbound								
LTR	722	1910	0.33	0.38	21.1	C	21.1	C

Intersection Delay = 23.9 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/7/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Sunken Meadow
Area Type: All other areas
Jurisd:
Year : 2014 Build Conditions -Sce 1
N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	5	53	25	63	145	11	33	7	34	11	14	4
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			0			0			4			1

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0				30.0			
Yellow	4.0				4.0			
All Red	1.5				1.5			

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	872	1935	0.12	0.45	11.6	B	11.6	B
Westbound								
LTR	833	1848	0.38	0.45	14.2	B	14.2	B
Northbound								
LTR	795	1765	0.12	0.45	11.6	B	11.6	B
Southbound								
LTR	814	1805	0.04	0.45	11.0	B	11.0	B

Intersection Delay = 13.0 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Sunken Meadow
Area Type: All other areas
Jurisd:
Year : 2014 Build Conditions -Sce 1
N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	4	172	23	26	61	14	14	19	68	16	12	5
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0				30.0			
Yellow	4.0				4.0			
All Red	1.5				1.5			

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	928	2059	0.28	0.45	13.0	B	13.0	B
Westbound								
LTR	831	1843	0.15	0.45	11.9	B	11.9	B
Northbound								
LTR	832	1846	0.14	0.45	11.8	B	11.8	B
Southbound								
LTR	783	1737	0.07	0.45	11.3	B	11.3	B

Intersection Delay = 12.3 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 3/8/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Sunken Meadow
Area Type: All other areas
Jurisd:
Year : 2014 Build Conditions -Sce 1
N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	22	88	28	59	99	32	17	88	68	46	45	7
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			2			10			18			2

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0					30.0		
Yellow	4.0					4.0		
All Red	1.5					1.5		

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	883	1960	0.23	0.45	12.5	B	12.5	B
Westbound								
LTR	803	1782	0.28	0.45	13.1	B	13.1	B
Northbound								
LTR	902	2001	0.18	0.45	12.1	B	12.1	B
Southbound								
LTR	803	1781	0.13	0.45	11.7	B	11.7	B

Intersection Delay = 12.5 (sec/veh) Intersection LOS = B

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Sunken Meadow Road at East Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 1
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: East Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	18	67			135	45
Peak-Hour Factor, PHF	0.76	0.76			0.82	0.82
Hourly Flow Rate, HFR	23	88			164	54
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				14		9
Peak Hour Factor, PHF				0.88		0.88
Hourly Flow Rate, HFR				15		10
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	23						25	
C(m) (vph)	1352						724	
v/c	0.02						0.03	
95% queue length	0.05						0.11	
Control Delay	7.7						10.2	
LOS	A						B	
Approach Delay							10.2	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst:	OSB
Agency/Co.:	Nelson & Pope
Date Performed:	3/14/2011
Analysis Time Period:	PM Peak Hour
Intersection:	Sunken Meadow Road at East Drw
Jurisdiction:	
Units: U. S. Customary	
Analysis Year:	2014 Build Conditions Sce 1
Project ID:	St. Johnland Continuing Care Retirement-95124
East/West Street:	Sunken Meadow Road
North/South Street:	East Driveway
Intersection Orientation: EW	Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	3	157			64	15
Peak-Hour Factor, PHF	0.83	0.83			0.79	0.79
Hourly Flow Rate, HFR	3	189			81	18
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				41		14
Peak Hour Factor, PHF				0.58		0.58
Hourly Flow Rate, HFR				70		24
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	3						94	
C(m) (vph)	1494						757	
v/c	0.00						0.12	
95% queue length	0.01						0.42	
Control Delay	7.4						10.4	
LOS	A						B	
Approach Delay							10.4	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.:
Date Performed: 3/14/2011
Analysis Time Period: Sat Peak Hour
Intersection: Sunken Meadow Road at East Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Condition Sce 1
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: East Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	12	125			104	19
Peak-Hour Factor, PHF	0.74	0.74			0.86	0.86
Hourly Flow Rate, HFR	16	168			120	22
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				13		7
Peak Hour Factor, PHF				0.75		0.75
Hourly Flow Rate, HFR				17		9
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	16						26	
C(m) (vph)	1441						729	
v/c	0.01						0.04	
95% queue length	0.03						0.11	
Control Delay	7.5						10.1	
LOS	A						B	
Approach Delay							10.1	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Sunken Meadow Road at West Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 1
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: West Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	27	81	2	3	120	21
Peak-Hour Factor, PHF	0.82	0.82	0.92	0.92	0.88	0.88
Hourly Flow Rate, HFR	32	98	2	3	136	23
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	2	3	0	8
Peak Hour Factor, PHF	0.92	0.93	0.92	0.32	0.32	0.32
Hourly Flow Rate, HFR	1	0	2	9	0	25
Percent Heavy Vehicles	0	0	0	2	0	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	32	3		3			34	
C(m) (vph)	1420	1505		800			804	
v/c	0.02	0.00		0.00			0.04	
95% queue length	0.07	0.01		0.01			0.13	
Control Delay	7.6	7.4		9.5			9.7	
LOS	A	A		A			A	
Approach Delay				9.5			9.7	
Approach LOS				A			A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: PM Peak Hour
Intersection: Sunken Meadow Road at West Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 1
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: West Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	145	1	3	72	4
Peak-Hour Factor, PHF	0.85	0.85	0.92	0.92	0.86	0.86
Hourly Flow Rate, HFR	4	170	1	3	83	4
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	2	0	3	12	0	25
Peak Hour Factor, PHF	0.92	0.92	0.92	0.37	0.37	0.37
Hourly Flow Rate, HFR	2	0	3	32	0	67
Percent Heavy Vehicles	0	0	0	2	0	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	4	3		5			99	
C(m) (vph)	1509	1418		745			853	
v/c	0.00	0.00		0.01			0.12	
95% queue length	0.01	0.01		0.02			0.39	
Control Delay	7.4	7.5		9.9			9.8	
LOS	A	A		A			A	
Approach Delay				9.9			9.8	
Approach LOS				A			A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: Sat Peak Hour
Intersection: Sunken Meadow Road at West Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 1
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: West Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	2	126	2	4	101	5
Peak-Hour Factor, PHF	0.84	0.84	0.92	0.92	0.70	0.70
Hourly Flow Rate, HFR	2	150	2	4	144	7
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	2	0	4	7	0	6
Peak Hour Factor, PHF	0.92	0.92	0.92	0.56	0.92	0.56
Hourly Flow Rate, HFR	2	0	4	12	0	10
Percent Heavy Vehicles	0	0	0	2	0	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	2	4		6			22	
C(m) (vph)	1430	1441		790			733	
v/c	0.00	0.00		0.01			0.03	
95% queue length	0.00	0.01		0.02			0.09	
Control Delay	7.5	7.5		9.6			10.1	
LOS	A	A		A			B	
Approach Delay				9.6			10.1	
Approach LOS				A			B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Sunken Meadow Road at Kohr Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 1
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: Kohr Road
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		83	6	4	172	
Peak-Hour Factor, PHF		0.76	0.76	0.91	0.91	
Hourly Flow Rate, HFR		109	7	4	189	
Percent Heavy Vehicles		--	--	33	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	37		8			
Peak Hour Factor, PHF	0.65		0.65			
Hourly Flow Rate, HFR	56		12			
Percent Heavy Vehicles	5		28			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		4		68				
C(m) (vph)		1301		703				
v/c		0.00		0.10				
95% queue length		0.01		0.32				
Control Delay		7.8		10.7				
LOS		A		B				
Approach Delay				10.7				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst:	OSB
Agency/Co.:	Nelson & Pope
Date Performed:	3/14/2011
Analysis Time Period:	PM Peak Hour
Intersection:	Sunken Meadow Road at Kohr Rd
Jurisdiction:	
Units: U. S. Customary	
Analysis Year:	2014 Build Conditions Sce 1
Project ID:	St. Johnland Continuing Care Retirement-95124
East/West Street:	Sunken Meadow Road
North/South Street:	Kohr Road
Intersection Orientation: EW	Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		165	28	4	98	
Peak-Hour Factor, PHF		0.77	0.77	0.79	0.79	
Hourly Flow Rate, HFR		214	36	5	124	
Percent Heavy Vehicles		--	--	33	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	7		2			
Peak Hour Factor, PHF	0.69		0.69			
Hourly Flow Rate, HFR	10		2			
Percent Heavy Vehicles	33		50			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		5		12				
C(m) (vph)		1154		592				
v/c		0.00		0.02				
95% queue length		0.01		0.06				
Control Delay		8.1		11.2				
LOS		A		B				
Approach Delay				11.2				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: Sat Peak Hour
Intersection: Sunken Meadow Road at Kohr Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 1
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: Kohr Road
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		126	25	8	92	
Peak-Hour Factor, PHF		0.84	0.84	0.72	0.72	
Hourly Flow Rate, HFR		150	29	11	127	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	21		20			
Peak Hour Factor, PHF	0.53		0.53			
Hourly Flow Rate, HFR	39		37			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration	LR					

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		11		76				
C(m) (vph)		1397		762				
v/c		0.01		0.10				
95% queue length		0.02		0.33				
Control Delay		7.6		10.2				
LOS		A		B				
Approach Delay				10.2				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Old Dock Road and Site Drivewa
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 1
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Site Driveway
North/South Street: Old Dock Road
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	27	73			101	0
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.90
Hourly Flow Rate, HFR	29	79			109	0
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				0		14
Peak Hour Factor, PHF				0.92		0.92
Hourly Flow Rate, HFR				0		15
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/		No	/
Lanes				0	0	
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	29						15	
C(m) (vph)	1481						945	
v/c	0.02						0.02	
95% queue length	0.06						0.05	
Control Delay	7.5						8.9	
LOS	A						A	
Approach Delay							8.9	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: PM Peak Hour
Intersection: Old Dock Road and Site Drivewa
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 1
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Site Driveway
North/South Street: Old Dock Road
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	24	101			60	0
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.90
Hourly Flow Rate, HFR	26	109			65	0
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT				TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				0		26
Peak Hour Factor, PHF				0.92		0.92
Hourly Flow Rate, HFR				0		28
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	26						28	
C(m) (vph)	1537						999	
v/c	0.02						0.03	
95% queue length	0.05						0.09	
Control Delay	7.4						8.7	
LOS	A						A	
Approach Delay							8.7	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst:	OSB
Agency/Co.:	Nelson & Pope
Date Performed:	3/14/2011
Analysis Time Period:	Sat Peak Hour
Intersection:	Old Dock Road and Site Drivewa
Jurisdiction:	
Units: U. S. Customary	
Analysis Year:	2014 Build Conditions Sce 1
Project ID:	St. Johnland Continuing Care Retirement-95124
East/West Street:	Site Driveway
North/South Street:	Old Dock Road
Intersection Orientation:	NS
Study period (hrs):	0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	36	173			131	0
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.90
Hourly Flow Rate, HFR	39	188			142	0
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				0		31
Peak Hour Factor, PHF				0.92		0.92
Hourly Flow Rate, HFR				0		33
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	39						33	
C(m) (vph)	1441						906	
v/c	0.03						0.04	
95% queue length	0.08						0.11	
Control Delay	7.6						9.1	
LOS	A						A	
Approach Delay							9.1	
Approach LOS							A	

Build Capacity Analyses Scenario 2

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road

Inter.: NYS Route 25A at Sunken Meadow
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce 2
N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	5	14	43	57	61	91	128	576	28	45	739	8
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			4			2			1			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0				52.0			
Yellow	4.0				4.0			
All Red	2.0				3.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	553	1843	0.14	0.30	23.2	C	23.2	C
Westbound								
LTR	527	1757	0.46	0.30	26.3	C	26.3	C
Northbound								
L	187	312	0.77	0.60	31.0	C		
TR	1099	1832	0.62	0.60	14.0	B	17.0	B
Southbound								
L	305	509	0.17	0.60	8.3	A		
TR	1104	1840	0.76	0.60	18.2	B	17.6	B

Intersection Delay = 18.6 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB | Inter. : NYS Route 25A at Sunken Meadow
Agency: Nelson & Pope | Area Type: All other areas
Date: 3/8/2011 | Jurisd: NYSDOT
Period: PM Peak Hour | Year : 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road | N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	13	31	48	28	18	58	42	622	51	111	652	16
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			1			4			4			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	25.0					52.0		
Yellow	4.0					4.0		
All Red	2.0					3.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	574	1912	0.22	0.30	23.8	C	23.8	C
Westbound								
LTR	534	1780	0.23	0.30	23.9	C	23.9	C
Northbound								
L	277	461	0.18	0.60	8.4	A		
TR	1116	1860	0.71	0.60	16.5	B	16.0	B
Southbound								
L	228	380	0.53	0.60	12.9	B		
TR	1114	1857	0.65	0.60	14.8	B	14.5	B

Intersection Delay = 16.4 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Sunken Meadow Road

Inter.: NYS Route 25A at Sunken Meadow
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce 2
N/S St: NYS Route 25A

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	1	1	0	1	1	0
LGConfig		LTR			LTR		L	TR		L	TR	
Volume	16	23	30	30	20	63	51	662	45	81	670	30
Lane Width		16.0			16.0		12.0	12.0		12.0	12.0	
RTOR Vol			0			2			3			1

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	P			
Right	A				Right	P			
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	P			
Right	A				Right	P			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	25.0					52.0			
Yellow	4.0					4.0			
All Red	2.0					3.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	545	1818	0.15	0.30	23.2	C	23.2	C
Westbound								
LTR	547	1823	0.23	0.30	23.9	C	23.9	C
Northbound								
L	283	472	0.19	0.60	8.4	A		
TR	1120	1866	0.65	0.60	14.7	B	14.2	B
Southbound								
L	280	467	0.30	0.60	9.4	A		
TR	1118	1863	0.65	0.60	14.8	B	14.2	B

Intersection Delay = 15.3 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions - Sce 2
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	98	281	48	484	398	3	38	171	200	9	262	99
Lane Width	11.0	12.0		11.0	12.0			12.0	10.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
WB	Left	A	A			SB	Left	A			
	Thru	A	P				Thru	A			
	Right	A	P				Right	A			
	Peds						Peds				
NB	Right	A				EB	Right				
SB	Right					WB	Right				
Green		15.0	50.0					30.6			
Yellow		3.0	3.9					3.5			
All Red		0.0	2.0					2.0			

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	416	881	0.26	0.47	17.9	B		
TR	841	1782	0.44	0.47	21.0	C	20.3	C
Westbound								
L	630	1728	0.80	0.66	18.3	B		
TR	1149	1808	0.36	0.64	9.7	A	14.4	B
Northbound								
LT	392	1345	0.63	0.29	36.9	D	27.8	C
R	700	1463	0.34	0.48	18.1	B		
Southbound								
LTR	554	1898	0.75	0.29	40.9	D	40.9	D

Intersection Delay = 23.2 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce 2
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	63	398	75	276	322	10	75	191	371	9	131	31
Lane Width	11.0	12.0		11.0	12.0			12.0	10.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
WB	Left	A	A			SB	Left	A			
	Thru	A	P				Thru	A			
	Right	A	P				Right	A			
	Peds						Peds				
NB	Right	A				EB	Right				
SB	Right					WB	Right				
Green		15.0	50.0					30.6			
Yellow		3.0	3.9					3.5			
All Red		0.0	2.0					2.0			

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	442	936	0.15	0.47	16.7	B		
TR	861	1824	0.57	0.47	23.8	C	22.9	C
Westbound								
L	532	1711	0.65	0.66	14.3	B		
TR	1191	1874	0.35	0.64	9.6	A	11.7	B
Northbound								
LT	424	1453	0.70	0.29	39.5	D	29.2	C
R	713	1492	0.58	0.48	21.9	C		
Southbound								
LTR	573	1963	0.39	0.29	31.6	C	31.6	C

Intersection Delay = 22.0 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Pulaski Road
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions - Sce 2
N/S St: Pulaski Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	1	1	0	0	1	1	0	1	0
LGConfig	L	TR		L	TR			LT	R		LTR	
Volume	54	492	88	378	435	9	100	158	359	14	177	63
Lane Width	11.0	12.0		11.0	12.0			13.0	12.0		15.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
WB	Left	A	A			SB	Left	A			
	Thru	A	P				Thru	A			
	Right	A	P				Right	A			
	Peds						Peds				
NB	Right	A				EB	Right				
SB	Right					WB	Right				
Green		17.6	47.0					31.0			
Yellow		3.0	3.9					3.5			
All Red		0.0	2.0					2.0			

Cycle Length: 110.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	397	892	0.15	0.44	18.4	B		
TR	818	1841	0.81	0.44	34.8	C	33.4	C
Westbound								
L	422	1711	0.98	0.66	68.3	E		
TR	1185	1876	0.41	0.63	10.3	B	36.9	D
Northbound								
LT	326	1105	0.81	0.30	49.7	D	31.2	C
R	808	1599	0.45	0.51	17.9	B		
Southbound								
LTR	582	1970	0.57	0.30	34.1	C	34.1	C

Intersection Delay = 34.2 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions-Sce 2
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	6	351	40	152	788	49	81	75	78	94	124	18
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			3			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		A			NB Left A			
Thru		P			Thru A			
Right		P			Right A			
Peds					Peds			
WB Left	A	A			SB Left A			
Thru	A	P			Thru A			
Right	A	P			Right A			
Peds					Peds			
NB Right	A				EB Right			
SB Right					WB Right			
Green	15.0	53.0			37.3			
Yellow	3.0	3.5			3.5			
All Red	0.0	2.7			2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	884	1946	0.52	0.45	25.5	C	25.5	C
Westbound								
L	542	1668	0.30	0.63	11.5	B		
TR	1051	1739	0.86	0.60	26.6	C	24.3	C
Northbound								
L	318	984	0.31	0.32	31.2	C		
T	551	1705	0.17	0.32	29.2	C	25.7	C
R	775	1568	0.12	0.49	16.4	B		
Southbound								
L	395	1222	0.33	0.32	31.3	C		
T	571	1766	0.31	0.32	30.8	C	30.8	C
R	511	1580	0.05	0.32	28.0	C		

Intersection Delay = 25.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions - Sce 2
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	13	619	101	157	576	39	100	128	255	57	160	19
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			5			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		A			NB Left	A			
Thru		P			Thru	A			
Right		P			Right	A			
Peds					Peds				
WB Left	A	A			SB Left	A			
Thru	A	P			Thru	A			
Right	A	P			Right	A			
Peds					Peds				
NB Right	A				EB Right				
SB Right					WB Right				
Green	10.0	61.0				34.3			
Yellow	3.0	3.5				3.5			
All Red	0.0	2.7				2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	1009	1938	0.78	0.52	29.3	C	29.3	C
Westbound								
L	407	1668	0.40	0.66	12.5	B		
TR	1093	1738	0.58	0.63	13.8	B	13.5	B
Northbound								
L	265	888	0.45	0.30	35.3	D		
T	509	1705	0.30	0.30	32.7	C	29.1	C
R	670	1568	0.44	0.43	24.7	C		
Southbound								
L	314	1051	0.23	0.30	32.1	C		
T	527	1766	0.39	0.30	33.8	C	33.1	C
R	471	1580	0.05	0.30	30.0	C		

Intersection Delay = 24.6 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A

Inter.: NYS Route 25A at Church St
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce 2
N/S St: Church St/Indian Head Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	1	1	0	1	1	1	1	1	1
LGConfig		LTR		L	TR		L	T	R	L	T	R
Volume	12	663	168	285	675	69	165	181	220	101	194	50
Lane Width		15.0		10.0	11.0		11.0	10.0	12.0	10.0	11.0	14.0
RTOR Vol			0			0			1			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		A			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
WB	Left	A	A			SB	Left	A			
	Thru	A	P				Thru	A			
	Right	A	P				Right	A			
	Peds						Peds				
NB	Right	A				EB	Right				
SB	Right					WB	Right				
Green		12.3	60.0					33.0			
Yellow		3.0	3.5					3.5			
All Red		0.0	2.7					2.0			

Cycle Length: 120.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	1008	1967	0.87	0.51	36.1	D	36.1	D
Westbound								
L	390	1620	0.76	0.67	23.5	C		
TR	1134	1772	0.68	0.64	15.5	B	17.7	B
Northbound								
L	253	881	0.72	0.29	48.3	D		
T	500	1739	0.40	0.29	35.0	C	34.2	C
R	670	1538	0.36	0.44	23.0	C		
Southbound								
L	252	875	0.42	0.29	35.8	D		
T	523	1818	0.39	0.29	34.8	C	34.6	C
R	495	1723	0.11	0.29	31.5	C		

Intersection Delay = 28.8 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: NYS Route 25A/Rose St

Inter.: NYS Route 25A at St Johnland R
Area Type: All other areas
Jurisd: NYSDOT
Year : 2014 Build Conditions -Sce 2
N/S St: NYS Route 25A/St Johnland Rd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	0	1	0	0	1	0	0	1	0
LGConfig		LT	R		LTR			LTR			LTR	
Volume	22	184	297	5	167	5	325	45	12	6	99	71
Lane Width		11.0	11.0		16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	A		
Right	P				Right	A		
Peds					Peds			
WB Left	A				SB Left		A	
Thru	P				Thru		A	
Right	P				Right		A	
Peds					Peds			
NB Right					EB Right	A		
SB Right					WB Right			
Green	26.6					30.0	17.0	
Yellow	3.5					3.6	3.5	
All Red	2.0					2.0	1.8	

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	520	1666	0.43	0.31	27.2	C	14.2	B
R	1012	1432	0.32	0.71	5.2	A		
Westbound								
LTR	647	2071	0.28	0.31	24.4	C	24.4	C
Northbound								
LTR	659	1876	0.68	0.35	27.8	C	27.8	C
Southbound								
LTR	401	1940	0.51	0.21	32.7	C	32.7	C

Intersection Delay = 22.7 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: Sat Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Church St
Area Type: All other areas
Jurisd:
Year : 2014 Build Conditions -Sce 2
N/S St: Church St

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	85	161	59	181	175	23	44	106	135	19	113	81
Lane Width		14.0			11.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	P		
Right	A				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	45.0					32.0		
Yellow	4.0					4.0		
All Red	2.5					2.5		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	794	1521	0.53	0.52	15.0	B	15.0	B
Westbound								
LTR	589	1128	0.80	0.52	25.7	C	25.7	C
Northbound								
LTR	678	1795	0.58	0.38	25.8	C	25.8	C
Southbound								
LTR	723	1913	0.33	0.38	21.1	C	21.1	C

Intersection Delay = 22.0 (sec/veh) Intersection LOS = C

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: AM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Sunken Meadow
Area Type: All other areas
Jurisd:
Year : 2014 Build Conditions -Sce 2
N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	5	53	25	63	143	11	33	7	34	11	14	4
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			0			0			4			1

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	P					Thru	P			
	Right	P					Right	P			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	P					Thru	P			
	Right	P					Right	P			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						30.0			
Yellow		4.0						4.0			
All Red		1.5						1.5			

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	873	1936	0.12	0.45	11.6	B	11.6	B
Westbound								
LTR	832	1846	0.37	0.45	14.2	B	14.2	B
Northbound								
LTR	795	1765	0.12	0.45	11.6	B	11.6	B
Southbound								
LTR	814	1805	0.04	0.45	11.0	B	11.0	B

Intersection Delay = 13.0 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB
Agency: Nelson & Pope
Date: 7/14/2011
Period: PM Peak Hour
Project ID: St. Johnland Continuing Care Retirement - 95124
E/W St: Old Dock Road

Inter.: Old Dock Road at Sunken Meadow
Area Type: All other areas
Jurisd:
Year : 2014 Build Conditions -Sce 2
N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	4	170	23	26	60	14	14	19	68	16	12	5
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			0			0			0			0

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru	P					Thru	P			
	Right	P					Right	P			
	Peds						Peds				
WB	Left	A				SB	Left	A			
	Thru	P					Thru	P			
	Right	P					Right	P			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0						30.0			
Yellow		4.0						4.0			
All Red		1.5						1.5			

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group	Adj Sat Flow Rate (s)	Ratios		Lane Group		Approach	
	Capacity		v/c	g/C	Delay	LOS	Delay	LOS
Eastbound								
LTR	928	2058	0.28	0.45	13.0	B	13.0	B
Westbound								
LTR	830	1842	0.15	0.45	11.9	B	11.9	B
Northbound								
LTR	832	1846	0.14	0.45	11.8	B	11.8	B
Southbound								
LTR	783	1737	0.07	0.45	11.3	B	11.3	B

Intersection Delay = 12.3 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.4

Analyst: OSB	Inter.: Old Dock Road at Sunken Meadow
Agency: Nelson & Pope	Area Type: All other areas
Date: 7/14/2011	Jurisd:
Period: Sat Peak Hour	Year : 2014 Build Conditions -Sce 2
Project ID: St. Johnland Continuing Care Retirement - 95124	
E/W St: Old Dock Road	N/S St: Sunken Meadow Rd/St Johnl Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LTR			LTR			LTR	
Volume	22	85	28	59	97	32	17	88	68	46	45	7
Lane Width		16.0			16.0			16.0			16.0	
RTOR Vol			2			10			18			2

Duration 0.25 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
WB Left	A				SB Left	A		
Thru	P				Thru	P		
Right	P				Right	P		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0				30.0			
Yellow	4.0				4.0			
All Red	1.5				1.5			

Cycle Length: 71.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LTR	882	1957	0.22	0.45	12.5	B	12.5	B
Westbound								
LTR	803	1781	0.28	0.45	13.1	B	13.1	B
Northbound								
LTR	902	2001	0.18	0.45	12.1	B	12.1	B
Southbound								
LTR	803	1781	0.13	0.45	11.7	B	11.7	B

Intersection Delay = 12.5 (sec/veh) Intersection LOS = B

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 7/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Sunken Meadow Road at East Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: East Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	18	67			133	45
Peak-Hour Factor, PHF	0.76	0.76			0.82	0.82
Hourly Flow Rate, HFR	23	88			162	54
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				14		9
Peak Hour Factor, PHF				0.88		0.88
Hourly Flow Rate, HFR				15		10
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	23						25	
C(m) (vph)	1354						726	
v/c	0.02						0.03	
95% queue length	0.05						0.11	
Control Delay	7.7						10.1	
LOS	A						B	
Approach Delay							10.1	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 7/14/2011
Analysis Time Period: PM Peak Hour
Intersection: Sunken Meadow Road at East Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: East Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	3	155			63	15
Peak-Hour Factor, PHF	0.83	0.83			0.79	0.79
Hourly Flow Rate, HFR	3	186			79	18
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				41		14
Peak Hour Factor, PHF				0.58		0.58
Hourly Flow Rate, HFR				70		24
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	3						94	
C(m) (vph)	1496						761	
v/c	0.00						0.12	
95% queue length	0.01						0.42	
Control Delay	7.4						10.4	
LOS	A						B	
Approach Delay							10.4	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 7/14/2011
Analysis Time Period: Sat Peak Hour
Intersection: Sunken Meadow Road at East Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: East Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	12	122			102	19
Peak-Hour Factor, PHF	0.74	0.74			0.86	0.86
Hourly Flow Rate, HFR	16	164			118	22
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				13		7
Peak Hour Factor, PHF				0.75		0.75
Hourly Flow Rate, HFR				17		9
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	16						26	
C(m) (vph)	1443						733	
v/c	0.01						0.04	
95% queue length	0.03						0.11	
Control Delay	7.5						10.1	
LOS	A						B	
Approach Delay							10.1	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 7/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Sunken Meadow Road at West Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: West Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	27	81	0	1	120	21
Peak-Hour Factor, PHF	0.82	0.82	0.92	0.92	0.88	0.88
Hourly Flow Rate, HFR	32	98	0	1	136	23
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	2	3	0	8
Peak Hour Factor, PHF	0.92	0.93	0.92	0.32	0.32	0.32
Hourly Flow Rate, HFR	1	0	2	9	0	25
Percent Heavy Vehicles	0	0	0	2	0	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	32	1		3			34	
C(m) (vph)	1420	1508		804			806	
v/c	0.02	0.00		0.00			0.04	
95% queue length	0.07	0.00		0.01			0.13	
Control Delay	7.6	7.4		9.5			9.7	
LOS	A	A		A			A	
Approach Delay				9.5			9.7	
Approach LOS				A			A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst:	OSB
Agency/Co.:	Nelson & Pope
Date Performed:	7/14/2011
Analysis Time Period:	PM Peak Hour
Intersection:	Sunken Meadow Road at West Drw
Jurisdiction:	
Units: U. S. Customary	
Analysis Year:	2014 Build Conditions Sce 2
Project ID:	St. Johnland Continuing Care Retirement-95124
East/West Street:	Sunken Meadow Road
North/South Street:	West Driveway
Intersection Orientation: EW	Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	4	145	1	2	72	4
Peak-Hour Factor, PHF	0.85	0.85	0.92	0.92	0.86	0.86
Hourly Flow Rate, HFR	4	170	1	2	83	4
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	1	12	0	25
Peak Hour Factor, PHF	0.92	0.92	0.92	0.37	0.37	0.37
Hourly Flow Rate, HFR	1	0	1	32	0	67
Percent Heavy Vehicles	0	0	0	2	0	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	4	2		2			99	
C(m) (vph)	1509	1418		720			856	
v/c	0.00	0.00		0.00			0.12	
95% queue length	0.01	0.00		0.01			0.39	
Control Delay	7.4	7.5		10.0+			9.8	
LOS	A	A		B			A	
Approach Delay				10.0+			9.8	
Approach LOS				B			A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 7/14/2011
Analysis Time Period: Sat Peak Hour
Intersection: Sunken Meadow Road at West Drw
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: West Driveway
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	2	126	1	2	101	5
Peak-Hour Factor, PHF	0.84	0.84	0.92	0.92	0.70	0.70
Hourly Flow Rate, HFR	2	150	1	2	144	7
Percent Heavy Vehicles	2	--	--	0	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	0	1	7	0	6
Peak Hour Factor, PHF	0.92	0.92	0.92	0.56	0.92	0.56
Hourly Flow Rate, HFR	1	0	1	12	0	10
Percent Heavy Vehicles	0	0	0	2	0	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	2	2		2			22	
C(m) (vph)	1430	1442		747			739	
v/c	0.00	0.00		0.00			0.03	
95% queue length	0.00	0.00		0.01			0.09	
Control Delay	7.5	7.5		9.8			10.0+	
LOS	A	A		A			B	
Approach Delay				9.8			10.0+	
Approach LOS				A			B	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Sunken Meadow Road at Kohr Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: Kohr Road
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		81	6	4	172	
Peak-Hour Factor, PHF		0.76	0.76	0.91	0.91	
Hourly Flow Rate, HFR		106	7	4	189	
Percent Heavy Vehicles		--	--	33	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes		1	0	0	1	
Configuration			TR	LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	37		8			
Peak Hour Factor, PHF	0.65		0.65			
Hourly Flow Rate, HFR	56		12			
Percent Heavy Vehicles	5		28			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		4		68				
C(m) (vph)		1304		705				
v/c		0.00		0.10				
95% queue length		0.01		0.32				
Control Delay		7.8		10.7				
LOS		A		B				
Approach Delay				10.7				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 7/14/2011
Analysis Time Period: PM Peak Hour
Intersection: Sunken Meadow Road at Kohr Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: Kohr Road
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		165	28	4	97	
Peak-Hour Factor, PHF		0.77	0.77	0.79	0.79	
Hourly Flow Rate, HFR		214	36	5	122	
Percent Heavy Vehicles		--	--	33	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	7		2			
Peak Hour Factor, PHF	0.69		0.69			
Hourly Flow Rate, HFR	10		2			
Percent Heavy Vehicles	33		50			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		5		12				
C(m) (vph)		1154		593				
v/c		0.00		0.02				
95% queue length		0.01		0.06				
Control Delay		8.1		11.2				
LOS		A		B				
Approach Delay				11.2				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 7/14/2011
Analysis Time Period: Sat Peak Hour
Intersection: Sunken Meadow Road at Kohr Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Sunken Meadow Road
North/South Street: Kohr Road
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		125	25	8	91	
Peak-Hour Factor, PHF		0.84	0.84	0.72	0.72	
Hourly Flow Rate, HFR		148	29	11	126	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	21		20			
Peak Hour Factor, PHF	0.53		0.53			
Hourly Flow Rate, HFR	39		37			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		11		76				
C(m) (vph)		1399		764				
v/c		0.01		0.10				
95% queue length		0.02		0.33				
Control Delay		7.6		10.2				
LOS		A		B				
Approach Delay				10.2				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: AM Peak Hour
Intersection: Old Dock Road and Site Drivewa
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Site Driveway
North/South Street: Old Dock Road
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	73			101	0
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.90
Hourly Flow Rate, HFR	5	79			109	0
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				0		15
Peak Hour Factor, PHF				0.92		0.92
Hourly Flow Rate, HFR				0		16
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	5						16	
C(m) (vph)	1481						945	
v/c	0.00						0.02	
95% queue length	0.01						0.05	
Control Delay	7.4						8.9	
LOS	A						A	
Approach Delay							8.9	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 3/14/2011
Analysis Time Period: PM Peak Hour
Intersection: Old Dock Road and Site Drivewa
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Site Driveway
North/South Street: Old Dock Road
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	14	101			60	0
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.90
Hourly Flow Rate, HFR	15	109			65	0
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration		LT				TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				0		9
Peak Hour Factor, PHF				0.92		0.92
Hourly Flow Rate, HFR				0		9
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	15						9	
C(m) (vph)	1537						999	
v/c	0.01						0.01	
95% queue length	0.03						0.03	
Control Delay	7.4						8.6	
LOS	A						A	
Approach Delay							8.6	
Approach LOS							A	

HCS+: Unsignalized Intersections Release 5.4

TWO-WAY STOP CONTROL SUMMARY

Analyst: OSB
Agency/Co.: Nelson & Pope
Date Performed: 7/14/2011
Analysis Time Period: Sat Peak Hour
Intersection: Old Dock Road and Site Drivewa
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2014 Build Conditions Sce 2
Project ID: St. Johnland Continuing Care Retirement-95124
East/West Street: Site Driveway
North/South Street: Old Dock Road
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	13	173			131	0
Peak-Hour Factor, PHF	0.92	0.92			0.92	0.90
Hourly Flow Rate, HFR	14	188			142	0
Percent Heavy Vehicles	2	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1			1	0
Configuration	LT					TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				0		11
Peak Hour Factor, PHF				0.92		0.92
Hourly Flow Rate, HFR				0		11
Percent Heavy Vehicles				2		2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		No /
Lanes				0		0
Configuration					LR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT						LR	
v (vph)	14						11	
C(m) (vph)	1441						906	
v/c	0.01						0.01	
95% queue length	0.03						0.04	
Control Delay	7.5						9.0	
LOS	A						A	
Approach Delay							9.0	
Approach LOS							A	

APPENDIX M

COMMUNITY SERVICE CORRESPONDENCE

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

April 5, 2011

National Grid
8302-8624 Ditmas Avenue
Building #31
Brooklyn, NY 11236
attn: Richard P. Petraglia, Lead Account Executive

Re: St. Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review
NPV # 95124

Dear Mr. Petraglia:

Nelson, Pope & Voorhis, LLC is an environmental and planning consulting firm located in Melville. We are currently preparing a Draft Environmental Impact Statement (DEIS) on behalf of the Town of Smithtown for a proposed project located on the southwestern corner of the intersection of Saint Johnland Road and Old Dock Road, Kings Park in the Town of Smithtown (see attached location map). The proposed project involves the change of zone of a 49.69-acre property from Residential R-43 to Retirement Community (RC) for development of a 199-unit Continuing Care Retirement Community (CCRC) made up of 175 independent living units (28 townhouses and 147 apartment units) and 24 units of assisted living. CCRC developments provide for a housing and health care alternative for residents 62 years or older, in the form of congregate housing that maintains a program of continuing health care, and provides ancillary support areas and services designed to maximize independence of residents as their age advances.

I am writing to obtain information in regard to gas service available to the site. It is understood that the proposed project is in the early review stages and specific load information is unavailable at this time. However, general information such as locations and size of the supply lies in the vicinity of the subject site would be helpful during preliminary environmental impact review.

If you have any further detailed input with regard to the ability to provide services to this project, please provide an explanation so that this may be considered in the review process. Your responses will be included in the DEIS submitted for review by the Town of Smithtown.

If you should have any questions or require additional information, please do not hesitate to contact me at (631) 427-5665 or kmccabe@nelsonpope.com.

Very truly yours,
NELSON, POPE AND VOORHIS, LLC

Kristen L. McCabe
Environmental Planner

nationalgrid

8302-8624 Ditmas Avenue
Building #31
Brooklyn, NY 11236

RICHARD P. PETRAGLIA
LEAD ACCOUNT EXECUTIVE
ARCHITECTS /ENGINEERS
Channel Management
718-270-0137

April 18, 2011

Kristen L. McCabe
Nelson, Pope & Voorhis, LLC
572 Walt Whitman Road
Melville, NY 11747-2188

Re: St Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review – NPV #95124

Dear Ms. McCabe,

We have reviewed your documentation for the proposed St Johnland Continuing Care Retirement Community project located on Saint Johnland Road and Old Dock Road in Kings Park. As requested, please be advised that our preliminary review indicates that National Grid would most likely be able to provide gas service to the above referenced project in accordance with our filed tariff and schedules in effect at the time service is required. Our maps indicate high pressure gas in the project vicinity.

A formal engineering analysis will be required to officially confirm the above information and to determine any upfront customer contribution requirements. Please note that the nearest gas to the west may require a significant customer contribution and main work. Please submit a formal load letter listing all equipment and their associated gas loads, operating pressure requirements and efficiencies to www.myngrid.com/GLDS., along with a scaled plot plan indicating the proposed point of entry and the meter room.

Once submitted I will also provide you with the contact information of the assigned sales representative who will process your service application. Please feel free to contact me at (718) 270-0137 if you require further information.

Sincerely,

Richard P. Petraglia
Lead Account Executive
Architect/Engineer (A/E) Program

Tel: (718) 270-1037
Fax: (718) 270-5756
Email: Richard.Petraglia@us.ngrid.com

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

February 1, 2011

Suffolk County Water Authority
FOIL Request
PO Box 38
Oakdale, NY 11769

Re: St. Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review
NPV # 95124

To Whom It May Concern:

Nelson, Pope & Voorhis, LLC is an environmental and planning consulting firm located in Melville. We are currently preparing a Draft Environmental Impact Statement (DEIS) for a proposed project located on the southwestern corner of the intersection of Saint Johnland Road and Old Dock Road, Kings Park in the Town of Smithtown (see attached location map). The proposed project involves the change of zone of a 49.69-acre property from Residential R-43 to Retirement Community (RC) for development of a 199-unit Continuing Care Retirement Community (CCRC). CCRC developments provide for a housing and health care alternative for residents 62 years or older, in the form of congregate housing that maintain a program of continuing health care, and provides ancillary support areas and services designed to maximize independence of residents as their age advances.

I would like to request the following information (which may be contained in the District's Annual Water Report):

- The locations of the SCWA's supply and/or monitoring wells within 1,000 feet of the site;
- The locations of the SCWA's supply wells which would serve the site, if applicable;
- The aquifer from which each of the above wells pumps including any wells down gradient of the site;
- Untreated water quality test results from the last three years for the above wells;
- If applicable, information on the nature and extent of any water quality and/or water supply problems in the area;
- Will the project require a new or extended supply line to serve the site?

If you have any further input with regard to the ability to provide services to this project, please provide an explanation so that this may be considered in the review process. Your responses will be included in the DEIS submitted for review by the Town of Smithtown.

If you should have any questions or require additional information, please do not hesitate to contact me at (631) 427-5665 or kmccabe@nelsonpope.com.

Very truly yours,
NELSON, POPE & VOORHIS, LLC

Kristen L. McCabe
Environmental Planner

File

SUFFOLK COUNTY WATER AUTHORITY

Timothy J. Hopkins
General Counsel

Administrative Offices: 4060 Sunrise Highway, Oakdale, NY 11769-0901
(631) 563-0236
Fax (631) 563-0370

February 10, 2011

RECEIVED
FEB 14 2011
NELSON & POPE

Kristen L. McCabe
Nelson, Pope & Voorhis, LLC
572 Walt Whitman Road
Melville, NY 11747

RE: Request - Locale of Public Supply Wells located within a 1,000 foot radius of Proposed: St. Johnland Continuing Care Retirement Center

Dear Ms. McCabe:

The above referenced request is acknowledged. It will take approximately three weeks to assemble any such records and/or make a determination as to their availability under the Public Officers Law.

You will be contacted with respect to the amount of production charges, if any, associated with the available records. If you have any questions in this matter, please feel free to contact me at 631-563-0375.

Very truly yours,

Kimberly Kennedy
Assistant to General Counsel

SUFFOLK COUNTY WATER AUTHORITY

Timothy J. Hopkins
General Counsel

Administrative Offices: 4060 Sunrise Highway, Oakdale, NY 11769-0901
(631) 563-0236
Fax (631) 563-0370

February 28, 2011

RECEIVED
MAR 0 2 2011
NELSON & POPE

Kristen L. McCabe
Nelson, Pope & Voorhis, LLC
572 Walt Whitman Road
Melville, NY 11747

RE: Request - Locale of Public Supply Wells located within a 1,000 foot radius of Proposed: St. Johnland Continuing Care Retirement Center

Dear Ms. McCabe:

The Suffolk County Water Authority has assembled, reviewed and downloaded on disc the SCWA well data you requested.

New York State Public Officers Law, Article 6, Section 87-1 (c) (i), allows a public agency to charge for the reproduction of requested records. The cost of reproducing the requested records is $152.76.

Kindly remit a check made payable to the Suffolk County Water Authority to my attention. Upon receipt of the check, the records will be forwarded to you.

Very truly yours,

Kimberly Kennedy
Assistant to General Counsel

SUFFOLK COUNTY WATER AUTHORITY

Timothy J. Hopkins
General Counsel

Administrative Offices: 4060 Sunrise Highway, Oakdale, New York 11769-0901
(631) 563-0236
Fax (631) 563-0370

April 12, 2011

RECEIVED
APR 14 2011
NELSON & POPE

Kristen L. McCabe
Nelson, Pope & Voorhis, LLC
572 Walt Whitman Road
Melville, NY 11747

RE: Request - Locale of Public Supply Wells located within a 1,000 foot radius of Proposed: St. Johnland Continuing Care Retirement Center

Dear Ms. McCabe:

Pursuant to your request, please be advised that the SCWA does not have any public supply wells located within a 1,000 feet of the subject project.

While SCWA has an integrated water supply system, the following wells could serve the captioned project. Well data for the wells identified below are provided on disc.

Sunken Meadow State Park Well Field, Pump Station & Booster Station - Magothy
N/S of 25A, E/S of Sunken Meadow State Parkway
Kings Park

Middleville Road Well Field, Pump Station& Standpipe - Magothy
S/S of Middleville Road, Approximately 2300' W/O Old Bridge Road
60 Middleville Road
Middleville Town of Huntington

Wayne Court Well Field & Pump Station - Screened in sandy section of the Raritan Clay
E/S of Wayne Court, Approximately 910' S/O Mountain View Drive
20A Wayne Court, Northport
Fort Salonga Town of Huntington

Very truly yours,

Kimberly Kennedy
Assistant to General Counsel

Enc.
Disc.

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

April 5, 2011

Smithtown Municipal Services Facility
85 Old Northport Road
Kings Park, NY 11754
Attn: Mathew Gorecki, Jr. - Sanitation Supervisor

Re: St. Johnland Continuing Care Retirement Community (CCRC) Environmental Impact Review NPV # 95124

Dar Mr. Gorecki:

Nelson, Pope & Voorhis, LLC is an environmental and planning consulting firm located in Melville. We are currently preparing a Draft Environmental Impact Statement (DEIS) on behalf of the Town of Smithtown for a proposed project located on the southwestern corner of the intersection of Saint Johnland Road and Old Dock Road, Kings Park in the Town of Smithtown (see attached location map). The proposed project involves the change of zone of a 49.69-acre property from Residential R-43 to Retirement Community (RC) for development of a 199-unit Continuing Care Retirement Community (CCRC) made up of 175 independent living units (28 townhouses and 147 apartment units) and 24 units of assisted living. CCRC developments provide for a housing and health care alternative for residents 62 years or older, in the form of congregate housing that maintains a program of continuing health care, and provides ancillary support areas and services designed to maximize independence of residents as their age advances.

The proposed project will generate approximately 15 tons of solid waste per month, based on 3.5 pounds per capita, with an estimated 287 total residents. It is anticipated that a private hauler will be utilized for garbage pickup on the site. We are writing to obtain information in regard to the solid waste facilities which may be pertinent to the project. Specifically, I am requesting the following:

- The yearly tonnage of solid waste disposed of at the Town's facility
- The percentage or tonnage breakdown of waste disposition (i.e. recycled, incinerated, landfilled), and where is waste disposed of via these routes?
- Confirmation that the Town will accept waste from the project (should the private hauler choose to utilize the municipal facility);
- Are there any waste regulations specific to these uses which should be considered in connection with this application?

If you have any further input with regard to the ability to provide services to this project, please provide an explanation so that this may be considered in the review process. Your responses will be included in the DEIS submitted for review by the Town of Smithtown.

If you should have any questions or require additional information, please do not hesitate to contact me at (631) 427-5665 or kmccabe@nelsonpope.com.

Very truly yours,
NELSON, POPE AND VOORHIS, LLC

Kristen L. McCabe
Environmental Planner

TOWN OF SMITHTOWN

SUPERVISOR
PATRICK R. VECCHIO

TOWN COUNCIL
THOMAS J. McCARTHY
EDWARD R. WEHRHEIM
ROBERT J. CREIGHTON
KEVIN J. MALLOY

MAIN OFFICE (631) 360-7514
WASTE MANAGEMENT (631) 754-4998
FAX: (631) 360-0227
dew@tosgov.com

DEPARTMENT OF
ENVIRONMENT &
WATERWAYS

RUSSELL K. BARNETT
DIRECTOR

April 14, 2011

RECEIVED
APR 20 2011
NELSON & POPE

Nelson, Pope & Voorhis, LLC
Attn: Ms. Kristen L. McCabe
572 Walt Whitman Road
Melville, New York 11747-2188

Re: St. Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review NPV # 95124

Dear Ms. McCabe

I am in receipt of your letter dated April 5, 2011 to Mr. Gorecki (attached) regarding the request of miscellaneous solid waste information in connection with DEIS reporting for the above referenced project. Below please find clarification and information pursuant to your request:

- The above referenced project is subject to the Nonresidential Solid Waste Disposal Capacity Generation Fee program pursuant to the Smithtown Town Code Ch.177 § 102 & 103. The CCRC shall be billed directly by the Town based on waste generation volumes. Procurement of a private hauling contractor is at the discretion the facility.
- The Town of Smithtown generated approximately 51,882 tons of residential solid waste and 50,470 tons of nonresidential (commercial) solid waste in 2010. The foregoing tonnages are representative of a typical year and consistent with waste generation trends. All of the combined solid waste was delivered and disposed of at the Huntington Resource Recovery Facility (HRRF) energy from waste facility.
- The Town of Smithtown collected approximately 8,257 tons of recyclables consisting of paper, cardboard, plastic, glass, aluminum and other metals. All of the combined recyclables were delivered and processed at the Town of Smithtown Municipal Recycling Facility in Kings Park. The entire volume of said recyclables was marketed and delivered for reuse.
- The Town of Smithtown does not have an operating disposal facility (i.e. landfill) except for the processing of residential and some commercial recyclables. Nonresidential facilities are required to recycle cardboard and are encouraged to recycle other paper material and comingled recyclables.

- Town generated residential and most nonresidential (commercial) waste is processed at the HRRF on Townline Road in East Northport. This facility is shared by the Towns of Huntington and Smithtown and is operated by Covanta Energy.
- The Town will accept the CCRC facility solid waste at the HRRF pursuant to the Nonresidential Solid Waste Disposal Capacity Generation Fee program.
- The proposed facility and its waste contractors are subject to all licensing, permitting and fees as indicated in Chapter 177 of the Smithtown Town Code. Many commercial carters performing solid waste removal services in Smithtown are familiar with regulatory and program requirements.

For additional information, you may visit the Smithtown website at smithtowninfo.com or you may contact this office at (631) 360-7514.

Very truly yours,

Michael P. Engelmann,
Solid Waste Coordinator

Cc: Russell K. Barnett, Environmental Protection Director
Howard Barton 3rd, Assistant Environmental Protection Director
Mathew Gorecki, Jr., Sanitation Supervisor

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

April 5, 2011

LIPA
Attn: Electric Design and Construction
1650 Islip Avenue
Brentwood, NY 11717

Re: St. Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review
NPV # 95124

To Whom It May Concern:

Nelson, Pope & Voorhis, LLC is an environmental and planning consulting firm located in Melville. We are currently preparing a Draft Environmental Impact Statement (DEIS) on behalf of the Town of Smithtown for a proposed project located on the southwestern corner of the intersection of Saint Johnland Road and Old Dock Road, Kings Park in the Town of Smithtown (see attached location map). The proposed project involves the change of zone of a 49.69-acre property from Residential R-43 to Retirement Community (RC) for development of a 199-unit Continuing Care Retirement Community (CCRC) made up of 175 independent living units (28 townhouses and 147 apartment units) and 24 units of assisted living. CCRC developments provide for a housing and health care alternative for residents 62 years or older, in the form of congregate housing that maintains a program of continuing health care, and provides ancillary support areas and services designed to maximize independence of residents as their age advances.

I am writing to obtain information in regard to electric service available to the site. It is understood that the proposed project is in the early review stages and specific load information is unavailable at this time. However, general information such as locations of supply lies in the vicinity of the subject site would be helpful during preliminary environmental impact review.

If you have any further input with regard to the ability to provide services to this project, please provide an explanation so that this may be considered in the review process. Your responses will be included in the DEIS submitted for review by the Town of Smithtown.

If you should have any questions or require additional information, please do not hesitate to contact me at (631) 427-5665 or kmccabe@nelsonpope.com.

Very truly yours,
NELSON, POPE AND VOORHIS, LLC

Kristen L. McCabe
Environmental Planner

LIPA
Long Island Power Authority
175 E. Old Country Road
Hicksville, NY 11801

RECEIVED
MAY 18 2011
NELSON & POPE

May 16, 2011

Nelson, Pope, & Voorhis, LLC
572 Walt Whitman Road
Melville, NY 11747
Attn: Kristen McCabe

Re: Letter of Availability – Map of Saint Johnland Continuing Care Retirement Community s/w/c of Sunken Meadow Rd, (St. Johnland Rd) and Old Dock Rd, Kings Park, NY

LIPA Job Ref.# T101225245

Dear Sir or Madam:

As requested, please be advised that the Long Island Power Authority will provide service to the above referenced project in accordance with our filed tariff and schedules in effect at the time service is required.

Please feel free to contact our Customer Order Fulfillment office at (631) 348-6044 if you require any further information.

Very truly yours,

A. Stallone

Anthony Stallone, Manager
Customer Order Fulfillment

AS/ljm

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL PLANNING CONSULTING
PH: (631) 427-5665
FAX: (631) 427-5620
572 Walt Whitman Road
Melville, NY 11747

Transmittal Letter

TO: New York State Office of Parks,
Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island Resource Center
P.O. Box 189
Waterford, NY 12188-0189

Date: Thursday, April 07, 2011

Re: St. Johnland Continuing Care Retirement Community (CCRC)

NP&V # 95124

VIA:

X **Regular Mail**

Fedex

By Messenger

Enclosed please find the following:

Quantity	Description
1	Project Review Cover Form
1	Project Description
3	Phase I Archaeological Investigations on the Old Dock Road Property, Kings Park

Greetings:
Please find the enclosed materials sent per Kristen McCabe's request. Please do not hesitate to contact me should you have any questions or need further assistance. Thank you.

Sincerely,

NELSON, POPE & VOORHIS, LLC

By: Ashley Marciszyn x215

cc: File

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island Resource Center, PO Box 189, Waterford, NY 12188-0189 (Mail)
Delaware Avenue, Cohoes 12047 (Delivery) (518) 237-8643

PROJECT REVIEW COVER FORM

Rev. 5-05

*Please complete this form and attach it to the top of **any and all information submitted to this office** for review. Accurate and complete forms will assist this office in the timely processing and response to your request.*

This information relates to a previously submitted project.

PROJECT NUMBER ____ **PR**_____

COUNTY _____

☐ If you have checked this box and noted the previous Project Review (PR) number assigned by this office you do not need to continue unless any of the required information below has changed.

---

2. This is a new project. ☑ If you have checked this box you will need to complete ALL of the following information.

Project Name St. Johnland Continuing Care Retirement Community (CCRC)

Location S/w/c/o Saint Johnland Road/Old Dock Road intersection
You MUST include street number, street name and/or County, State or Interstate route number if applicable

City/Town/Village Town of Smithtown (Hamlet of Kings Park)
List the correct municipality in which your project is being undertaken. If in a hamlet you must also provide the name of the town.

County Suffolk County
If your undertaking* covers multiple communities/counties please attach a list defining all municipalities/counties included.

TYPE OF REVIEW REQUIRED/REQUESTED (Please answer both questions)

A. Does this action involve a permit approval or funding, now or ultimately from any other governmental agency?

☐ No ☑ Yes

If Yes, list agency name(s) and permit(s)/approval(s)

Agency involved	Type of permit/approval	State	Federal
Town Board	Change of Zone	☐	☐
Planning Board	Site Plan	☐	☐
Health Department	Sanitary System	☐	☐

B. Have you consulted the NYSHPO web site at **http://nysparks.state.ny.us to determine the preliminary presence or absence of previously identified cultural resources within or adjacent to the project area? If yes: ☑ Yes ☐ No

Was the project site wholly or partially included within an identified archeologically sensitive area? ☑ Yes ☐ No

Does the project site involve or is it substantially contiguous to a property listed or recommended for listing in the NY State or National Registers of Historic Places? ☐ Yes ☑ No

CONTACT PERSON FOR PROJECT

Name Kristen McCabe **Title** Environmental Planner

Firm/Agency Nelson Pope & Voorhis (on behalf of the Town of Smithtown)

Address 572 Walt Whitman Road **City** Melville **STATE** NY **Zip** 11747

Phone (631) 427.5665 **Fax** (631) 427.5620 **E-Mail** kmccabe@nelsonpope.com

http://nysparks.state.ny.us then select **HISTORIC PRESERVATION then select **On Line Resources**

The Historic Preservation Review Process in New York State

In order to insure that historic preservation is carefully considered in publicly-funded or permitted undertakings*, there are laws at each level of government that require projects to be reviewed for their potential impact/effect on historic properties. At the federal level, Section 106 of the National Historic Preservation Act of 1966 (NHPA) directs the review of federally funded, licensed or permitted projects. At the state level, Section 14.09 of the New York State Parks, Recreation and Historic Preservation Law of 1980 performs a comparable function. Local environmental review for municipalities is carried out under the State Environmental Quality Review Act (SEQRA) of 1978.
regulations on line at:
http://nysparks.state.ny.us then select **HISTORIC PRESERVATION** then select **Environmental Review**

Project review is conducted in two stages. First, the Field Services Bureau assesses affected properties to determine whether or not they are listed or eligible for listing in the New York State or National Registers of Historic Places. If so, it is deemed "historic" and worthy of protection and the second stage of review is undertaken. The project is reviewed to evaluate its impact on the properties significant materials and character. Where adverse effects are identified, alternatives are explored to avoid, or reduce project impacts; where this is unsuccessful, mitigation measures are developed and formal agreement documents are prepared stipulating these measures.

ALL PROJECTS SUBMITTED FOR REVIEW SHOULD INCLUDE THE FOLLOWING MATERIAL(S).

☑ **Project Description**

Attach a full description of the nature and extent of the work to be undertaken as part of this project. Relevant portions of the project applications or environmental statements may be submitted.

☑ **Maps Locating Project** (provided in Phase I Archeological Investigation)

Include a map locating the project in the community. The map must clearly show street and road names surrounding the project area as well as the location of all portions of the project. Appropriate maps include tax maps, Sanborn Insurance maps, and/or USGS quadrangle maps.

☑ **Photographs** (provided in Phase I Archeological Investigation)

Photographs may be black and white prints, color prints, or color laser/photo copies; standard (black and white) photocopies are NOT acceptable.

-*If the project involves rehabilitation*, include photographs of the building(s) involved. Label each exterior view to a site map and label all interior views.

-*If the project involves new construction*, include photographs of the surrounding area looking out from the project site. Include photographs of any buildings (more than 50 years old) that are located on the project property or on adjoining property.

NOTE: Projects submissions will not be accepted via facsimile or e-mail.

**Undertaking* is defined as an agency's purchase, lease or sale of a property, assistance through grants, loans or guarantees, issuing of licenses, permits or approvals, and work performed pursuant to delegation or mandate.

PROJECT DESCRIPTION

The subject property is located at the southwestern corner of the intersection of Saint Johnland Road and Old Dock Road, Kings Park in the Town of Smithtown. The subject site occupies 49.69 acres of vacant land opposite the St. Johnland Nursing Center. The proposed project involves a change of zone request which would convert the site's existing Residence R-43 zoning to Retirement Community (RC) zoning to allow for the development of a 199-unit Continuing Care Retirement Community (CCRC) made up of 174 independent living units (28 townhouses and 147 apartment units) and 24 assisted living units. The proposed CCRC development will provide housing and health care for residents 62 and older, in the form of a congregate housing community that maintains a program of health care and provides ancillary support and services designed to maximize the independence of residents as their age advances.

Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

New York State Office of Parks,
Recreation and Historic Preservation
Historic Preservation Field Services Bureau • Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643
www.nysparks.com

May 03, 2011

RECEIVED
MAY 06 2011
NELSON & POPE

Kristen McCabe
Nelson, Pope & Voorhis, LLC
572 Walt Whitman Rd
Melville, New York 11747

Re: DEC
St. Johnland Continuing Care Retirement Community (CCRC) –
Proposed new construction
SW cor. of St. Johnland Rd. & Old Dock Rd.
SMITHTOWN, Suffolk County
11PR02442

Dear Ms. McCabe:

Thank you for requesting the comments of the Field Services Bureau of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the Field Services Bureau and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Register of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Acting Deputy Commissioner for Historic Preservation

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

April 5, 2011

Suffolk County Police Department
Research and Development Section
Attn: William English
Principal Management Analyst
30 Yaphank Avenue
Yaphank, NY 11980

Re: St. Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review
NPV # 95124

Dear Mr. English:

Nelson, Pope & Voorhis, LLC is an environmental and planning consulting firm located in Melville. We are currently preparing a Draft Environmental Impact Statement (DEIS) on behalf of the Town of Smithtown for a proposed project located on the southwestern corner of the intersection of Saint Johnland Road and Old Dock Road, Kings Park in the Town of Smithtown (see attached location map). The proposed project involves the change of zone of a 49.69-acre property from Residential R-43 to Retirement Community (RC) for development of a 199-unit Continuing Care Retirement Community (CCRC) made up of 175 independent living units (28 townhouses and 147 apartment units) and 24 units of assisted living. CCRC developments provide for a housing and health care alternative for residents 62 years or older, in the form of congregate housing that maintains a program of continuing health care, and provides ancillary support areas and services designed to maximize independence of residents as their age advances.

I am writing to obtain information regarding SCPD facilities and services which may be pertinent to the project. Specifically, I am requesting the following:

- Location of the stationhouse;
- Patrol sector assigned to the site.

If you have any further input with regard to the ability to provide services to this project, please provide an explanation so that this may be considered in the review process. Your responses will be included in the DEIS submitted for review by the Town of Smithtown.

If you should have any questions or require additional information, please do not hesitate to contact me at (631) 427-5665 or kmccabe@nelsonpope.com.

Very truly yours,
NELSON, POPE AND VOORHIS, LLC

Kristen L. McCabe
Environmental Planner

COUNTY OF SUFFOLK

STEVE LEVY
COUNTY EXECUTIVE

RICHARD DORMER
POLICE COMMISSIONER

POLICE DEPARTMENT

March 22, 2011

RECEIVED
APR 14 2011
NELSON & POPE

Kristen L. McCabe
Environmental Planner
Nelson, Pope & Voorhis, LLC
572 Walt Whitman Road
Melville, NY 11747-2188

Re: St. Johnland CCRC / NPV # 95124

Dear Ms. McCabe:

This is the Suffolk County Police Department's (SCPD) response to your request for information regarding SCPD facilities and services available to the referenced site.

The subject site is located within the confines of the SCPD Fourth Precinct, Sector 401. The Fourth Precinct is located at 345 Old Willets Path, Hauppauge NY 11788 and the telephone number is 631-854-8400.

The exact impact of your planned development is difficult to determine. There is no single determining element utilized in the decision to deploy a set number of officers to a given area. Factors such as demographics, traffic patterns, police hazards and emergency response time are variables which require consideration. The SCPD will adapt as necessary to protect and serve the community as it grows.

If you need any further information, please contact me at 631-852-6069 or send an e-mail to william.english@suffolkcountyny.gov.

Sincerely,

William J. English
Principal Management Analyst
Research and Development Section **2110**

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

February 1, 2011

Dr. Susan Agruso
Superintendent of Schools
Kings Park Central School District:
180 Lawrence Road Kings Park, NY 11754

Re: St. Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review
NPV # 95124

Dear Dr. Agruso:

Nelson, Pope & Voorhis, LLC is an environmental and planning consulting firm located in Melville. We are currently preparing a Draft Environmental Impact Statement (DEIS) for a proposed project located on the southwestern corner of the intersection of Saint Johnland Road and Old Dock Road, Kings Park in the Town of Smithtown (see attached location map). The proposed project involves the change of zone of a 49.69-acre property from Residential R-43 to Retirement Community (RC) for development of a 199-unit Continuing Care Retirement Community (CCRC). CCRC developments provide for a housing and health care alternative for residents 62 years or older, in the form of congregate housing that maintains a program of continuing health care, and provides ancillary support areas and services designed to maximize independence of residents as their age advances.

As the proposed project will include senior housing only, no school age children will be added to the school district.

If you have any concerns regarding this development, please contact us in writing so that your response can be included in the DEIS for review by the Town of Smithtown. If you have any questions regarding the details of the project or the information contained in this letter, please contact me at (631) 427-5665 or kmccabe@nelsonpope.com.

Very truly yours,
NELSON, POPE AND VOORHIS, LLC

Kristen L. McCabe
Environmental Planner

File

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

April 5, 2011

Kings Park Fire District
2 East Main Street
Kings Park, NY 11754
Attn: Gregory Fagan, Chief

Re: St. Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review
NPV # 95124

Dear Chief Fagan:

Nelson, Pope & Voorhis, LLC is an environmental and planning consulting firm located in Melville. We are currently preparing a Draft Environmental Impact Statement (DEIS) on behalf of the Town of Smithtown for a proposed project located on the southwestern corner of the intersection of Saint Johnland Road and Old Dock Road, Kings Park in the Town of Smithtown (see attached location map). The proposed project involves the change of zone of a 49.69-acre property from Residential R-43 to Retirement Community (RC) for development of a 199-unit Continuing Care Retirement Community (CCRC) made up of 175 independent living units (28 townhouses and 147 apartment units) and 24 units of assisted living. CCRC developments provide for a housing and health care alternative for residents 62 years or older, in the form of congregate housing that maintains a program of continuing health care, and provides ancillary support areas and services designed to maximize independence of residents as their age advances.

I am writing to obtain information in regard to Kings Park Fire District facilities, services, and capabilities which may be pertinent to the project. In consideration of the type of use being proposed, information on the District's ambulance capabilities relative to servicing the site would be useful. Specifically, I am requesting the following:

- District boundaries served;
- The location of the stations and/or substation(s) which would serve the site;
- A listing of the major pieces of firefighting equipment at each facility;
- The number of firefighters assigned to each facility;
- Indicate any specialized firefighting capabilities of the District;
- Indicate whether the firefighters are volunteers or full-time;
- Any ambulance and/or EMT facilities or equipment relative to servicing the site.
- Annual operating budget.

If you have any further input with regard to the ability to provide services to this project, please provide an explanation so that this may be considered in the review process. Your responses will be included in the DEIS submitted for review by the Town of Smithtown.

If you should have any questions or require additional information, please do not hesitate to contact me at (631) 427-5665 or kmccabe@nelsonpope.com.

Very truly yours,
NELSON, POPE AND VOORHIS, LLC

Kristen L. McCabe
Environmental Planner

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

June 13, 2011

Kings Park Fire District
2 East Main Street
Kings Park, NY 11754
Attn: Gregory Fagan, Chief

Re: **SECOND REQUEST FOR INFORMATION**
St. Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review
NPV # 95124

Dear Chief Fagan:

Nelson, Pope & Voorhis, LLC is an environmental and planning consulting firm located in Melville. We are currently preparing a Draft Environmental Impact Statement (DEIS) on behalf of the Town of Smithtown for a proposed project located on the southwestern corner of the intersection of Saint Johnland Road and Old Dock Road, Kings Park in the Town of Smithtown (see attached location map). The proposed project involves the change of zone of a 49.69-acre property from Residential R-43 to Retirement Community (RC) for development of a 199-unit Continuing Care Retirement Community (CCRC) made up of 175 independent living units (28 townhouses and 147 apartment units) and 24 units of assisted living. CCRC developments provide for a housing and health care alternative for residents 62 years or older, in the form of congregate housing that maintains a program of continuing health care, and provides ancillary support areas and services designed to maximize independence of residents as their age advances.

I am writing to obtain information in regard to Kings Park Fire District facilities, services, and capabilities which may be pertinent to the project. In consideration of the type of use being proposed, information on the District's ambulance capabilities relative to servicing the site would be useful. Specifically, I am requesting the following:

- District boundaries served;
- The location of the stations and/or substation(s) which would serve the site;
- A listing of the major pieces of firefighting equipment at each facility;
- The number of firefighters assigned to each facility;
- Indicate any specialized firefighting capabilities of the District;
- Indicate whether the firefighters are volunteers or full-time;
- Any ambulance and/or EMT facilities or equipment relative to servicing the site.
- Annual operating budget.

If you have any further input with regard to the ability to provide services to this project, please provide an explanation so that this may be considered in the review process. Your responses will be included in the DEIS submitted for review by the Town of Smithtown.

If you should have any questions or require additional information, please do not hesitate to contact me at (631) 427-5665 or kmccabe@nelsonpope.com.

Very truly yours,
NELSON, POPE AND VOORHIS, LLC

Kristen L. McCabe
Environmental Planner

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

CERTIFIED MAIL
7010 1870 0003 5282 1005

October 20, 2011

Kings Park Fire District
2 East Main Street
Kings Park, NY 11754
Attn: Gregory Fagan, Chief

Re: **THIRD REQUEST FOR INFORMATION**
St. Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review
NPV # 95124

Dear Chief Fagan:

Nelson, Pope & Voorhis, LLC is an environmental and planning consulting firm located in Melville. We are currently preparing a Draft Environmental Impact Statement (DEIS) on behalf of the Town of Smithtown for a proposed project located on the southwestern corner of the intersection of Saint Johnland Road and Old Dock Road, Kings Park in the Town of Smithtown (see attached location map). The proposed project involves the change of zone of a 49.69-acre property from Residential R-43 to Retirement Community (RC) for development of a 199-unit Continuing Care Retirement Community (CCRC) made up of 175 independent living units (28 townhouses and 147 apartment units) and 24 units of assisted living. CCRC developments provide for a housing and health care alternative for residents 62 years or older, in the form of congregate housing that maintains a program of continuing health care, and provides ancillary support areas and services designed to maximize independence of residents as their age advances.

I am writing to obtain information in regard to Kings Park Fire District facilities, services, and capabilities which may be pertinent to the project. In consideration of the type of use being proposed, information on the District's ambulance capabilities relative to servicing the site would be useful. Specifically, I am requesting the following:

- District boundaries served;
- The location of the stations and/or substation(s) which would serve the site;
- A listing of the major pieces of firefighting equipment at each facility;
- The number of firefighters assigned to each facility;
- Indicate any specialized firefighting capabilities of the District;
- Indicate whether the firefighters are volunteers or full-time;
- Any ambulance and/or EMT facilities or equipment relative to servicing the site.
- Annual operating budget.

If you have any further input with regard to the ability to provide services to this project, please provide an explanation so that this may be considered in the review process. Your responses will be included in the DEIS submitted for review by the Town of Smithtown.

If you should have any questions or require additional information, please do not hesitate to contact me at (631) 427-5665 or kmccabe@nelsonpope.com.

Very truly yours,
NELSON, POPE AND VOORHIS, LLC
Kristen L. McCabe
Environmental Planner

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Kings Park Fire District
2 East Main Street
Kings Park, NY 11754
Attn: Gregory Fagan, Chief

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- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Kings Park Fire District
2 East Main Street
Kings Park, NY 11754
Attn: Gregory Fagan, Chief

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X [signature] ☐ Agent ☐ Addressee

B. Received by (Printed Name) [illegible] C. Date of Delivery 10.26.11

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☒ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1870 0003 5282 1005

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

KINGS PARK FIRE DEPARTMENT INC.,

2 East Main Street
Kings Park, New York 11754
(631)-269-6846 / Fax (631) 269-6849
http://www.kingsparkfd.org

RECEIVED
JAN 30 2012
NELSON & POPE

Chief
Gregory Fagan
1st Asst. Chief
Mark J. O'Brien
2nd. Asst. Chief
Daniel Guilfoil
3rd Asst. Chief
John M. Gallo

President
Roy Starke
Vice President
Frank Paliotta
Treasurer
Linda Buffa
Treasurer
Linda Buffa

January 19, 2012

Kristen L. McCabe
Environmental Planner
Nelson, Pope & Vorrhis, LLC
572 Walt Whitman Road
Melville, NY 11747

Re: St. Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review, NPV # 95124.

Ms. McCabe:

The following is a response to your inquiry about the Kings Park Fire District resources and facilities as of January 19, 2012. The Kings Park Fire Department responds to a variety of emergency calls in our district including but not limited to fires, medical calls, hazardous material incidents, vehicle accidents, marine emergencies and technical rescue incidents.

District boundaries served:

The Kings Park Fire District boundaries are as follows;
Bread and Cheese Hollow Road to the West, Town line Road/Old Northport Road to the South, St. Nicolas Road/Landing Road/25A to the East and the Long Island Sound is our Northern boundary.

The location of the stations and/or substations which would serve the site:

The Kings Park Fire Department and Fire District operate out of our main Fire Headquarters located at 2 East Main Street, Kings Park NY 11754.

A listing of the major pieces of firefighting equipment at each facility:

The Kings Park Fire District operates four Class A engines, one ladder truck, one heavy rescue, one brush fire unit, two fire police vehicles, one marine fire/rescue unit and three ambulances. All of the above mentioned fire/rescue/EMS vehicles operate out of our main fire headquarters located at 2 East Main Street Kings Park NY, 11754.

The number of firefighters assigned to each facility:

We currently have 94 firefighters and EMT's assigned to operate out of our main fire headquarters.

Indicate any specialized firefighting capabilities of the District:

The Kings Park Fire District does not have any specialized firefighting capabilities in relation to the scope of this project.

Indicate whether the firefighters are volunteers or full time:

The Kings Park Fire Department is a 100% volunteer Fire and EMS Department.

Any ambulance and/or EMT facilities or equipment relative to servicing the site:

The Kings Park Fire District operates three (two basic life support and one advanced life support) fully equipped NYS certified ambulances and one NYS advanced life support first responder vehicle.

Annual operating budget:

The Kings Park Fire District's annual operating budget for 2012 is $2,817,750.

Additional Comments:

We would like the opportunity to review all site and building plans prior to approval in order to have all of our requirements included in this project. These requirements may include, but not limited to, vehicle access, turning ratio of apparatus, type of building construction, fire protection systems (sprinklers, hydrants, standpipes, fire department connections, fire pump, etc...), complex access, fire alarm control panel locations and functionality, smoke detection, carbon monoxide detection.

If you require further information or would like to schedule a meeting to discuss this project further please contact me at (631) 269-6846 ext. 208 or jmgallo@kingsparkfd.org.

Sincerely,

John M. Gallo
Third Assistant Chief
Kings Park Fire Department
Kings Park, NY 11754

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
572 WALT WHITMAN ROAD, MELVILLE, NY 11747 - 2188
(631) 427-5665 FAX (631) 427-5620
npv@nelsonpope.com

CERTIFIED MAIL
7010 1870 0003 5282 0992

October 20, 2011

Dr. Susan Agruso
Superintendent of Schools
Kings Park Central School District:
180 Lawrence Road Kings Park, NY 11754

Re: **SECOND REQUEST FOR INFORMATION**
St. Johnland Continuing Care Retirement Community (CCRC)
Environmental Impact Review
NPV # 95124

Dear Dr. Agruso:

Nelson, Pope & Voorhis, LLC is an environmental and planning consulting firm located in Melville. We are currently preparing a Draft Environmental Impact Statement (DEIS) for a proposed project located on the southwestern corner of the intersection of Saint Johnland Road and Old Dock Road, Kings Park in the Town of Smithtown (see attached location map). The proposed project involves the change of zone of a 49.69-acre property from Residential R-43 to Retirement Community (RC) for development of a 199-unit Continuing Care Retirement Community (CCRC). CCRC developments provide for a housing and health care alternative for residents 62 years or older, in the form of congregate housing that maintains a program of continuing health care, and provides ancillary support areas and services designed to maximize independence of residents as their age advances.

As the proposed project will include senior housing only, no school age children will be added to the school district.

If you have any concerns regarding this development, please contact us in writing so that your response can be included in the DEIS for review by the Town of Smithtown. If you have any questions regarding the details of the project or the information contained in this letter, please contact me at (631) 427-5665 or kmccabe@nelsonpope.com.

Very truly yours,
NELSON, POPE AND VOORHIS, LLC

Kristen L. McCabe
Environmental Planner

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Dr. Susan Agruso
Superintendent of Schools
Kings Park Central School District
180 Lawrence Road
Kings Park, NY 11754

PS Form 3800, August 2006 See Reverse for Instructions

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- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Dr. Susan Agruso
Superintendent of Schools
Kings Park Central School District
180 Lawrence Road
Kings Park, NY 11754

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Linda Cass ☒ Agent ☐ Addressee

B. Received by (Printed Name) L CASS
C. Date of Delivery 10/21/11

D. Is delivery address different from item 1? ☒ Yes
If YES, enter delivery address below: ☐ No
180 LAWRENCE RD ROOM 208
KINGS PARK NY 11754

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Transfer from service label)* 7010 1870 0003 5282 0992

PS Form 3811, February 2004 Domestic Return Receipt 102595-02-M-1540

Town of Smithtown

Office of the Assessor

Peter D. Johnson, Esq., IAO
Sole Assessor
E-Mail: Assessor@tosgov.com

Supervisor
Patrick R Vecchio
Town Council
Thomas J. McCarthy
Edward R. Wehrheim
Robert J. Creighton
Kevin J. Malloy

June 12, 2012

Vincent J. Trimarco, Esq.
1038 West Jericho Turnpike
Smithtown, New York 11787

RE: The Uplands @ St. Johnland
Sunken Meadow Road, Kings Park, New York
SCTM# 800-8.-4-2
Proposed Continuing Care Retirement Community

Dear Mr. Trimarco:

As a follow-up to my recent meeting with you and your clients, this will serve to confirm receipt of proposed site plan and description relative to the above project. Pursuant to your request, this office has reviewed and revised its previous estimate of the foregoing, together with relevant market, rental and building cost data.

Based solely on the foregoing, and subject to change based upon typical appraisal considerations, including changes in market conditions, and any changes regarding the actual improvements to be constructed, I have revised our preliminary estimate of the assessment for the project. As you know, I am guided in the valuation methods and techniques used as limited by law.

Again, the following estimate is based upon current conditions and approximations, and is subject to change and/or review as of taxable status date of each tax year, pursuant to the Real Property Tax Law of the State of New York. As a result, this estimate is preliminary only and should not be relied upon for anything other than a broad overview.

The current proposal calls for the development of a 199 unit residential continuing care retirement community, as set forth in the Master Development Plan prepared by Engineering, Survey and Landscape Architecture, P.C. as revised through September 8, 2010. VHB ING 3/1/2012

This office estimates that the project will result in a total assessment of approximately 685,000 or the equivalent market value of approximately $49,000,000 to $50,000,000 +/- (685,000/.0137 State Equalization Rate). Using the current tax rate (2011/12) for the area, this would yield an approximate gross tax liability of $1,290,000 +/-. The tax estimation, like the assessed valuation, is subject to change.

I trust the foregoing is responsive to your inquiry.

Very truly yours,

Peter D. Johnson
Assessor

40 Maple Avenue - Smithtown, N.Y. 11787 Tel:(631)360-7560 - Fax:(631)360-1704

From: Assessor Dept [mailto:assessormail@tosgov.com]
Sent: Monday, July 09, 2012 11:23 AM
To: Chic Voorhis
Cc: Howard Barton III(DEW)
Subject: RE: St. Johnland Tax Estimation

Mr. Voorhis,

I reviewed the plans that I previously reviewed, and referred to in my correspondence of 6/12/12 to Vincent Trimarco, Esq. These plans are in fact the same "Master Development Plan", dated 1/11/12, by VHB Engineering, Surveying and Landscape Architecture, P.C., which are on file with Mr. Barton in the latest proposed DEIS. As a result, my analysis remains unchanged.

I hope this clarifies matters.

Peter D. Johnson, Esq., IAO
Assessor
Town of Smithtown
40 Maple Avenue
Smithtown, New York 11787
(631) 360-7560

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From: Chic Voorhis [CVoorhis@exchange.np-npv.com]
Sent: Monday, June 25, 2012 5:45 PM
To: Assessor Dept; Assessor Dept
Cc: Carrie OFarrell
Subject: St. Johnland Tax Estimation

Peter,
I am in receipt of your June 12, 2012 letter to Vincent Trimarco regarding the above. I was hoping you could make several minor changes for the sake of accuracy and consistency with other documents. The Master Development Plan was prepared by "VHB" Engineering, Surveying and Landscape Architecture, P.C. Can you please add the "VHB" and make "Survey", "Surveying" where shown in the attached markup. Also, the plan that accompanies the DEIS is dated March 2, 2012. There is no material change to the buildings, number of units, etc. Changes mostly involved site grading, clearing and drainage.
Attached is a markup for your consideration.
Thank you and call if questions.
Sincerely,
Chic Voorhis

APPENDIX N

AIR QUALITY DATA

Sulfur Dioxide - Continuous Pulsed Fluorescence

NYSDEC Region 1

Metropolitan Air Quality Control Region

Annual Averages 1999 through 2009 (12 month average not to exceed 0.03 PPM*)													
Station	**County**	**Site No.**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Babylon	Suffollk	5150-02	.007	(.010)	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx
Eisenhower Park	Nassau	2950-10	.006	.006	.005	.004	.005	.004	.004	.004	.004	.005	.003

Comparison Between NYS Ambient Air Quality and Ambient Air Quality Standards for Calendar Year 2009													
Station	**Site No.**	**One-Hour Averages**		**3-Hour Block Averages Maximum not to exceed 0.5 PPM more than once per calendar year***					**24 Hour Average (Calendar Day) Maximum not to exceed 0.14 PPM more than once per calendar year***				
				Observations		**Highest Values, PPM Non-Overlapping**			**Observations**		**Highest Values, PPM Midnight - Midnight**		
		Total Obs.	**% Avail**	**Total**	**>0.5 PPM**	**1st**	**2nd**	**3rd**	**Total**	**>0.14 PPM**	**1st**	**2nd**	**3rd**
Eisenhower Park	2950-10	8,620	98	2,830	0	.048 [01/23, 09]	.038 [02/07, 09]	.036 [02/07, 06]	365	0	.021 [01/22]	.020 [01/13]	.019 [01/23]

(Annual Means in parentheses based on <75% available data)

[Date of Occurrence, Hour]

* New York and Federal Ambient Air Quality Standard

+ Denotes a contravention of Federal AAQS

Inhalable Particulates (<2.5 Microns) - Rupprecht & Patashnick Sampler

NYSDEC Region 1

Metropolitan Air Quality Control Region

Comparison Between NYS Ambient Air Quality and Ambient Air Quality Standards for Calendar Year 2009 (Average of last 3 years' annual means not to exceed 15 µg/m3*; and average of 98th percentile for last 3 years not to exceed 35 µg/m3*)																			
Station	**County**	**Site No.**	**Total Obs.**	**Maximum Values**			**98th Percentile**				**Quarterly Averages, 2009**				**Annual Mean**				
				1st	**2nd**	**3rd**	**2009**	**2008**	**2007**	**3-yr avg**	**1st**	**2nd**	**3rd**	**4th**	**2009**	**2008**	**2007**	**3-yr avg**	
Eisenhower Park(T)	Nassau	2950-10	361	38.4 [02/07]	35.2 [03/07]	34.1 [01/13]	26.7	29.8	32.0	30	13.4	7.7	8.5	9.0	9.7	11.2	11.2	10.7	
Hempstead (F)	Nassau	2950-18	113	33.9 [01/19]	28.3 [11/09]	25.8 [08/17]	25.8	29.2	28.5	28	11.2	7.7	9.4	7.7	9.0	10.9	11.1	10.3	
Babylon (F)	Suffolk	5150-01	113	24.9 [01/22]	24.0 [01/22]	21.6 [01/13]	21.6	26.8	28.8	26	9.0	7.7	8.7	6.9	8.1	10.1	10.9	9.7	

F = Federal Reference Method

T = TEOM (Tapered Element Oscillating Microbalance), acceptable for AQI purposes, but not for NAAQS decisions

* Federal Ambient Air Quality Standard (changed from 65 to 35 ug/m^3 on 12/17/06)

+ Denotes a contravention of Federal AAQS

Nitric Oxide & Nitrogen Dioxide - Continuous Chemiluminescence

NYSDEC Region 1

Metropolitan Air Quality Control Region

Nitric Oxide - Annual Arithmetic Means (PPM) 1999 through 2009													
Station	**County**	**Site No.**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Eisenhower Park	Nassau	2950-10	.032	.028	.029	.024	.023	(.018)	.018	.019	.015	.015	.012

Nitrogen Dioxide - Annual Arithmetic Means (PPM) 1999 through 2009 - (12 month average not to exceed 0.05 PPM *)													
Station	**County**	**Site No.**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Eisenhower Park	Nassau	2950-10	.025	.024	.024	.022	.021	(.019)	.020	.018	.018	.017	.016

Comparison Between NYS Ambient Air Quality and Ambient Air Quality Standards for Calendar Year 2009														
Station	**Site No.**	**Nitric Oxide One-Hour Averages**						**Nitrogen Dioxide One-Hour Averages**						
		Observations			**Highest Values, PPM**			**Observations**			**Highest Values, PPM**			
		Total		**% Avail**	**1st**	**2nd**	**3rd**	**Total**		**% Avail**	**1st**	**2nd**	**3rd**	
Eisenhower Park	2950-10	8,583	98	.500 [01/13, 09]	.488 [02/02, 08]	.480 [03/05, 08]	8,583	98	.097 [02/07, 09]	.091 [03/05, 08]	.086 [01/13, 09]	091 [03/05, 08]	.086 [01/13, 09]	

(Annual Means in parentheses based on <75% available data)

[Date of Occurrence, Hour]

* New York and Federal Ambient Air Quality Standard

+ Denotes a contravention of Federal AAQS

Ozone - Continuous UV Light Absorption

NYSDEC Region 1

Metropolitan Air Quality Control Region

Annual Averages 1999 through 2009 (PPM)													
Station	**County**	**Site No.**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Babylon	Suffolk	5150-02	.025	.023	.023	.024	.025	.024	.024	.024	.026	.026	.027
Holtsville	Suffolk	5151-10	--	--	--	--	--	--	--	.030	.032	.031	.028
Riverhead	Suffolk	5155-01	.035	.034	.030	.033	.030	(.029)	.035	.039	.034	.034	.035

Comparison Between NYS Ambient Air Quality and Ambient Air Quality Standards for Calendar Year 2009												
Station	**Site No.**	**One Hour Averages**							**4th Highest Daily Maximum 8-Hour Average - Not to exceed an avg of 0.075 PPM during the last 3 years***			
		Observations			**Highest Values, PPM**							
		Total Obs.	**% Avail**	**>.12 PPM**	**1st**	**2nd**	**3rd**	**4th**	**2007**	**2008**	**2009**	**3-yr Avg**
Babylon	5150-02	8,327	95	0	.103 [08/16, 13]	.102 [04/26, 18]	.100 [08/17, 14]	.092 [08/10, 15]	.083 [07/08]	.083 [06/10]	.079 [08/10]	.081+
Holtsville (Operated 02/03-11/09)	5151-10	5,740	85	0	.096 [09/05, 17]	.093 [08/17, 14]	.087 [08/10, 16]	.087 [08/26, 14]	.084 [07/08]	.083 [06/10]	.074 [04/26]	.080+
Riverhead (Operated 01/01 - 11/07)	5155-01	6,037	81	0	.090 [06/02, 17]	.087 [08/10, 18]	.086 [09/05, 17]	.084 [08/16, 13]	.085 [08/04]	.083 [07/21]	.071 [09/05]	.079+

Due to EPA Waiver, % Availability may be based on operational year of less than 12 months (Riverhead, Holtsville)

F = Federal Reference Method

T = TEOM (Tapered Element Oscillating Microbalance), acceptable for AQI purposes, but not for NAAQS decisions

* Federal Ambient Air Quality Standard (changed from 65 to 35 ug/m^3 on 12/17/06)

+ Denotes a contravention of Federal AAQS

Carbon Monoxide - Continuous Non-Dispersive Infrared

NYSDEC Region 1

Metropolitan Air Quality Control Region

Annual Averages 1990 through 2000 (PPM)												
Station	**Site No.**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**
Eisenhower Park	2950-10	1.1	1.0	0.9	0.8	0.8	0.8	0.8	0.7	0.6	0.7	(0.7)

Sampling at 2950-01 was terminated on 5/31/2000.

(Annual Means in parentheses based on <75% available data)

* New York and Federal Ambient Air Quality Standard

[Date of Occurrence, Hour]

+ Denotes a contravention of Federal AAQS

Inhalable Particulates (<10 Microns) - Wedding Sampler

NYSDEC Region 1

Metropolitan Air Quality Control Region

Annual Averages 1995 through 2005 (µg/m3)												
Station	**Site No.**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Babylon (Farmingdale)	5150-01	18	18	19	19	xx	xx	xx	xx	xx	xx	xx
Eisenhower Park	2950-10	20	18	21	18	16	17	17	18	18	15	xx
Roslyn Heights	2951-03	(18)	20	23	20	xx	xx	xx	xx	xx	xx	xx

Lab results not received for 2005. Sampling terminated at 2950-10 on 12/31/2005

(Annual Means in parentheses based on <75% available data)

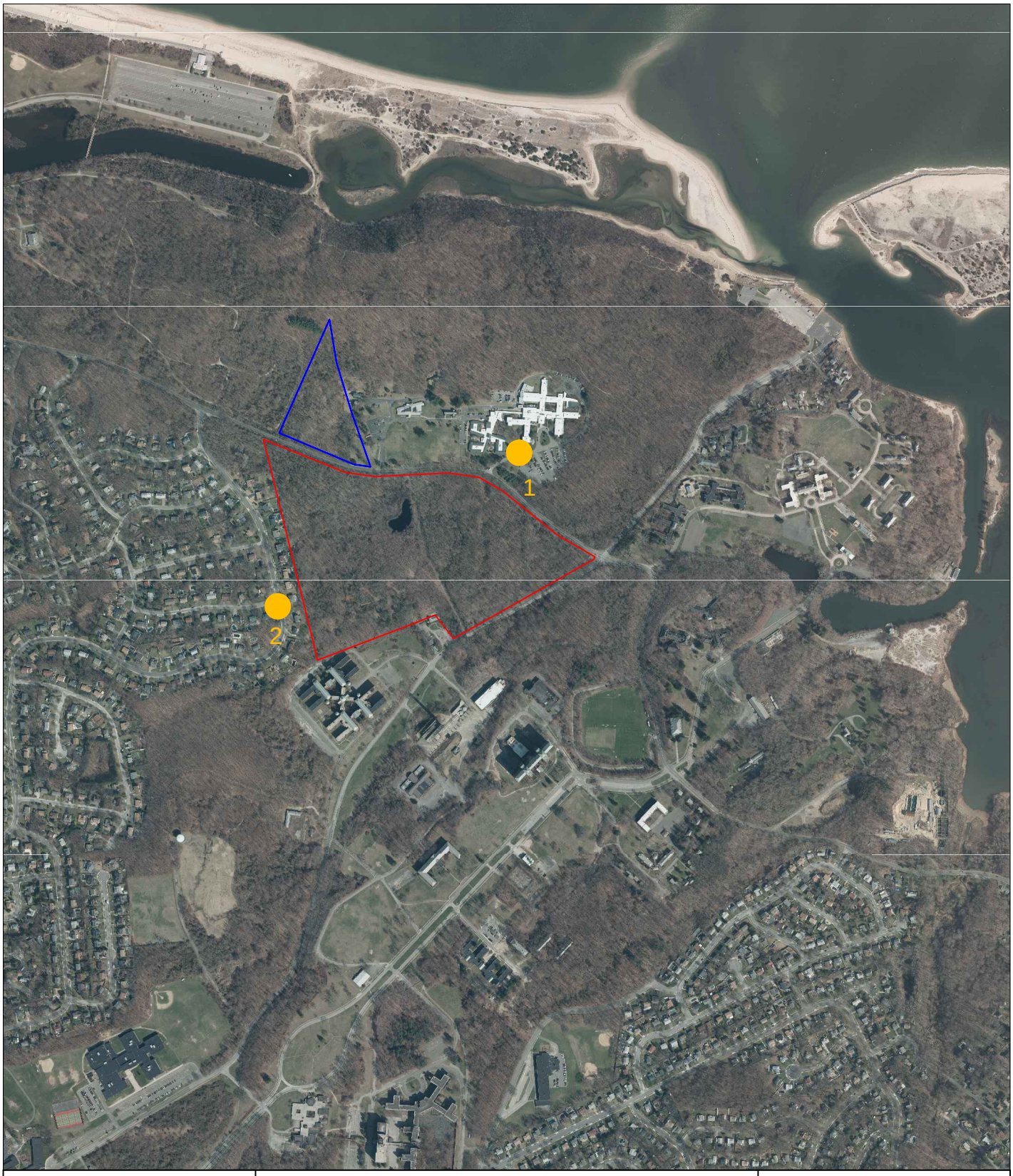
[Date of Occurrence, Hour]

* New York and Federal Ambient Air Quality Standard

+ Denotes a contravention of Federal AAQS

APPENDIX O

NOISE SURVEY DATA



NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

APPENDIX O
NOISE STATION LOCATION MAP

Source: NYSGIS Orthoimagery Program, 2010
Scale: 1" = 1,000'

NORTH

The Uplands
at St. Johnland

Kings Park

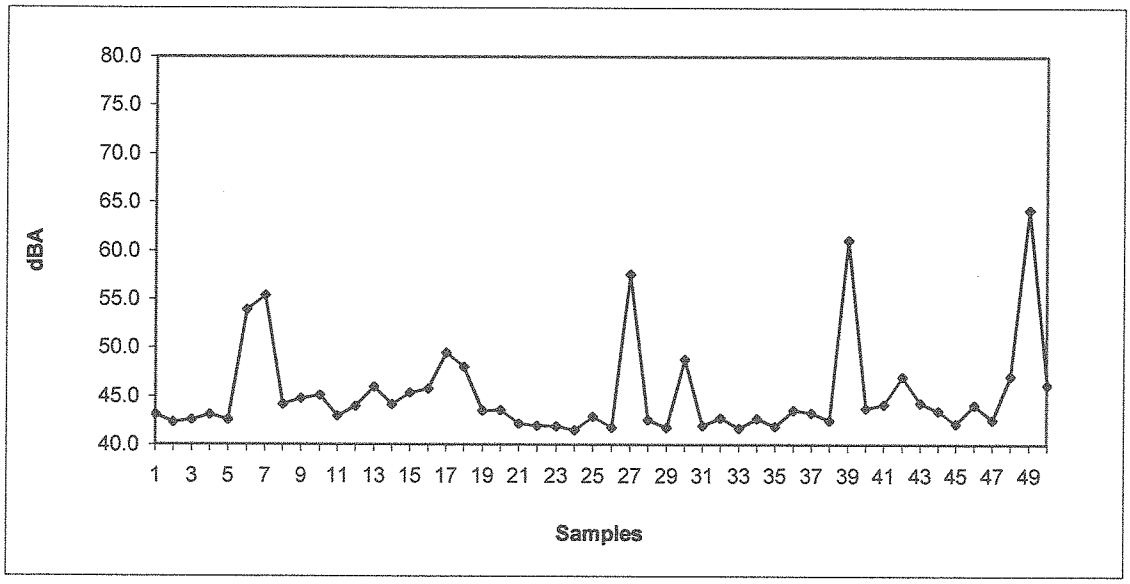
The Uplands at St. Johnland
NOISE SURVEY DATA SHEET

STATION #1

Date: 8/23/2011
Time: 9:15 AM
Interval: 10 seconds
Location: On St. Johnland Nursing Home Property
Weather: 78 degrees, clear, calm
Description: Small area with picnic tables adjacent to parking lot and driveway
Station somewhat shielded by existing building and some trees.

1	43.1	18	48.0 A	35	41.9
2	42.3	19	43.5	36	43.6
3	42.6	20	43.6	37	43.3
4	43.1	21	42.2	38	42.5
5	42.6	22	42.0	39	61.1 C
6	53.9 A	23	41.9	40	43.8
7	55.4 C	24	41.5	41	44.2
8	44.2	25	42.9	42	47.0 P
9	44.8	26	41.8	43	44.3
10	45.1	27	57.6 C	44	43.5
11	43.0	28	42.6	45	42.2
12	44.0	29	41.8	46	44.1
13	46.0	30	48.8 C	47	42.6
14	44.2	31	42.0	48	47.1 A
15	45.4	32	42.8	49	64.2 A
16	45.8	33	41.7	50	46.2
17	49.5 P	34	42.7	**Leq:**	**51.0**

Field Notes:
Ambient noise environment reflects
steady traffic on Sunken Meadow Road, birds and cicadas.
Cars and Ambulette's coming into the Nursing Home.
Planes flying overhead.



Maximum Value: 64.2
Minimum Value: 41.5

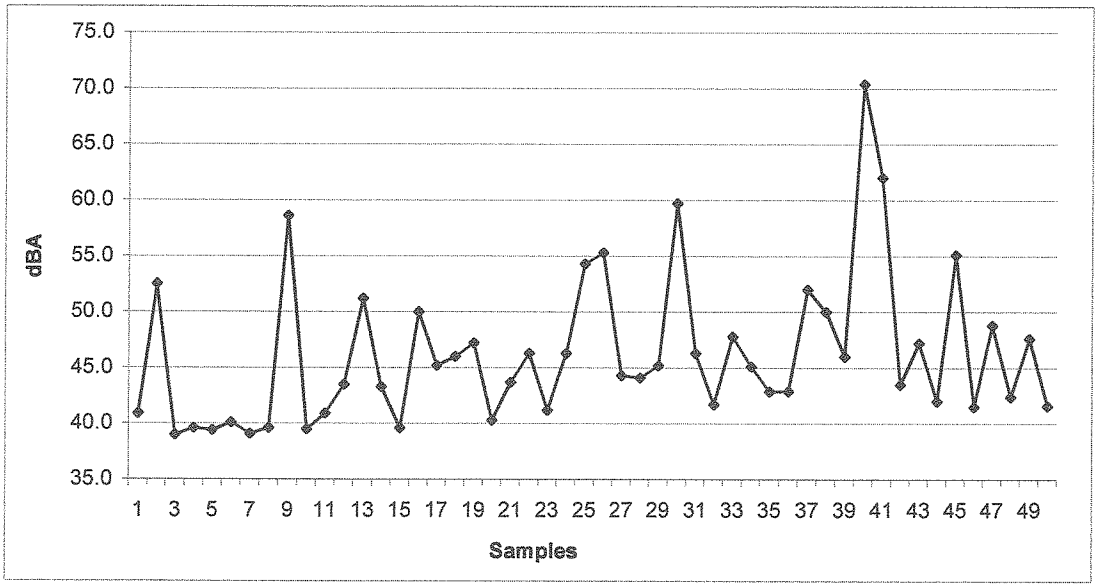
Station 1

STATION #2

Date: 8/23/2011
Time: 9:51 AM
Interval: 10 seconds
Location: On the corner of Mountain Laurel Lane and Twin Oaks Drive
Weather: 78 degrees, clear, calm
Description: Corner of two residential streets.
Station somewhat shielded by existing building and some trees.

1	40.9	18	46.0	35	42.9
2	52.5 C	19	47.2	36	42.9
3	39.0	20	40.3	37	52.0 P
4	39.6	21	43.7	38	50.0
5	39.4	22	46.3	39	46.0
6	40.1 D	23	41.2	40	70.4 T
7	39.1	24	46.3	41	62.0 C
8	39.6	25	54.3	42	43.5
9	58.6 C	26	55.3 C	43	47.2
10	39.5	27	44.3	44	42.0
11	40.9	28	44.1	45	55.1
12	43.5	29	45.2 D	46	41.5
13	51.2 C	30	59.7 C	47	48.8
14	43.3	31	46.3	48	42.4
15	39.6	32	41.7	49	47.6
16	50.0	33	47.8	50	41.6
17	45.2	34	45.1	**Leq:**	**55.3**

Field Notes:
Ambient noise environment reflects
birds, cicadas, neighborhood Dogs barking.
Cars and Trucks passing by.
Planes flying overhead.



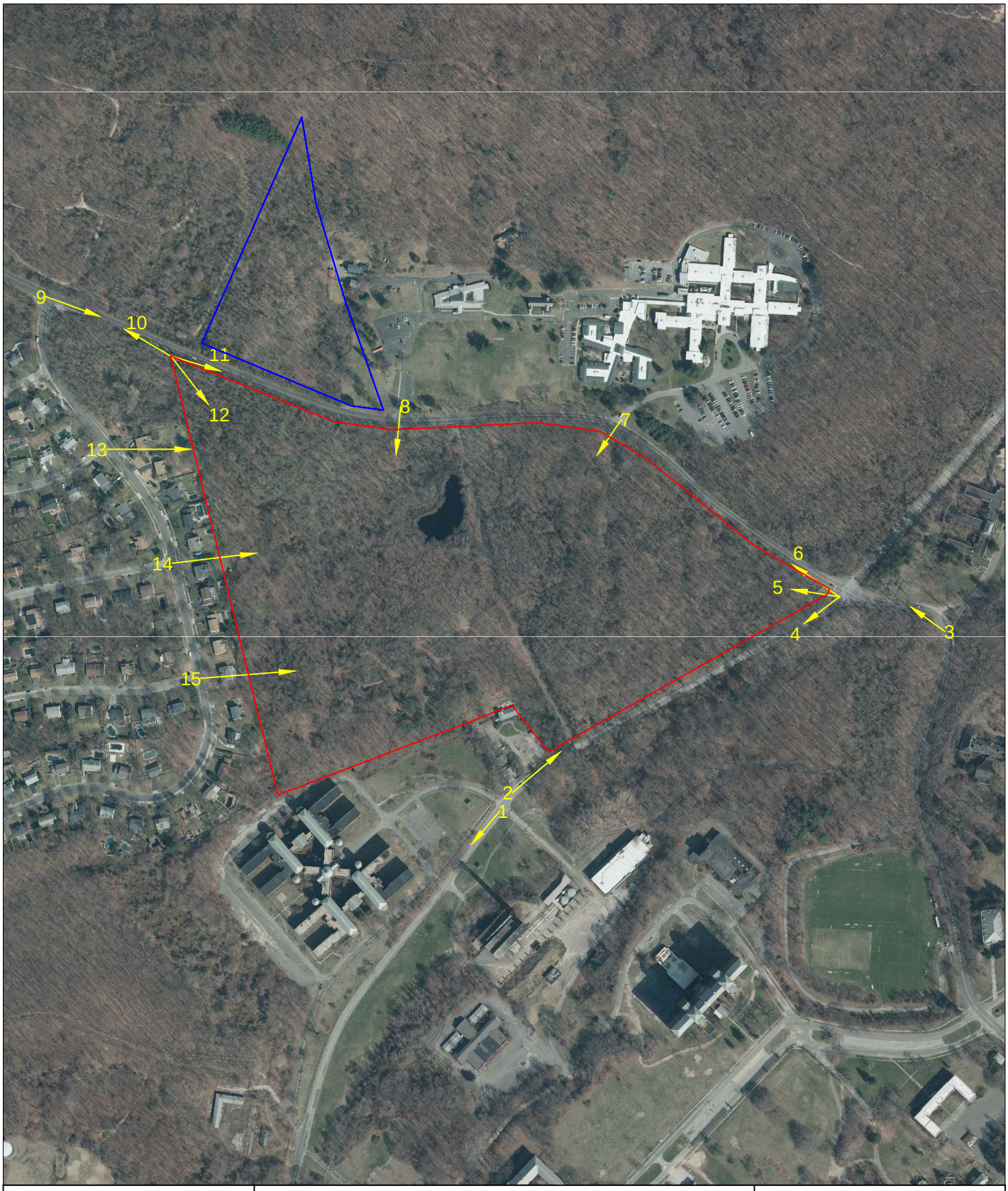
Maximum Value: 70.4
Minimum Value: 39.0

APPENDIX P

COMMUNITY CHARACTER

APPENDIX P-1

Photographs of Site and Vicinity



NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

APPENDIX P-1
PHOTOGRAPH LOCATION MAP

Source: NYSGIS Orthoimagery Program, 2010
Scale: 1" = 500'

NORTH

The Uplands at St. Johnland

Kings Park

1. View from the intersection of Old Dock Road and Orchard Road, looking southwest along Old Dock Road.

2. View from the intersection of Old Dock Road and Orchard Road, looking northeast along Old Dock Road.

3. View from the intersection of St. Johnland Road, Soundview Court, and Sunken Meadow Road, looking north west along Sunken Meadow Road.

4. View from the intersection of Old Dock Road and Sunken Meadow Road, looking southwest along Old Dock Road.

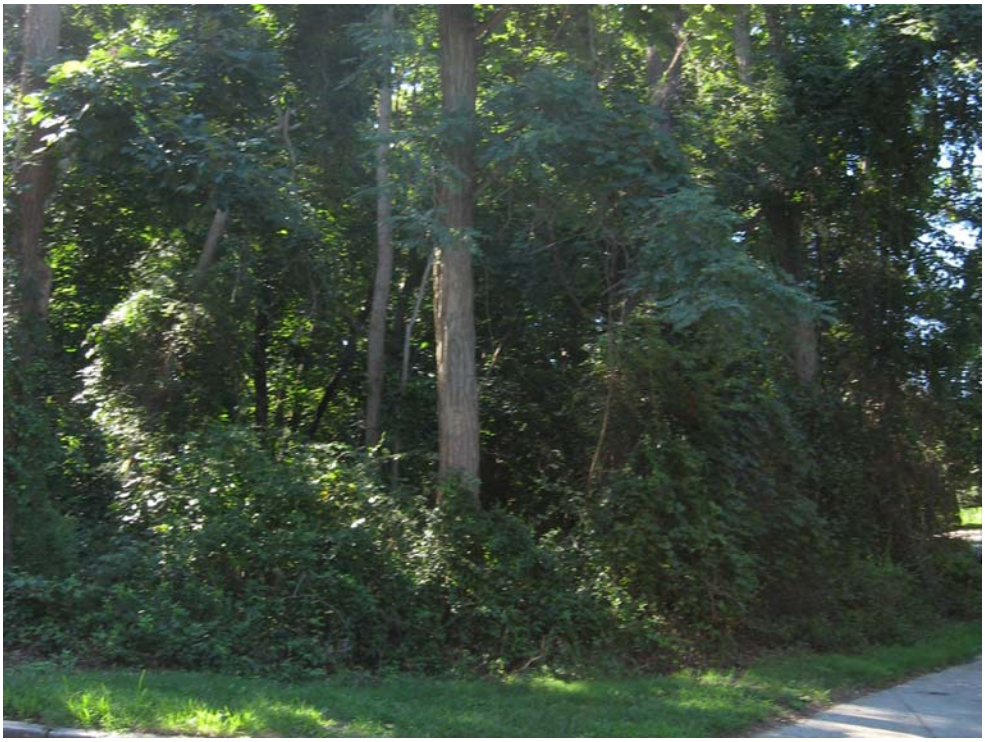
5. View from the intersection of Old Dock Road and Sunken Meadow Road, looking west into the subject property.

6. View from the intersection of Old Dock Road and Sunken Meadow Road, looking northwest along Sunken Meadow Road.

7. View from the eastern entrance to the St. Johnland Nursing Home on Sunken Meadow Road looking south towards the subject property.

8. View from the western entrance to the St. Johnland Nursing Home on Sunken Meadow Road looking south towards the subject property.

9. View from the intersection of Twin Oaks Drive and Sunken Meadow Road, looking southeast towards the subject property.



10. View from the northwestern corner of the subject property, looking northwest along Sunken Meadow Road.

11. View from the northwestern corner of the subject property, looking southeast along Sunken Meadow Road.

12. View from the northwestern corner of the subject property, looking southeast into the subject property.

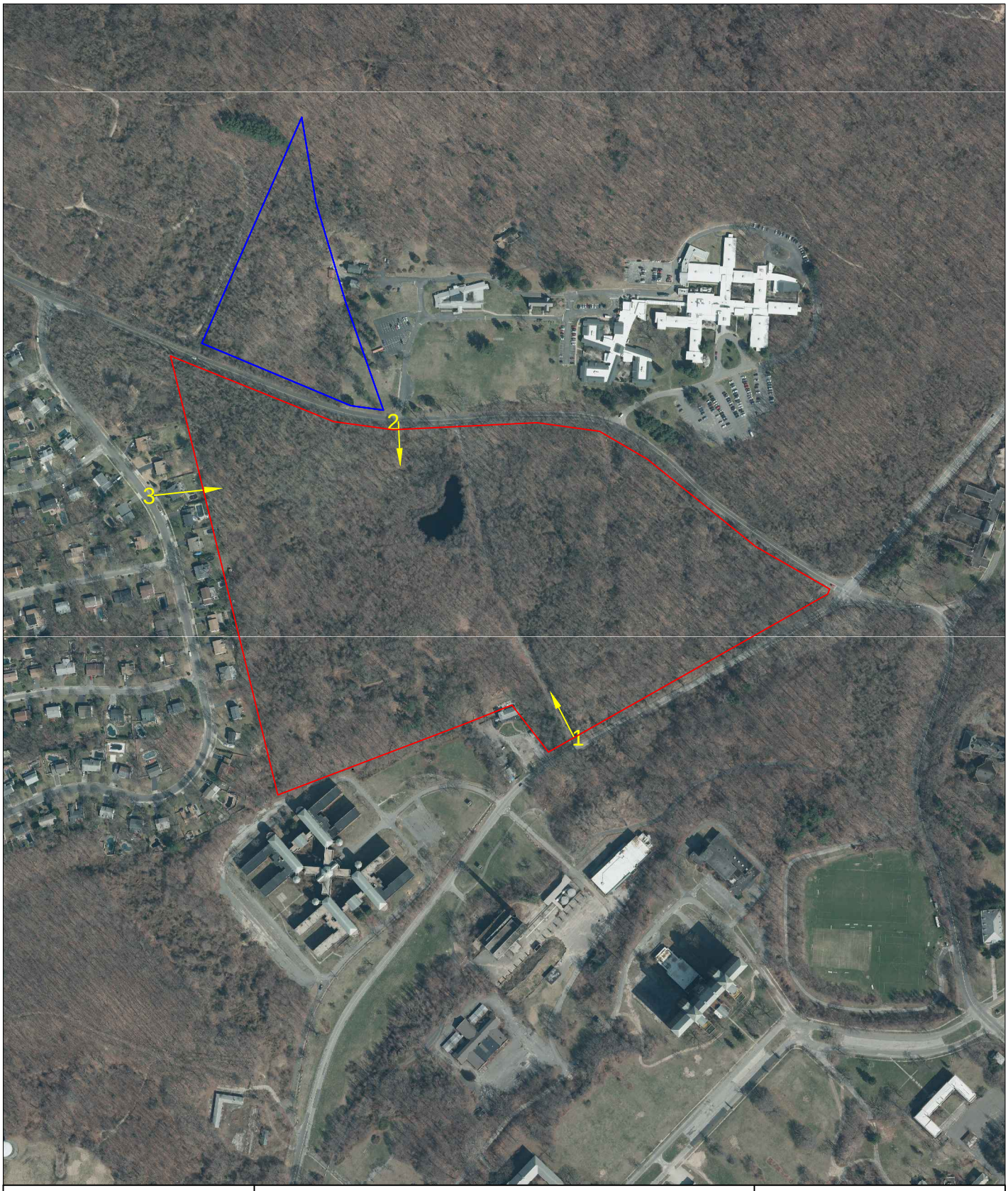
13. View from the intersection of Twin Oaks Drive and Cedar Place looking east towards the subject property.

14. View from the intersection of Twin Oaks Drive and Lyn Oaks Lane, looking east towards the subject property.

15. View from the intersection of Twin Oaks Drive and Mountain Laurel Lane, looking east towards the subject property.

APPENDIX P-2

Photo Simulations



NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

APPENDIX P-2
PHOTOSIMULATION LOCATION MAP

Source: NYSGIS Orthoimagery Program, 2010
Scale: 1" = 500'

NORTH

The Uplands at St. Johnland

Kings Park

The Uplands at St. Johnland
Change of Zone Application
Draft EIS
Existing Conditions Photographs Taken February 2011
Photographs and Simulations Prepared by VHB

LOCATION 1—EXISTING VIEW

LOCATION 1—SIMULATED VIEW

NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

The Uplands at St. Johnland
Change of Zone Application
Draft EIS
Existing Conditions Photographs Taken February 2011
Photographs and Simulations Prepared by VHB

LOCATION 2—EXISTING VIEW

LOCATION 2—SIMULATED VIEW

NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

The Uplands at St. Johnland
Change of Zone Application
Draft EIS
Existing Conditions Photographs Taken February 2011
Photographs and Simulations Prepared by VHB

LOCATION 3—EXISTING VIEW

LOCATION 3—SIMULATED VIEW

NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

APPENDIX Q

HISTORIC/ARCHAEOLOGICAL DOCUMENTS

APPENDIX Q-1

Phase I Archaeological Investigation

TRACKER

Archaeology Services, Inc.

Tracking the Footsteps of the Ancestors

REPORTS OF INVESTIGATIONS

Phase I Archaeological Investigations on the Old Dock property
Kings Park, Township of Smithtown, Suffolk County, New York

March 2011

Prepared for:
Nelson, Pope & Voorhis, LLC, New York

Prepared by:

Alfred G. Cammisa, RPA
Felicia B. Cammisa, Alexander Padilla

Report #: 711

TRACKER ARCHAEOLOGY SERVICES, INC.
MONROE, NY 10950 • (845) 783-4082
NORTH BABYLON, NY 11703 • (631) 321-1380

MANAGEMENT SUMMARY

PR#:
None known

Involved agencies:
NYDEC
Town of Smithtown

Phase:
Phase IA & IB

Location:
Kings Park
Town of Smithtown
Suffolk County

Survey Area:
Length: about 1100 feet (335 meters) north-south
Width: about 1400 feet (427 m) east-west
Acres Surveyed: 26.9 acre (10.8 hectares) from a 50 acre property

USGS:
Saint James, NY

Survey overview:
ST no. & interval: 432 ST's at 50 ft (15 m) intervals.
Size of freshly plowed area: na
Surface survey transect interval: na

Results:
No prehistoric or historic remains.

Results of Architectural Survey:
No. Of buildings/structures/cemeteries in project area: slate pedestal
No. Of buildings/structures/cemeteries adjacent to project area: several
No. Of previously determined NR listed or eligible buildings/structures/cemeteries/districts: none
No. Of identified eligible buildings/structures/cemeteries/districts: none

Authors:
Alfred G. Cammisa, M.A./RPA
Felicia Cammisa, B.A.
Alexander Padilla, B.A.

Date of Report:
Report completed March, 2011

TABLE OF CONTENTS

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Field Results 5-6

Conclusions and Recommendations 6

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Appendix 1: Figures and Photos

Appendix 2: Shovel Test Notes

Appendix 3: Map Documented Structures

LIST OF FIGURES

Figure 1 Portion of the St. James, New York U.S.G.S.

Figure 2 Location of the shovel tests on the project area.

Figure 3 Portion of the 1836 Colton map.

Figure 4 Portion of the 1858 Chase map.

Figure 5 Portion of the 1873 Beers atlas.

Figure 6 Portion of the 1896 Hyde atlas.

Figure 7 Portion of the 1904 USGS.

Figure 8 Portion of the County Soil Survey.

LIST OF PHOTOS

Photo 1 Looking at project area from Old Dock Road.

Photo 2 Looking north from ST 155.

Photo 3 Looking north at possible house depression.

Photo 4 Looking north at slate platform from ST 203.

Photo 5 Looking south from ST 361.

INTRODUCTION

Between February 21 and March 11, 2011, TRACKER-Archaeology Services, Inc. conducted a Phase IA documentary study and a Phase IB archaeological survey for the Old Dock property in Kings Park, Township of Smithtown, Suffolk County, New York.

The purpose of the documentary study was to determine the prehistoric and historic potential of the project area for the recovery of archaeological remains.

The Phase IA was implemented by a review of the original and current environmental data, archaeological site files, other archival literature, maps and documents.

The prehistoric and historic site file search was conducted utilizing the resources of the New York State Historic Preservation Office in Waterford, New York. Various historical and/or archaeological web sites may have been queried to review any pertinent site information.

The purpose of the Phase IB survey was to recover physical evidence for the presence or absence of archaeological sites on the property. This was accomplished through subsurface testing and ground surface reconnaissance.

The entire property is 50 acres, located on the southwest side of the Old Dock Road and Saint Johnland Road intersection. The project area (APE) is limited to 26.9 acres minus wetlands and buffers.

The study was completed by TRACKER-Archaeology Services, Inc. of Monroe, New York. Prehistoric and historic research was conducted by Alfred Cammisa, M.A. Phase IB field work was completed by field director Alexander Padilla, B.A. and PI, Alfred Cammisa. Report preparation was by Alfred Cammisa, Felicia Cammisa, B.A. and Alexander Padilla.

The work was performed for Nelson, Pope & Voorhis, LLC, New York.

ENVIRONMENT

Geology

The study area is located in the southeast portion of New York State in the northeast part of Suffolk County. This portion of New York lies in the Atlantic Coastal Plains Physiographic Province. The coastal plain slopes gently eastward and is actually a strip of recently emerged sea bottom. The soils in this region consist of sand, clay and marl (a mixture of clay, finely fragmented shell and calcite). This region of Suffolk County lies on an outwash plain immediately south of the Harbor Hill Moraine and north of the Ronkonkoma Moraine. The project area may lie along the north edge of a proglacial river channel (Schuberth 1968: cover map, 184-186, Soren and Jensen 1974; Sirkin 1995:175).

Soils and Topography

Soils on the project area consist of:

Name	Soil Horizon Depth in(cm)	Color	Texture Inclusion	Slope %	Drainage	Landform
Riverhead	Ap=0-12 (0-30) B=12-27 (-69)	10YR4/3 7.5YR5/6	LoSa	0-3 & 3-8	well	moraines & outwash plains
Sudbury	O=2-1 (5-3) O=1-0 (3-0) A=0-1 (-3) B=1-13 (-33)	leaves organics 10YR4/1 2.5Y5/4	LoSa	0-3	well	outwash plains & moraines

(Warner 1975: Map 38; pgs. 81-83, 86-87).

KEY:
Shade: Lt=Light, Dk=Dark, V=Very
Color: Br=Brown, Blk=Black, Gry=Gray, Gbr=Gray Brown, StBr=Strong Brown, Rbr=Red Brown, Ybr= Yellow Brown
Soils: Si=Silt, Lo=Loam, Sa=Sand, Cl=Clay
Other: Sh=shale, M=Mottle, Gr=Gravelly, Cb=cobbles, /=or

Elevations on the project area ranged from approximately 85 feet to 60 feet above mean sea level.

Hydrology
A pond and associated wetlands are on the property adjacent to the project area. The study area is about 1700 feet east of Nissequogue River and 2000 feet south of Sunken Meadow Creek, both of which drain shortly into the Long Island Sound.

Vegetation
The predominant forest community inhabiting the Coastal Plain in this vicinity (Cape Cod to the Carolinas) was the Northern Pine-Oak Forest. These forests are maintained largely by the effects of frequent fires. Were it not for these fires which the pine species have adapted to, these forest would slowly turn to Mesic, dominated by oak, hickory and red maple. Northern Pine-Oak forests occur on sandy or otherwise poor soils that are overly dry. They generally have lower species diversity than bottomland forests(Kricher 1988: 16-17, 65-66). The reason the forests soils and surfaces are so dry in this moist region is due to the excessive drainage of overly sandy soils of the coastal plain.

At the time of the Phase IB investigation the property consisted of a forest with maple, oak, hickory, and briars.

PREHISTORIC POTENTIAL

A prehistoric site file search was conducted at the New York State Historic Preservation Office (NYSHPO). The search included a 1 mile radius around the project area. The following sites are recorded:

NYSM Sites	NYSHPO Sites	Distance from APE ft(m)	Site Description
	10308.00033	3227 (984)	Kallen Site: no info.
8057		2204 (672)	Kings Park Hospital: flakes, misc. on eroded bluff adjacent to marsh
8060		3520 (1073)	Pond Park: flakes, points?, near stream into pond.
	10308.000030	3368 (1027)	Obadiah Smith House: midden

A Paleoindian point was recovered from this vicinity and a burial was also reported (Stone nd:map).

In addition, an Indian foot trail may have existed along current Saint Johnland Road (Stone: not dated:map).

Assessing the known environmental and prehistoric data, we can summarize the following points:

-A pond and associated wetlands are on the property adjacent to the project area. The study area is about 1700 feet east of Nissequogue River and 2000 feet south of Sunken Meadow Creek, both of which drain shortly into the Long Island Sound.

-The project area contains level to moderate sloping terrain with well drained soils.

-An Indian trail was likely located very close to the project area.

-Prehistoric sites are recorded in the surrounding vicinity.

In our opinion, the study area has an above average potential for the recovery of prehistoric remains along the level portion of the property. The type of site encountered may be a procurement and/or processing station or camp.

HISTORIC POTENTIAL

Contact Period (Seventeenth Century)
At the time of European contact and settlement, the study area and surrounding territories were probably occupied by either the Slongo or Arhakaamunk, or Shockheyoune people. These people were likely villagers or a subtribe of either the large Nesaquake (Missaquogue) tribe or Matinecock. The Nesaquake and the Matinecock used territory appear to have interfaced in the Sunken Meadow area (Bolton 1975: 53-54; Stone nd:map; Erichsen 1968: 1).

An Indian foot trail may have existed along current Saint Johnland Road(Stone nd:map).

Eighteenth Century
Wigwams were still being used during this period. A wigwam was reported along the aforementioned Indian foot trail not far from the project area. It was reported by Reverend Horton in the 1740's who probably lived in it while visiting (Stone 1980:170; 1983; 1993:6; Stone nd: map). The term wigwam may have referred to 1 or a hamlet of wigwams.

Smithtown was predominantly an agricultural community where wheat rye, corn, oats and potatoes were the primary crops. The cutting and selling of cordwood also provided income. Fishing was a thriving industry. The waters had a large supply of clams, crabs, oysters and eels and because of the Nichols Patent of 1665 and the Andros Patent of 1667, Smithtown owned its own local water (Erichsen 1968: 7).

Settlement appears to have originally been concentrated near the northern part of the Town near the coast and upper Nissequogue River. During this century, settlement shifted further to the south of Town. The Nissequogue was dredged making it available for the bigger ships to dock further south (Cammisa 1994: 6).

Nineteenth Century
The 1836 Colton map shows what appears to be Route 25A but not Saint Johnland Road. No structures are on, or adjacent to, the study area (Figure 3).

The 1858 Chace map appears to depict buildings along Saint Johnland Road. Captain Smith's house appears adjacent to the project area. Three buildings are depicted across the road to the north (Figure 4).

The 1873 Beers atlas shows a school house on the property possibly adjacent to the project area. The buildings on the north side of Saint Johnland Road are the St. Johnland Institute for Children (Figure 5).

The project property has been owned by the St. Johnland Nursing Facility since 1866. At this time the property was used as a dairy farm (NPV 2011).

The 1896 Hyde atlas shows the school still on the property adjacent to the project area. Other buildings are depicted on the property adjacent to the project area to the southwest and off the property. State Institutions are shown to the north and southeast of the project parcel (Figure 6).

Twentieth Century
The 1904 USGS shows no structures on or adjacent to the project area (Figure 7).

Barns and workers quarters for the St. Johnland Nursing facility may have been located on the property. These may have included block foundations heated by coal (NPV 2011).

An historic site file search was conducted at the New York State Historic Preservation Office (NYSHPO). The following sites were recorded within 1 mile:

NYSM Sites	NYSHPO Sites	Distance from APE ft(m)	Site Description
	10308.000822	2868 (874)	Kings Park State Hospital: open field on Maple Hill was the burial ground (c. 1890-1980) with unmarked graves

NYSM Sites	NYSHPO Sites	Distance from APE ft(m)	Site Description
	96NR01061	3508 (1070)	Obadiah Smith House: c. 1708-1850

Assessing the known environmental and historic data, we can summarize the following points:

-A pond and associated wetlands are on the property adjacent to the project area. The study area is about 1700 feet east of Nissequogue River and 2000 feet south of Sunken Meadow Creek, both of which drain shortly into the Long Island Sound.

-The project area contains level to moderate sloping terrain with well drained soils.

-An Indian trail is located close to the project area.

-Historic burials and a house were located in the vicinity.

-Historic map documented structures were depicted adjacent to the project area.

In our opinion, the project area has a higher than average potential for the recovery of nineteenth century European-American sites, possibly related to the St. Johnland Nursing facility.

FIELD METHODS

Walkover

Exposed ground surface were walked over at shoulder width transects to observe for artifacts. Covered ground terrain was reconnoitered at about 15 meters intervals or less for any above ground features, such as terms, depressions, structures, or rock configurations, which might be evidence for a prehistoric or historic site.

Shovel Testing

Shovel test intervals were excavated at 15 meter intervals across the project area. Each shovel test measured about 30 to 40 cm. in diameter and was dug into the underlying subsoil (B horizon) 10 to 20 cm. when possible. All soils were screened through 1/4 inch wire mesh and observed for artifacts. All shovel test pits were mapped on the project area map.

Soil stratigraphy was recorded according to texture and color. Soil color was matched against the Munsell color charts for soils. Notes were transcribed on pre-printed field forms and a field journal.

FIELD RESULTS

Field testing of the project area consisted of the excavation of 432 shovel tests. No prehistoric features or artifacts were encountered. No historic features or artifacts were encountered. What appears to be a slate platform-like structure and associated building depressions were encountered along a gravel drive in the woods.

Stratigraphy

Stratigraphy on the property included the following:

A/O horizon - 1 to 12 cm. thick of root mat, leaf litter, and humus.

A horizon - 10 to 41 cm. thick of 10YR4/3 brown, 10YR3/3 dark brown, and 10YR4/4 dark yellow brown loamy sand.

B horizon - 10 to 20 cm. into of 10YR5/6, yellow brown loamy sand, which was occasionally impeded.

CONCLUSIONS AND RECOMMENDATIONS

The documentary study had revealed that the study area had a higher than average potential for the recovery of prehistoric sites and for historic sites. This was based upon environmental characteristics, proximity to prehistoric and historic sites, Indian trails, and European-American structures.

The field testing included the excavation of 432 ST's. No prehistoric artifacts or features were encountered. No historic artifacts or features were encountered. Twentieth century debris, slate platform-like structure and associated building depressions and roads were encountered. No further work is recommended.

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United States Geologic Survey
1956 *St. James, New York* quadrangle map, 7.5 minute series.
1904 *Setauket, NY* quadrangle map, 7.5 minute series

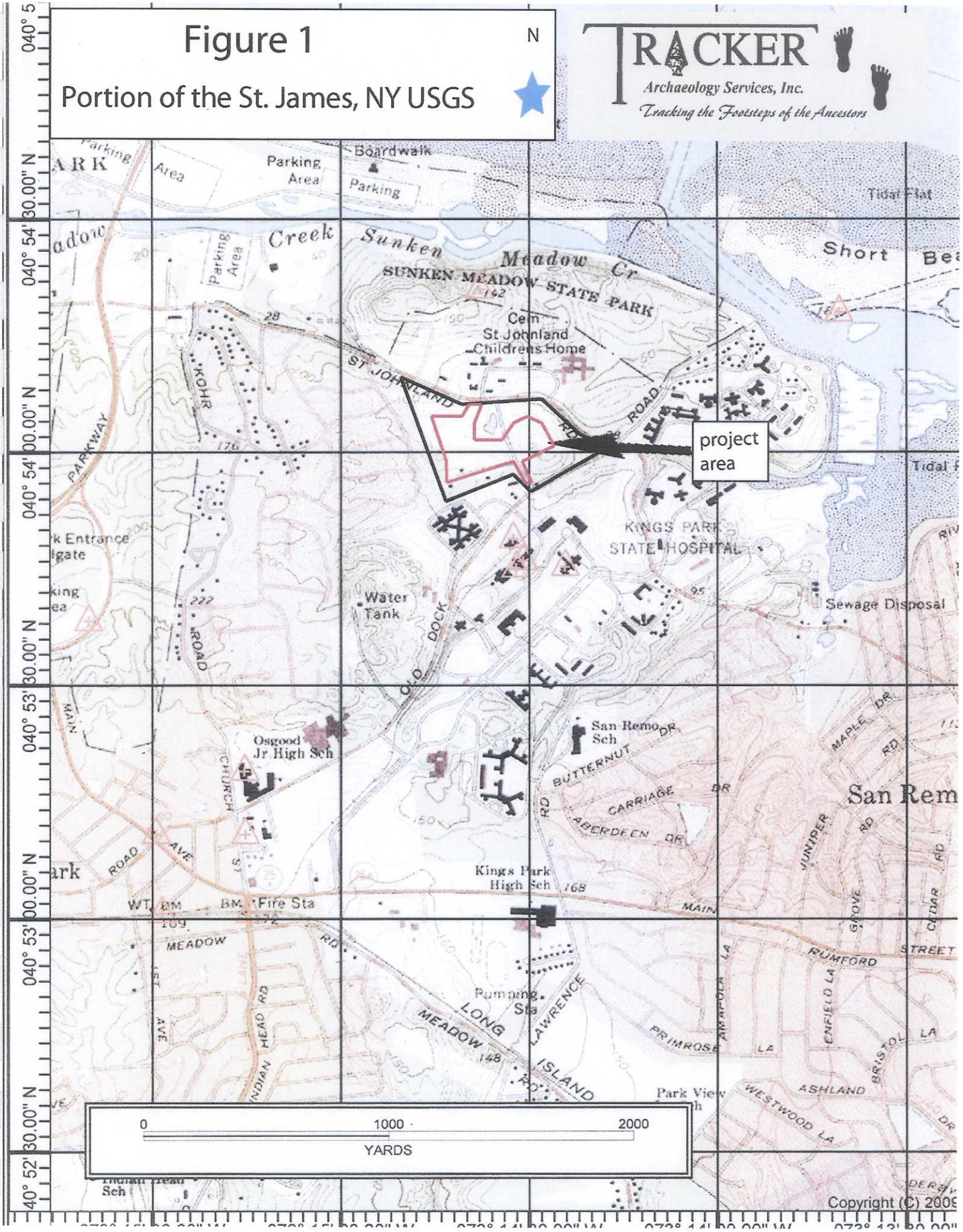
APPENDIX 1

Figure 1

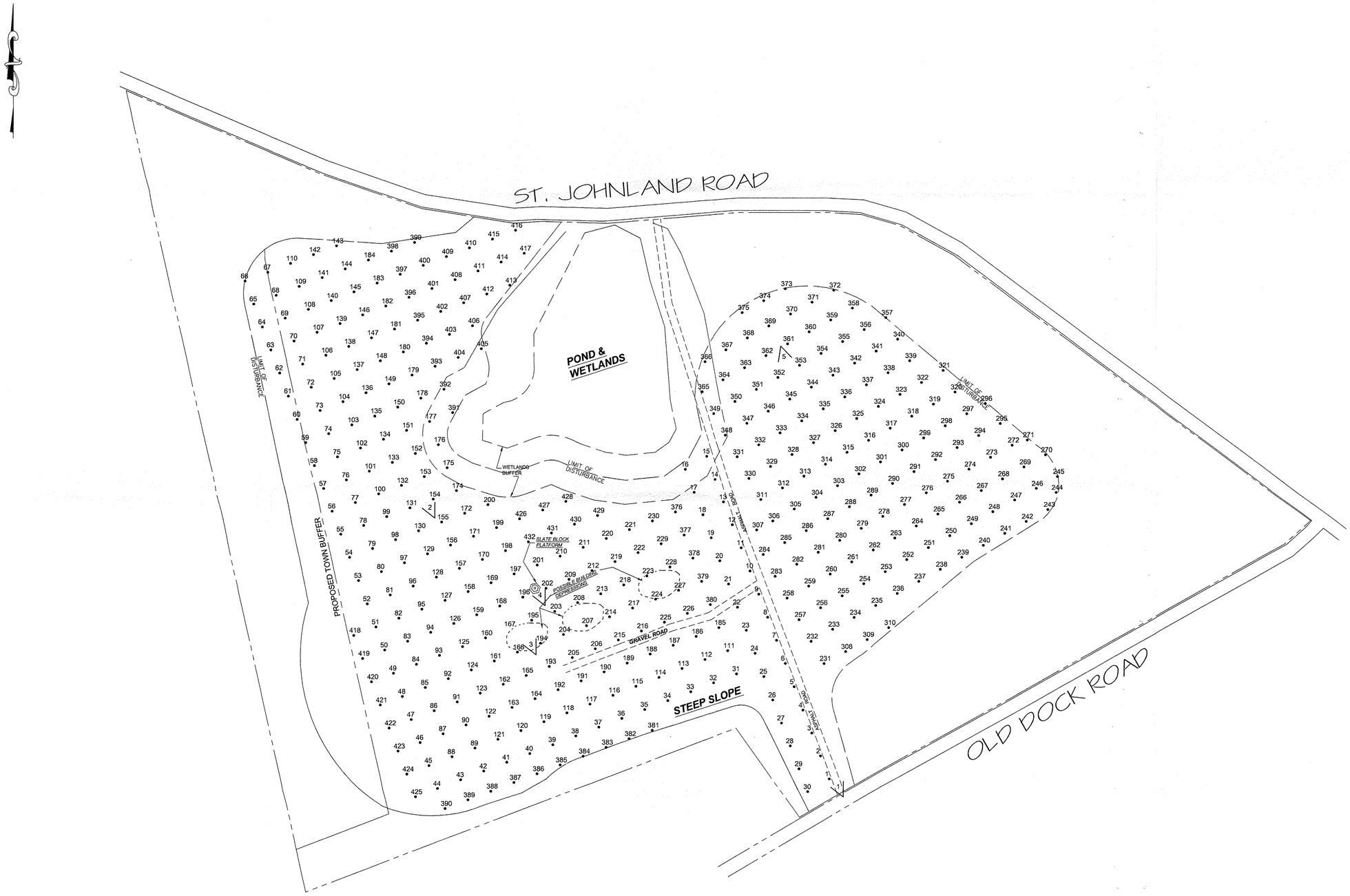
Portion of the St. James, NY USGS

N

TRACKER
Archaeology Services, Inc.
Tracking the Footsteps of the Ancestors



Copyright (C) 2009



SCALE: 1 INCH = 100 FEET

200' 150' 100' 50' 0 100' 200'

FIGURE 2: LOCATION OF SHOVEL TESTS

V PHOTO ANGLE

● NEGATIVE SHOVEL TEST

PROJECT NAME: OLD DOCK ROAD

TRACKER Archaeology Services, Inc. "Tracking the Footsteps of the Ancestors"

Figure 3

Portion of the 1836 Colton map

N

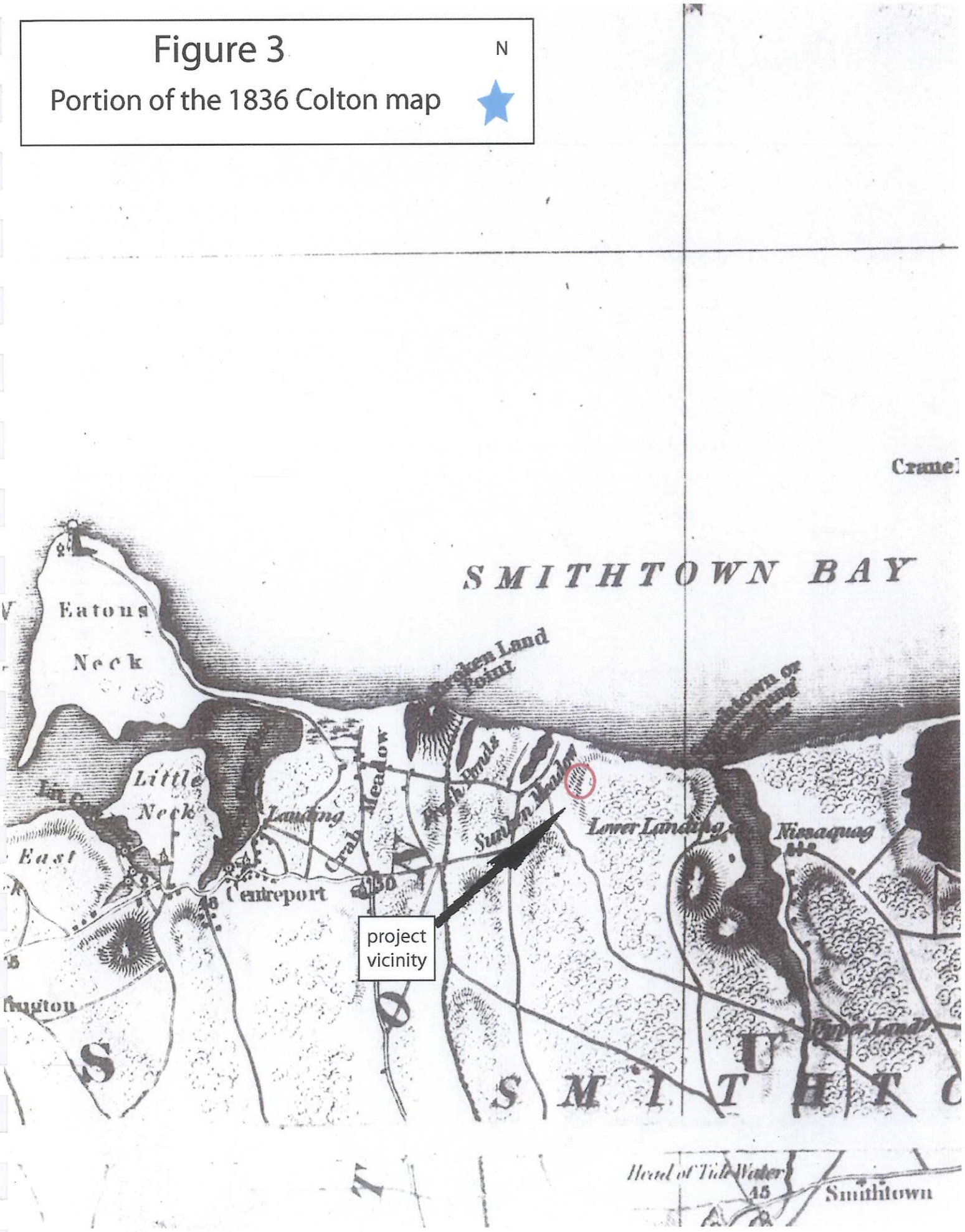


Figure 4

Portion of the 1858 Chace map

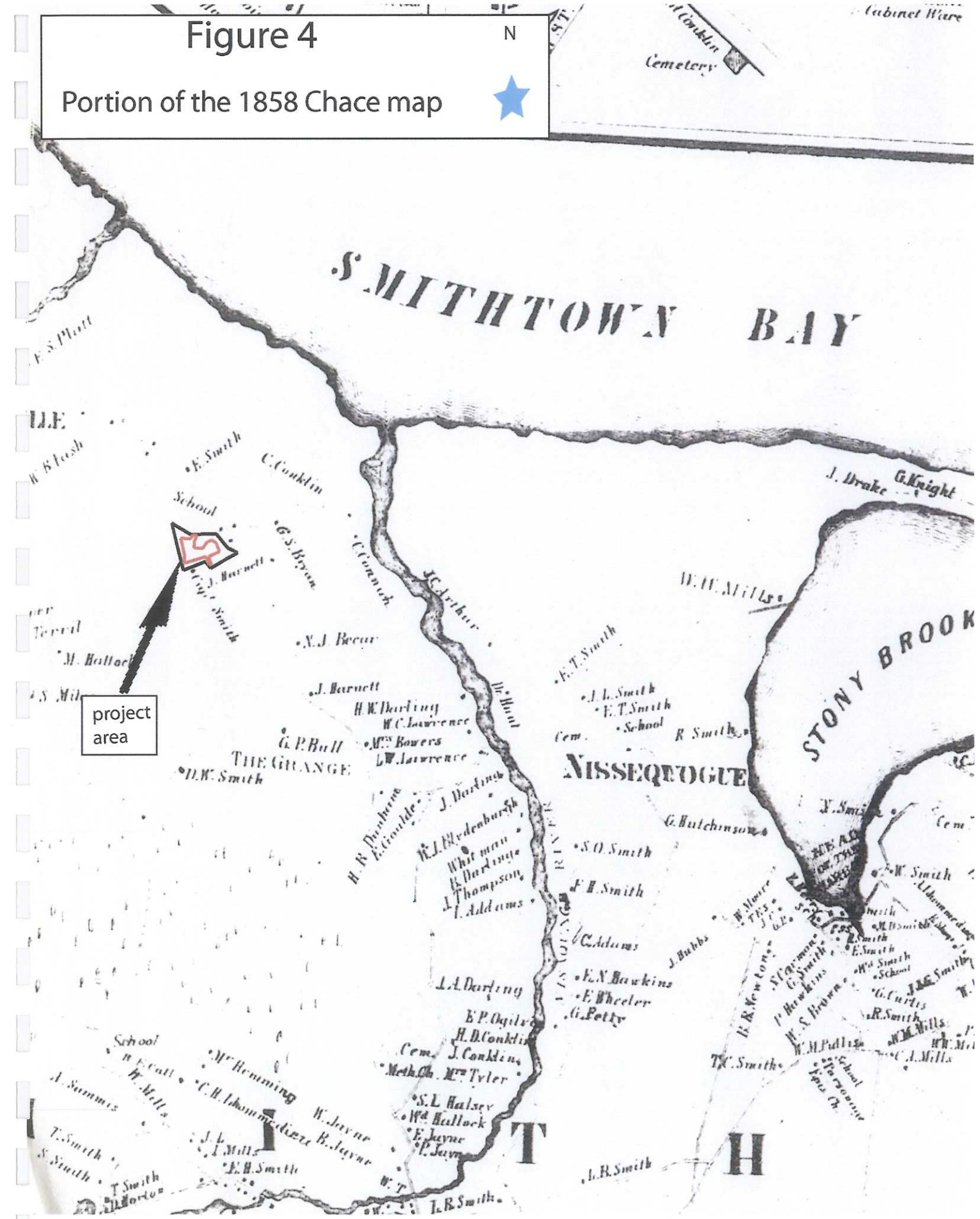


Figure 5
Portion of the 1873 Beers atlas
N
project area
MEADOW GLEN
DIST. No 4
DIST. 10
DIST. No 7
SMITHTOWN P.O.
Scale 1⅕ Inches to
Sunk Meadow Creek
Institute for Children
St. Johnland
C.Brush
N. Robins
E. Bryant
D. Bryant
J. Brush
W. Coles
E. Platt
C. Jarris
W. French
D. Brady
B. Bennett
J. Bubea
J. Shopland
E. Arthur
Mrs. Ketchum
Mrs. Sanford
A. Ketchum
J. Harmer
I. Nichols
T. Callihan
W.P. Buffett
M.P. Buffett
E.H. Ketchum
T. Smith
S. Smith
J. Barned
Capt. J.H. Smith
N.J. Bebar
A. Darling
J.B. Harned
V.J. Bowers
T. Brown
H.R. Dunham
F. Brush
E. Brush
G. Soper
Mrs. Tirrell
M. Halleck
E. Soper
T. O'Connell
I. Kelley
C. Smith
C.H. Halleck
D.W. Smith
E. Brush
W.H. Smith
T. Smith
D.W. Kissam
Cem.
L. Arthur
W. Seamen
J.W. Hulse
C. Hubbs
S. Nichols
L. Lawrence
J. Hemmings
L. Lawrence
S. Newton
J. Haggerty
W. Mills
A. Sammis
A. Whitman

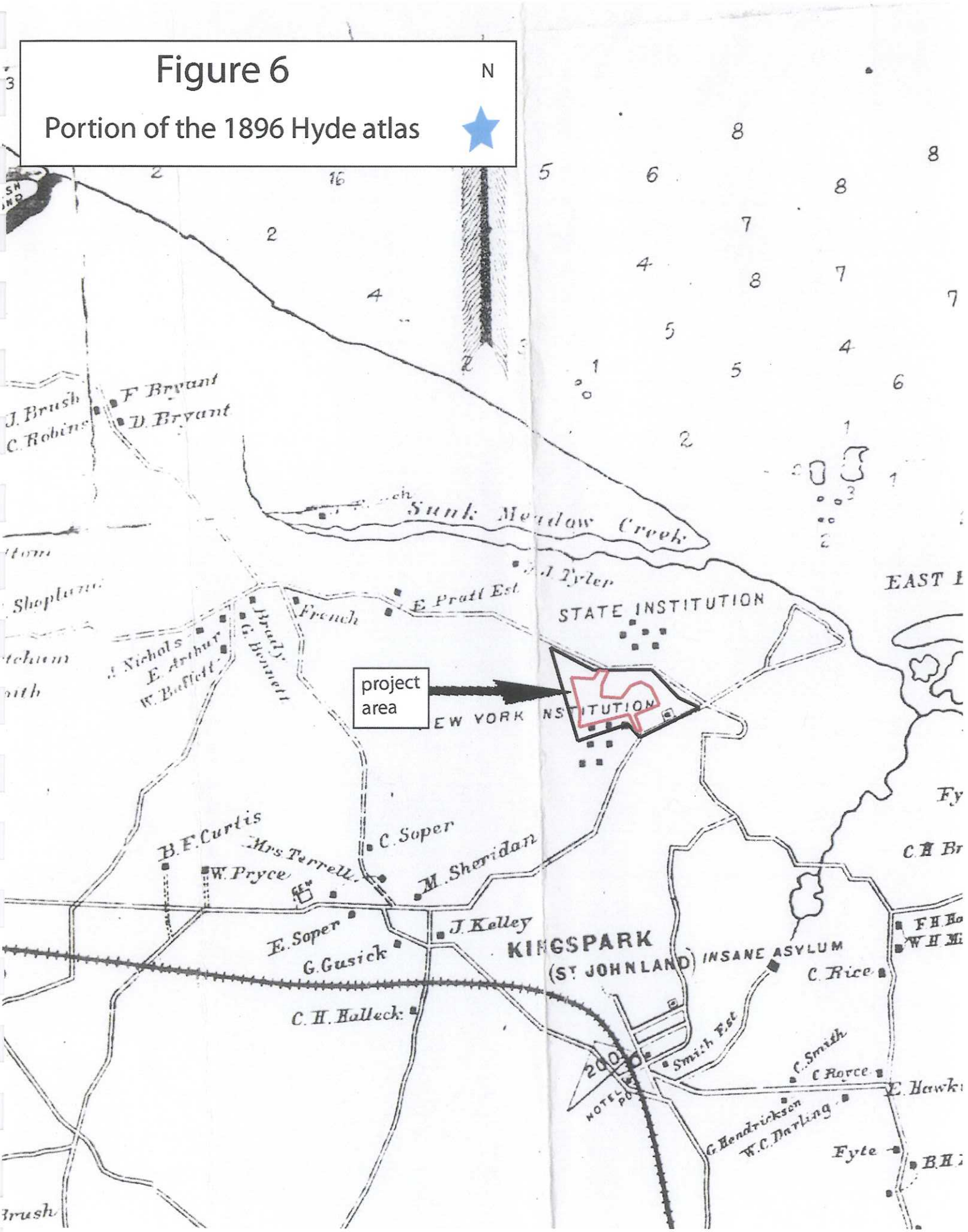


Figure 6
Portion of the 1896 Hyde atlas
N
project area
STATE INSTITUTION
Sunk Meadow Creek
KINGSPARK
(ST JOHNLAND)
INSANE ASYLUM
EAST
J. Brush
C. Robins
F. Bryant
D. Bryant
E. Pratt Est
French
Brady
G. Bennett
J. Nichols
E. Arthur
W. Bufflett
B. F. Curtis
Mrs Terrell
W. Pryce
C. Soper
M. Sheridan
E. Soper
G. Gusick
J. Kelley
C. H. Halleck
C. Rice
Smith Est
C. Smith
C. Rorce
G. Hendrickson
W. C. Darling
Fyte

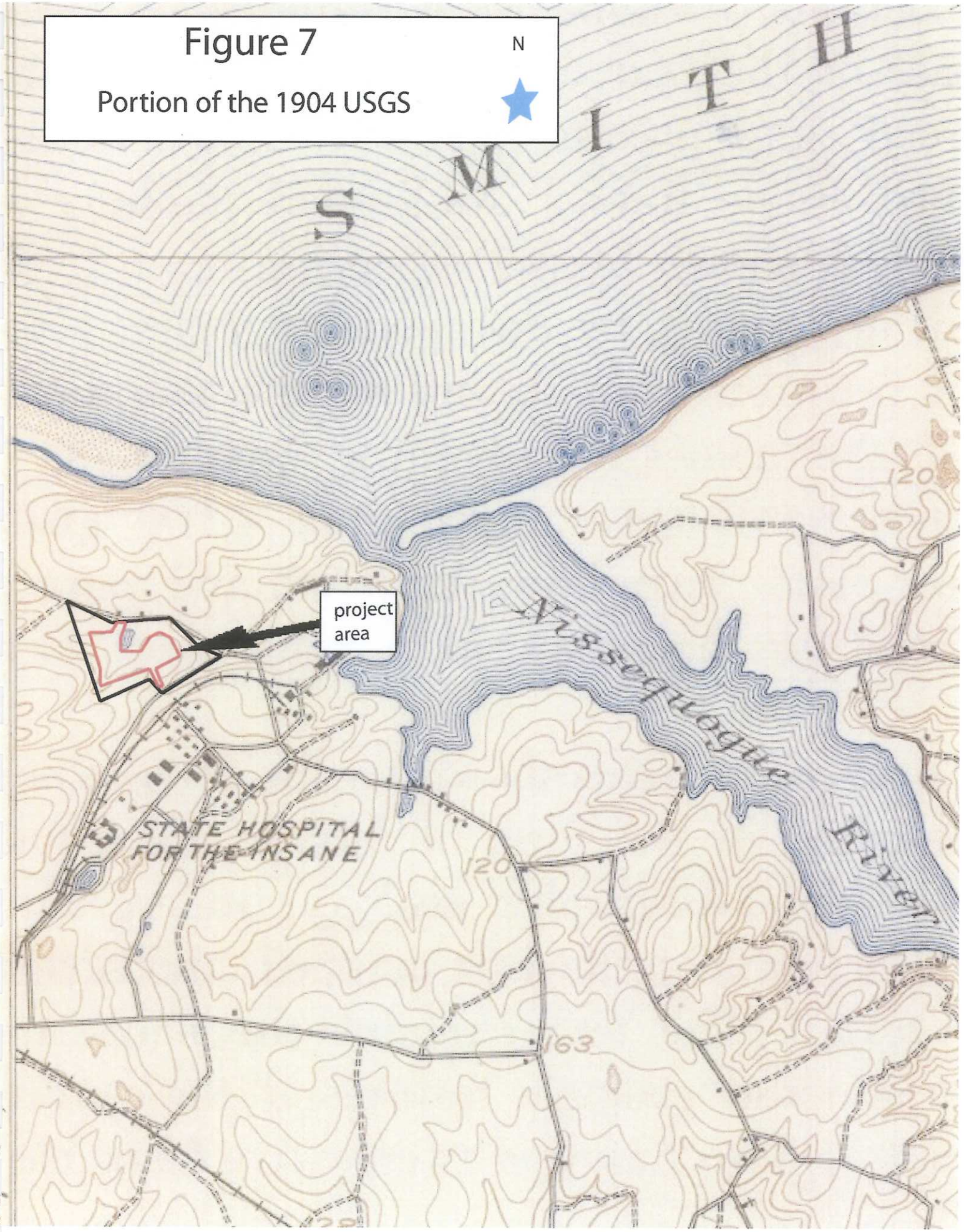


Figure 7
Portion of the 1904 USGS
N
S M I T H
project area
Mississippi River
STATE HOSPITAL FOR THE INSANE
120
163

Figure 8

Portion of the County Soil Survey

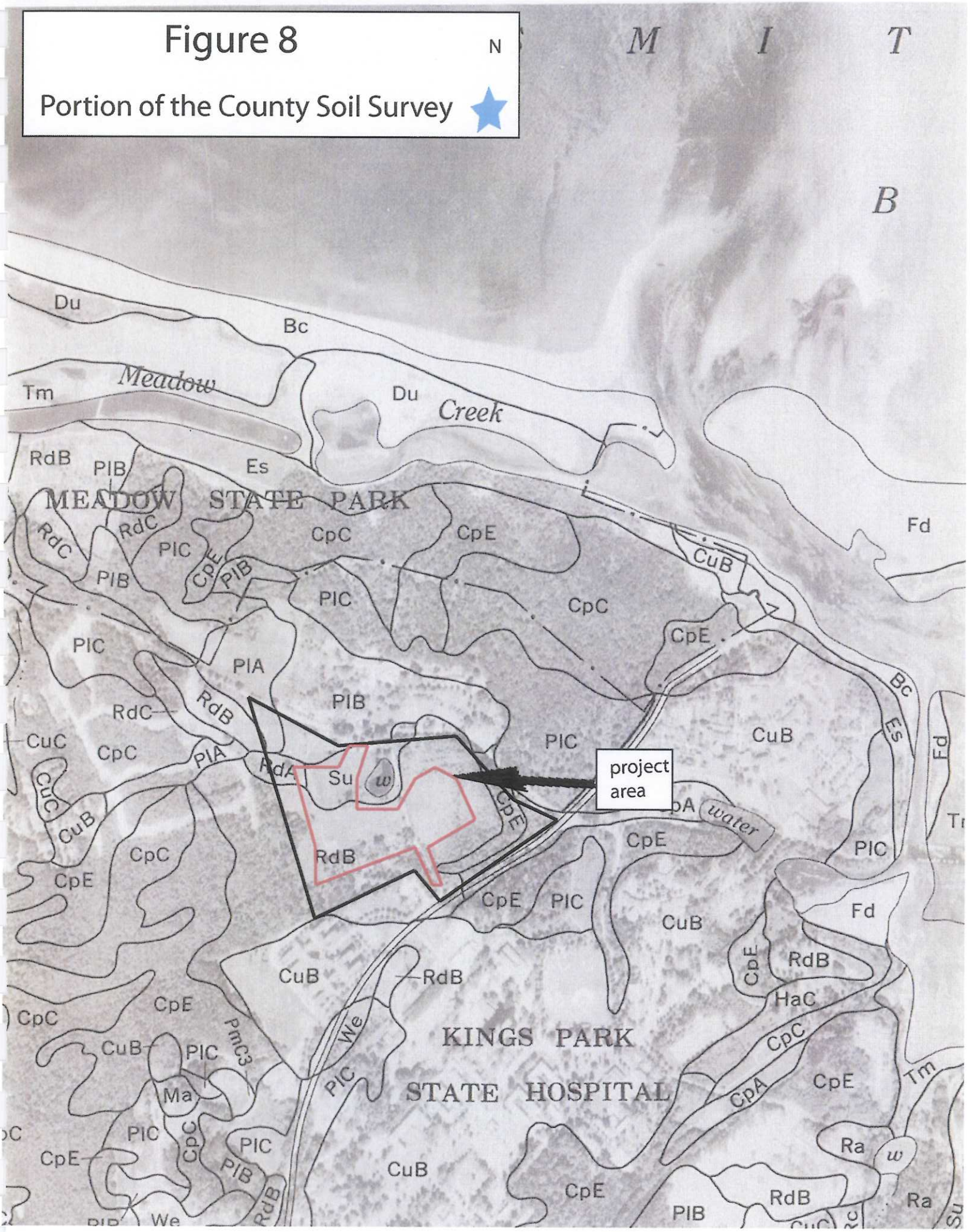
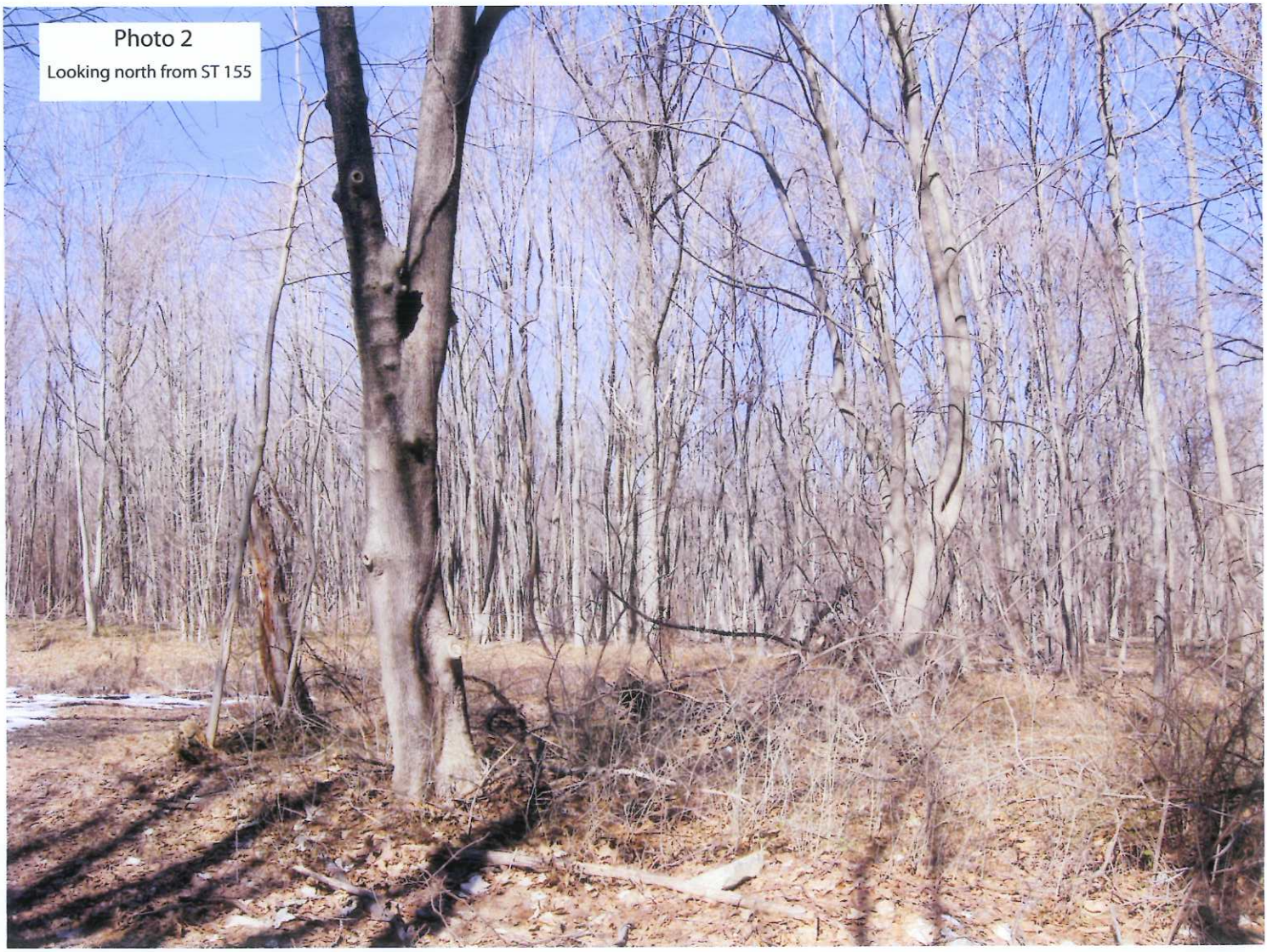


Photo 1

Looking at project area from Old Dock Road

Photo 2

Looking north from ST 155



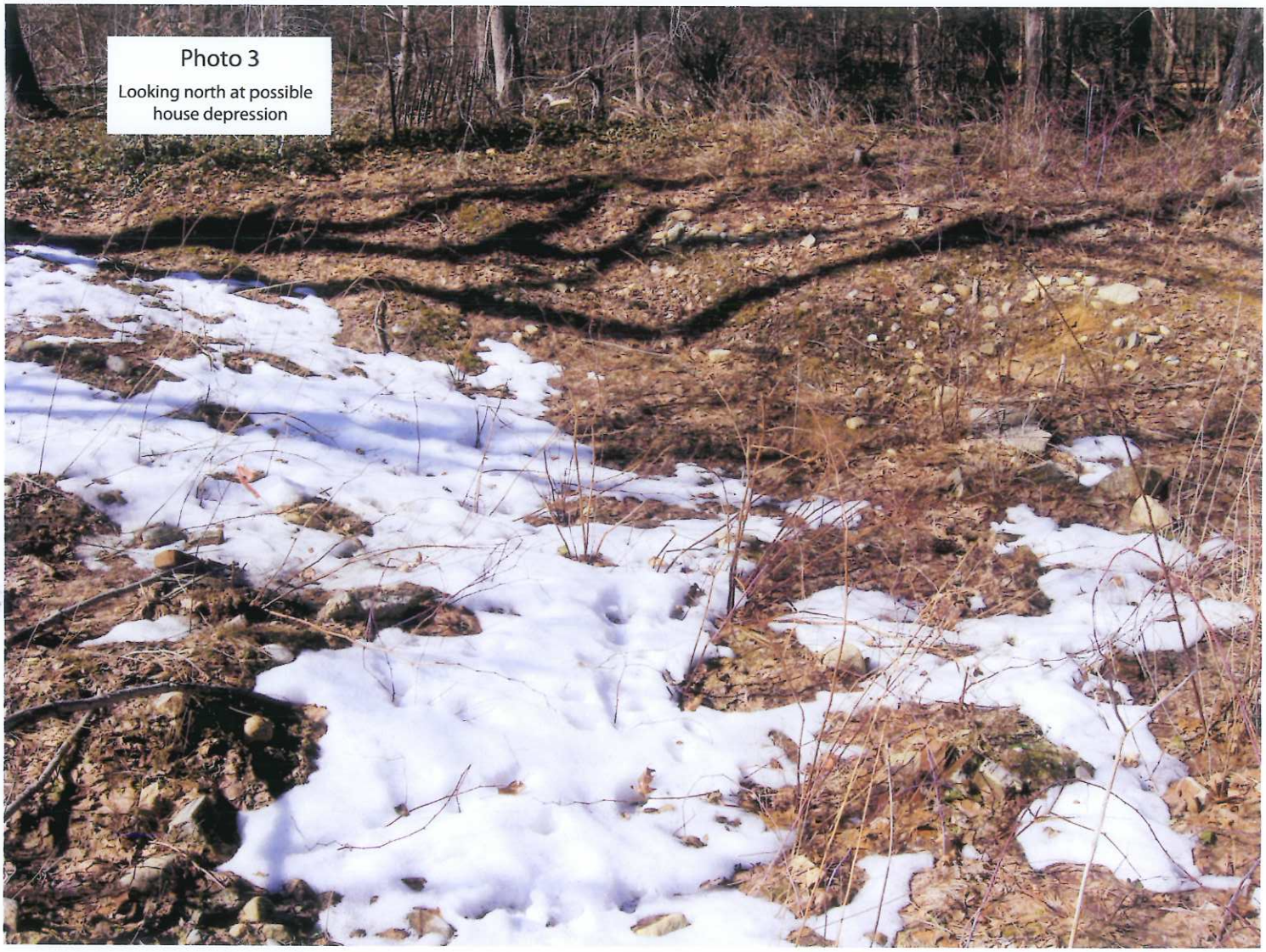


Photo 3
Looking north at possible
house depression

Photo 4

Looking north at slate platform from ST 203

Photo 5
Looking south from ST 361

APPENDIX 2

Shovel Tests

STP	Lv	Depth(cm)	Texture	Color	Hor.	Comments
1	1	0-6	rootmat,leaves,humus		A/0	NCM
	2	6-34	LoSa	10YR4/4	A	NCM
	3	34-45	LoSa	10YR5/6	B	NCM
2	1	0-6	rootmat,leaves,humus		A/0	NCM
	2	6-30	LoSa	10YR4/4	A	NCM
	3	30-40	LoSa	10YR5/6	B	NCM
3	1	0-6	rootmat,leaves,humus		A/0	NCM
	2	6-32	LoSa	10YR4/4	A	NCM
	3	32-43	LoSa	10YR5/6	B	NCM
4	1	0-4	rootmat,leaves,humus		A/0	NCM
	2	4-30	LoSa	10YR4/4	A	NCM
	3	30-43	LoSa	10YR5/6	B	NCM
5	1	0-4	rootmat,leaves,humus		A/0	NCM
	2	4-31	LoSa	10YR4/4	A	NCM
	3	31-44	LoSa	10YR5/6	B	NCM
6	1	0-4	rootmat,leaves,humus		A/0	NCM
	2	4-37	LoSa	10YR4/4	A	plastic
	3	37-49	LoSa	10YR5/6	B	NCM
7	1	0-5	rootmat,leaves,humus		A/0	NCM
	2	5-36	LoSa	10YR4/4	A	plastic
	3	36-47	LoSa	10YR5/6	B	NCM
8	1	0-2	rootmat,leaves,humus		A/0	NCM
	2	2-38	LoSa	10YR4/4	A	NCM
	3	38-55	LoSa	10YR5/6	B	NCM
9	1	0-2	rootmat,leaves,humus		A/0	NCM
	2	2-20	LoSa	10YR4/4	A	NCM
	3	20-38	LoSa	10YR5/6	B	NCM
10	1	0-6	rootmat,leaves,humus		A/0	NCM
	2	6-28	LoSa	10YR4/4	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
11	1	0-5	rootmat,leaves,humus		A/0	NCM
	2	5-35	LoSa	10YR4/4	A	plastic
	3	35-47	LoSa	10YR5/6	B	NCM
12	1	0-4	rootmat,leaves,humus		A/0	NCM
	2	4-33	LoSa	10YR4/4	A	NCM
	3	33-45	LoSa	10YR5/6	B	NCM
13	1	0-4	rootmat,leaves,humus		A/0	NCM
	2	4-34	LoSa	10YR4/4	A	NCM

	3	34-49	LoSa	10YR5/6	B	NCM
14	1	0-2	rootmat,leaves,humus		A/0	NCM
	2	2-28	LoSa	10YR4/4	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
15	1	0-3	rootmat,leaves,humus		A/0	NCM
	2	3-19	LoSa	10YR4/4	A	NCM
	3	19-31	LoSa	10YR5/6	B	NCM
16	1	0-3	rootmat,leaves,humus		A/0	NCM
	2	3-30	LoSa	10YR4/4	A	NCM
	3	30-40	LoSa,gravel	10YR5/6	B	NCM
17	1	0-3	rootmat,leaves,humus		A/0	NCM
	2	3-16	LoSa	10YR4/4	A	NCM
	3	16-roots.				
18	1	0-3	rootmat,leaves,humus		A/0	NCM
	2	3-36	LoSa	10YR4/4	A	NCM
	3	36-47	LoSa	10YR5/6	B	NCM
19	1	0-3	rootmat,leaves,humus		A/0	NCM
	2	3-24	LoSa	10YR4/4	A	NCM
	3	24-38	LoSa	10YR5/6	B	NCM
20	1	0-5	rootmat,leaves,humus		A/0	NCM
	2	6-10	LoSa	10YR4/4	A	NCM
	3	10-roots				
21	1	0-6	rootmat,leaves,humus		A/0	NCM
	2	6-44	LoSa	10YR4/4	A	NCM
	3	44-58	LoSa	10YR5/6	B	NCM
22	1	0-5	rootmat,leaves,humus		A/0	NCM
	2	5-34	LoSa	10YR4/4	A	mod. bottle glass
	3	34-45	LoSa	10YR5/6	B	NCM
23	1	0-3	rootmat,leaves,humus		A/0	NCM
	2	3-23	LoSa	10YR4/4	A	mod. bottle glass
	3	23-roots.				
24	1	0-4	rootmat,leaves,humus		A/0	NCM
	2	4-28	LoSa	10YR4/4	A	plastic
	3	28-40	LoSa	10YR5/6	B	NCM
25	1	0-4	rootmat,leaves,humus		A/0	NCM
	2	4-36	LoSa	10YR4/4	A	beer glass
	3	36-roots.				
26	1	0-6	rootmat,leaves,humus		A/0	NCM
	2	6-28	LoSa	10YR4/4	A	NCM
	3	28-39	LoSa	10YR5/6	B	NCM

27	1	0-6	rootmat,leaves,humus		A/0	NCM
	2	6-28	LoSa	10YR4/4	A	NCM
	3	28-42	LoSa	10YR5/6	B	NCM
28	1	0-5	rootmat,leaves,humus		A/0	NCM
	2	5-33	LoSa	10YR4/4	A	NCM
	3	33-45	LoSa	10YR5/6	B	NCM
29	1	0-3	rootmat,leaves,humus		A/0	NCM
	2	3-13	LoSa	10YR4/4	A	NCM
	3	13-water.				
30	1	0-3	rootmat,leaves,humus		A/0	NCM
	2	3-27	LoSa	10YR4/4	A	NCM
	3	27-water.				
31	1	0-5	rootmat,leaves,humus		A/0	NCM
	2	5-30	LoSa	10YR4/4	A	NCM
	3	30-42	LoSa	10YR5/6	B	NCM
32	1	0-6	rootmat,leaves,humus		A/0	NCM
	2	6-31	LoSa	10YR4/4	A	NCM
	3	31-44	LoSa	10YR5/6	B	NCM
33	1	0-6	rootmat,leaves,humus		A/0	NCM
	2	6-10	LoSa	10YR4/4	A	NCM
	3	10-35	LoSa	10YR5/6	B	NCM
34	1	0-6	rootmat,leaves,humus		A/0	NCM
	2	6-25	LoSa	10YR4/4	A	NCM
	3	25-37	LoSa	10YR5/6	B	NCM
35	1	0-8	rootmat,leaves,humus		A/0	NCM
	2	8-25	LoSa	10YR4/4	A	NCM
	3	25-35	LoSa	10YR5/6	B	NCM
36	1	0-5	rootmat,leaves,humus		A/0	NCM
	2	5-28	LoSa	10YR4/4	A	NCM
	3	28-39	LoSa	10YR5/6	B	NCM
37	2	0-2	LoSa,disturbed	10YR4/3	A	coal
	3	2-30	LoSa,disturbed	10YR5/6	B	NCM
38	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-26	LoSa	10YR4/3	A	NCM
	3	26-38	LoSa	10YR5/6	B	NCM
39	1	0-8	rootmat,leaves,humus		A/O	NCM
	2	8-30	LoSa	10YR4/3	A	NCM
	3	30-40	LoSa	10YR5/6	B	NCM
40	1	0-10	rootmat,leaves,humus		A/O	NCM
	2	10-25	LoSa	10YR4/3	A	NCM
	3	25-40	LoSa	10YR5/6	B	NCM

41	1	0-8	rootmat,leaves,humus		A/O	NCM
	2	8-32	LoSa	10YR4/3	A	NCM
	3	32-42	LoSa	10YR5/6	B	NCM
42	1	0-12	rootmat,leaves,humus		A/O	NCM
	2	12-31	LoSa	10YR4/3	A	NCM
	3	31-42	LoSa	10YR5/6	B	NCM
43	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-29	LoSa	10YR4/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
44	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-38	LoSa	10YR4/3	A	NCM
	3	38-48	LoSa	10YR5/6	B	NCM
45	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-30	LoSa	10YR4/3	A	NCM
	3	30-40	LoSa	10YR5/6	B	NCM
46	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-37	LoSa	10YR4/3	A	NCM
	3	37-50	LoSa	10YR5/6	B	NCM
47	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-15	LoSa	10YR4/3	A	NCM
	3	15-25	LoSa	10YR5/6	B	NCM
48	1	0-2	rootmat,leave,humus		A/O	NCM
	2	2-27	LoSa	10YR4/3	A	NCM
	3	27-38	LoSa	10YR5/6	B	NCM
49	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-29	LoSa	10YR4/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
50	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-29	LoSa	10YR4/3	A	NCM
	3	29-39	LoSa	10YR5/6	B	NCM
51	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-30	LoSa	10YR4/3	A	NCM
	3	30-43	LoSa	10YR5/6	B	NCM
52	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-20	LoSa	10YR4/3	A	NCM
	3	20-30	LoSa	10YR5/6	B	NCM
53	1	0-7	rootmat,leaves,humus		A/O	NCM
	2	7-31	LoSa	10YR4/3	A	NCM
	3	31-45	LoSa	10YR5/6	B	NCM
54	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-21	LoSa	10YR4/3	A	NCM

	3	21-31	LoSa	10YR5/6	B	NCM
55	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-23	LoSa	10YR4/3	A	NCM
	3	23-38	LoSa	10YR5/6	B	NCM
56	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-25	LoSa	10YR4/3	A	NCM
	3	25-35	LoSa	10YR5/6	B	NCM
57	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-23	LoSa	10YR4/3	A	NCM
	3	23-37	LoSa	10YR5/6	B	NCM
58	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-28	LoSa	10YR4/3	A	NCM
	3	28-39	LoSa	10YR5/6	B	NCM
59	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-24	LoSa	10YR4/3	A	NCM
	3	24-35	LoSa	10YR5/6	B	NCM
60	1	0-7	rootmat,leaves,humus		A/O	NCM
	2	7-29	LoSa	10YR4/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
61	1	0-3	rootmat,leave,humus		A/O	NCM
	2	3-24	LoSa	10YR4/3	A	NCM
	3	24-36	LoSa	10YR5/6	B	NCM
62	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-26	LoSa	10YR4/3	A	beer glass
	3	26-37	LoSa	10YR5/6	B	NCM
63	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-25	LoSa	10YR4/3	A	NCM
	3	25-35	LoSa	10YR5/6	B	NCM
64	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-34	LoSa	10YR4/3	A	NCM
	3	34-45	LoSa	10YR5/6	B	NCM
65	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-26	LoSa	10YR4/3	A	NCM
	3	26-37	LoSa	10YR5/6	B	NCM
66	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-18	LoSa	10YR4/3	A	NCM
	3	18-32	LoSa	10YR5/6	B	NCM
67	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-26	LoSa	10YR4/3	A	NCM
	3	26-37	LoSa	10YR5/6	B	NCM

68	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-28	LoSa	10YR4/3	A	NCM
	3	28-50	LoSa	10YR5/6	B	NCM
69	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-21	LoSa	10YR4/3	A	NCM
	3	21-33	LoSa	10YR5/6	B	NCM
70	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-30	LoSa	10YR4/3	A	NCM
	3	30-43	LoSa	10YR5/6	B	NCM
71	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-18	LoSa	10YR4/3	A	NCM
	3	18-roots.				
72	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-22	LoSa	10YR4/3	A	NCM
	3	22-37	LoSa	10YR5/6	B	NCM
73	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-33	LoSa	10YR4/3	A	NCM
	3	33-43	LoSa	10YR5/6	B	NCM
74	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-34	LoSa	10YR4/3	A	NCM
	3	34-44	LoSa	10YR5/6	B	NCM
75	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR4/3	A	NCM
	3	28-39	LoSa	10YR5/6	B	NCM
76	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-31	LoSa	10YR4/3	A	NCM
	3	31-44	LoSa	10YR5/6	B	NCM
77	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-29	LoSa	10YR4/3	A	window glass
	3	29-40	LoSa	10YR5/6	B	NCM
78	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-15	LoSa	10YR4/3	A	NCM
	3	15-28	GrSaLo	10YR5/6	B	NCM
79	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-30	LoSa	10YR4/3	A	beer glass
	3	30-43	LoSa	10YR5/6	B	NCM
80	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-27	LoSa	10YR4/3	A	NCM
	3	27-roots.				
81	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-22	LoSa	10YR4/3	A	NCM

	3	22-35	GrSaLo	10YR5/6	B	NCM
82	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-29	LoSa	10YR4/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
83	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-13	LoSa	10YR4/3	A	NCM
	3	13-roots.				
84	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-34	LoSa	10YR4/3	A	NCM
	3	34-50	LoSa	10YR5/6	B	NCM
85	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-20	LoSa	10YR4/3	A	flower pot
	3	20-46	LoSa	10YR5/6	B	NCM
86	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-14	LoSa	10YR4/3	A	NCM
	3	14-roots.				
87	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-20	LoSa	10YR4/3	A	NCM
	3	20-35	LoSa	10YR5/6	B	NCM
88	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-22	LoSa	10YR4/3	A	NCM
	3	22-35	LoSa	10YR5/6	B	NCM
89	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
90	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-9	LoSa	10YR4/3	A	NCM
	3	9-26	LoSa	10YR5/6	B	NCM
91	1	0-8	rootmat,leaves,humus		A/O	NCM
	2	8-26	LoSa	10YR4/3	A	NCM
	3	26-39	LoSa	10YR5/6	B	NCM
92	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-30	LoSa	10YR4/3	A	NCM
	3	30-43	LoSa	10YR5/6	B	NCM
93	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR4/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
94	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-29	LoSa	10YR4/3	A	NCM
	3	29-46	LoSa	10YR5/6	B	NCM

95	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
96	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-31	LoSa	10YR4/3	A	NCM
	3	31-43	LoSa	10YR5/6	B	NCM
97	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR4/3	A	NCM
	3	28-43	LoSa	10YR5/6	B	NCM
98	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-33	LoSa	10YR4/3	A	NCM
	3	33-46	LoSa	10YR5/6	B	NCM
99	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-23	LoSa	10YR4/3	A	NCM
	3	23-33	LoSa	10YR5/6	B	NCM
100	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-28	LoSa	10YR4/3	A	NCM
	3	28-45	LoSa	10YR5/6	B	NCM
101	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-34	LoSa	10YR4/3	A	NCM
	3	34-46	LoSa	10YR5/6	B	NCM
102	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-38	LoSa	10YR4/3	A	NCM
	3	38-49	LoSa	10YR5/6	B	NCM
103	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-29	LoSa	10YR4/3	A	NCM
	3	29-roots.				
104	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-25	LoSa	10YR4/3	A	NCM
	3	25-36	LoSa	10YR5/6	B	NCM
105	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-28	LoSa	10YR4/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
106	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-19	LoSa	10YR4/3	A	NCM
	3	19-roots.				
107	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-17	LoSa	10YR4/3	A	NCM
	3	17-30	LoSa	10YR5/6	B	NCM
108	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-30	LoSa	10YR4/3	A	NCM

	3	30-43	GrSaLo	10YR5/6	B	NCM
109	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-28	LoSa	10YR4/3	A	NCM
	3	28-43	LoSa	10YR5/6	B	NCM
110	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-24	LoSa	10YR4/3	A	NCM
	3	24-39	LoSa	10YR5/6	B	NCM
111	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-12	LoSa	10YR4/3	A	NCM
	3	12-roots.				
112	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
113	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR4/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
114	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-30	LoSa	10YR4/3	A	beer glass
	3	30-43	LoSa	10YR5/6	B	NCM
115	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-33	LoSa	10YR4/3	A	NCM
	3	33-45	LoSa	10YR5/6	B	NCM
116	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-34	LoSa	10YR4/3	A	NCM
	3	34-47	LoSa	10YR5/6	B	NCM
117	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-30	LoSa	10YR4/3	A	NCM
	3	30-32	LoSa	10YR5/6	B	NCM
118	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-19	LoSa	10YR4/3	A	NCM
	3	19-30	LoSa	10YR5/6	B	NCM
119	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-20	LoSa	10YR4/3	A	NCM
	3	20-32	LoSa	10YR5/6	B	NCM
120	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR4/3	A	NCM
	3	28-43	LoSa	10YR5/6	B	NCM
121	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-26	LoSa	10YR4/3	A	NCM
	3	26-roots.				

122	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-25	LoSa	10YR4/3	A	NCM
	3	25-37	LoSa	10YR5/6	B	NCM
123	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-29	LoSa	10YR4/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
124	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-10	LoSa	10YR4/3	A	NCM
	3	10-roots.				
125	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-35	LoSa	10YR4/3	A	NCM
	3	35-48	LoSa	10YR5/6	B	NCM
126	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-33	LoSa	10YR4/3	A	NCM
	3	33-45	LoSa	10YR5/6	B	NCM
127	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-30	LoSa	10YR4/3	A	NCM
	3	30-44	LoSa	10YR5/6	B	NCM
128	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-32	LoSa	10YR4/3	A	NCM
	3	32-46	LoSa	10YR5/6	B	NCM
129	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-33	LoSa	10YR4/3	A	NCM
	3	33-43	LoSa	10YR5/6	B	NCM
130	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-19	LoSa	10YR4/3	A	NCM
	3	19-31	LoSa	10YR5/6	B	NCM
131	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-34	LoSa	10YR4/3	A	NCM
	3	34-48	LoSa	10YR5/6	B	NCM
132	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-32	LoSa	10YR4/3	A	NCM
	3	32-47	GrSaLo	10YR5/6	B	NCM
133	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-29	LoSa	10YR4/3	A	NCM
	3	29-41	LoSa	10YR5/6	B	NCM
134	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-36	LoSa	10YR4/3	A	NCM
	3	36-49	LoSa	10YR5/6	B	NCM
135	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-36	LoSa	10YR4/3	A	NCM

	3	36-49	LoSa	10YR5/6	B	NCM
136	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-38	LoSa	10YR4/3	A	NCM
	3	38-49	LoSa	10YR5/6	B	NCM
137	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-30	LoSa	10YR4/3	A	NCM
	3	30-43	LoSa	10YR5/6	B	NCM
138	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-29	LoSa	10YR4/3	A	NCM
	3	29-41	LoSa	10YR5/6	B	NCM
139	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
140	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-37	LoSa	10YR4/3	A	NCM
	3	37-48	LoSa	10YR5/6	B	NCM
141	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-38	LoSa	10YR4/3	A	NCM
	3	38-50	LoSa	10YR5/6	B	NCM
142	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-28	LoSa	10YR4/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
143	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-32	LoSa	10YR4/3	A	NCM
	3	32-45	LoSa	10YR5/6	B	NCM
144	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-33	LoSa	10YR4/3	A	NCM
	3	33-46	LoSa	10YR5/6	B	NCM
145	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-32	LoSa	10YR4/3	A	NCM
	3	32-46	LoSa	10YR5/6	B	NCM
146	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-33	LoSa	10YR4/3	A	NCM
	3	33-48	LoSa	10YR5/6	B	NCM
147	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-29	LoSa	10YR4/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
148	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM

149	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-30	LoSa	10YR4/3	A	NCM
	3	30-43	LoSa	10YR5/6	B	NCM
150	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-34	LoSa	10YR4/3	A	NCM
	3	34-47	LoSa	10YR5/6	B	NCM
151	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-29	LoSa	10YR4/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
152	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-30	LoSa	10YR4/3	A	NCM
	3	30-48	LoSa	10YR5/6	B	NCM
153	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-33	LoSa	10YR4/3	A	NCM
	3	33-43	LoSa	10YR5/6	B	NCM
154	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-35	LoSa	10YR4/3	A	NCM
	3	35-47	LoSa	10YR5/6	B	NCM
155	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-34	LoSa	10YR4/3	A	NCM
	3	34-47	LoSa	10YR5/6	B	NCM
156	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR4/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
157	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-36	LoSa	10YR4/3	A	NCM
	3	36-48	LoSa	10YR5/6	B	NCM
158	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-35	LoSa	10YR4/3	A	brick, plastic
	3	35-48	LoSa	10YR5/6	B	NCM
159	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-27	LoSa	10YR4/3	A	NCM
	3	27-37	LoSa	10YR5/6	B	NCM
160	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-33	LoSa	10YR4/3	A	NCM
	3	33-45	LoSa	10YR5/6	B	NCM
161	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-29	LoSa	10YR4/3	A	NCM
	3	29-43	LoSa	10YR5/6	B	NCM
162	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-34	LoSa	10YR4/3	A	NCM

	3	34-44	LoSa	10YR5/6	B	NCM
163	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-27	LoSa	10YR4/3	A	NCM
	3	27-35	LoSa	10YR5/6	B	NCM
164	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-24	LoSa	10YR4/3	A	NCM
	3	24-39	LoSa	10YR5/6	B	NCM
165	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-31	LoSa	10YR4/3	A	NCM
	3	31-43	LoSa	10YR5/6	B	NCM
166	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-35	LoSa	10YR4/3	A	NCM
	3	35-47	LoSa	10YR5/6	B	NCM
167	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-31	LoSa	10YR4/3	A	NCM
	3	31-45	LoSa	10YR5/6	B	NCM
168	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-35	LoSa	10YR4/3	A	NCM
	3	35-48	LoSa	10YR5/6	B	NCM
169	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-27	LoSa	10YR4/3	A	NCM
	3	27-38	LoSa	10YR5/6	B	NCM
170	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-40	LoSa	10YR4/3	A	NCM
	3	40-roots.				
171	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-16	LoSa	10YR4/3	A	NCM
	3	16-roots.				
172	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-19	LoSa	10YR4/3	A	NCM
	3	19-30	LoSa	10YR5/6	B	NCM
173	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-30	LoSa	10YR4/3	A	NCM
	3	30-49	LoSa	10YR5/6	B	NCM
174	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-24	LoSa	10YR4/3	A	NCM
	3	24-roots.				
175	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-33	LoSa	10YR4/3	A	NCM
	3	33-43	LoSa	10YR5/6	B	NCM

176	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-30	LoSa	10YR4/3	A	NCM
	3	30-43	LoSa	10YR5/6	B	NCM
177	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-29	LoSa	10YR4/3	A	NCM
	3	29-41	LoSa	10YR5/6	B	NCM
178	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-30	LoSa	10YR4/3	A	NCM
	3	30-41	LoSa	10YR5/6	B	NCM
179	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-29	LoSa	10YR4/3	A	NCM
	3	29-45	LoSa	10YR5/6	B	NCM
180	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-26	LoSa	10YR4/3	A	NCM
	3	26-39	LoSa	10YR5/6	B	NCM
181	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-38	LoSa	10YR4/3	A	NCM
	3	38-49	LoSa	10YR5/6	B	NCM
182	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-20	LoSa	10YR4/3	A	NCM
	3	20-roots.				
183	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-26	LoSa	10YR4/3	A	NCM
	3	26-39	LoSa	10YR5/6	B	NCM
184	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-23	LoSa	10YR4/3	A	NCM
	3	23-35	LoSa	10YR5/6	B	NCM
185	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-20	LoSa	10YR4/3	A	asphalt,plastic
	3	20-33	LoSa	10YR5/6	B	NCM
186	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-22	LoSa	10YR4/3	A	NCM
	3	22-35	LoSa	10YR5/6	B	NCM
187	1	0-4	rootmat,leave,humus		A/O	NCM
	2	4-24	LoSa	10YR4/3	A	milk glass
	3	24-37	LoSa	10YR5/6	B	NCM
188	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-30	LoSa	10YR4/3	A	metal
	3	30-45	LoSa	10YR5/6	B	NCM
189	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-29	LoSa	10YR4/3	A	foil

	3	29-43	LoSa	10YR5/6	B	NCM
190	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-16	LoSa	10YR4/3	A	NCM
	3	16-roots.				
191	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
192	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
193	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-12	LoSa	10YR4/3	A	NCM
	3	12-roots.				
194	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-29	LoSa	10YR4/3	A	NCM
	3	29-46	LoSa	10YR5/6	B	NCM
195	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-23	LoSa	10YR4/3	A	NCM
	3	23-35	LoSa	10YR5/6	B	NCM
196	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
197	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-19	LoSa	10YR4/3	A	NCM
	3	19-31	LoSa	10YR5/6	B	NCM
198	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-26	LoSa	10YR4/3	A	NCM
	3	26-39	LoSa	10YR5/6	B	NCM
199	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-30	LoSa	10YR4/3	A	NCM
	3	30-43	LoSa	10YR5/6	B	NCM
200	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
201	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-29	LoSa	10YR4/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
202	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-37	LoSa	10YR4/3	A	NCM
	3	37-49	LoSa	10YR5/6	B	NCM

203	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-26	LoSa	10YR4/3	A	coal
	3	26-48	LoSa	10YR5/6	B	NCM
204	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-20	LoSa	10YR4/3	A	NCM
	3	20-33	LoSa	10YR5/6	B	NCM
205	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-10	LoSa	10YR4/3	A	asphalt
	3	10-22	LoSa	10YR5/6	B	NCM
206	1	0-3	rootmat,leave,humus		A/O	NCM
	2	3-11	LoSa	10YR4/3	A	NCM
	3	11-asphalt.				
207	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-25	LoSa	10YR4/3	A	NCM
	3	25-37	LoSa	10YR5/6	B	NCM
208	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-29	LoSa	10YR4/3	A	NCM
	3	29-41	LoSa	10YR5/6	B	NCM
209	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-35	LoSa	10YR4/3	A	NCM
	3	35-48	LoSa	10YR5/6	B	NCM
210	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-28	LoSa	10YR4/3	A	NCM
	3	28-39	LoSa	10YR5/6	B	NCM
211	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-25	LoSa	10YR4/3	A	NCM
	3	25-38	LoSa	10YR5/6	B	NCM
212	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-30	LoSa	10YR4/3	A	NCM
	3	30-43	LoSa	10YR5/6	B	NCM
213	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-29	LoSa	10YR4/3	A	coal
	3	29-40	LoSa	10YR5/6	B	NCM
214	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-24	LoSa	10YR4/3	A	coal,window glass
	3	24-40	LoSa	10YR5/6	B	NCM
215	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-10	LoSa	10YR4/3	A	coal
	3	10-roots.				
216	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-32	LoSa	10YR4/3	A	NCM

	3	32-45	LoSa	10YR5/6	B	NCM
217	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-11	LoSa	10YR4/3	A	NCM
	3	11-roots.				
218	1	0-8	rootmat,leaves,humus		A/O	NCM
	2	8-24	LoSa	10YR4/3	A	coal
	3	24-39	LoSa	10YR5/6	B	NCM
219	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-28	LoSa	10YR4/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
220	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-25	LoSa	10YR4/3	A	NCM
	3	25-41	LoSa	10YR5/6	B	NCM
221	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-26	LoSa	10YR4/3	A	NCM
	3	26-39	LoSa	10YR5/6	B	NCM
222	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-33	LoSa	10YR4/3	A	NCM
	3	33-45	LoSa	10YR5/6	B	NCM
223	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-27	LoSa	10YR4/3	A	NCM
	3	27-35	LoSa	10YR5/6	B	NCM
224	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-18	LoSa	10YR4/3	A	NCM
	3	18-30	LoSa	10YR5/6	B	NCM
225	1	0-3	rootmat,leave,humus		A/O	NCM
	2	3-12	LoSa	10YR4/3	A	NCM
	3	12-roots.				
226	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-23	LoSa	10YR4/3	A	NCM
	3	23-35	LoSa	10YR5/6	B	NCM
227	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-24	LoSa	10YR4/3	A	NCM
	3	24-40	LoSa	10YR5/6	B	NCM
228	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
229	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-21	LoSa	10YR4/3	A	coal
	3	2134	LoSa	10YR5/6	B	NCM

230	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-33	LoSa	10YR4/3	A	NCM
	3	33-45	LoSa	10YR5/6	B	NCM
231	2	0-8	LoSa	10YR4/3	A	NCM
	3	8-24	LoSa	10YR5/6	B	NCM
232	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-28	LoSa	10YR4/3	A	NCM
	3	28-38	LoSa	10YR5/6	B	NCM
233	1	0-8	rootmat,leaves,humus		A/O	NCM
	2	8-28	LoSa	10YR4/3	A	NCM
	3	28-38	LoSa	10YR5/6	B	NCM
234	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-29	LoSa	10YR4/3	A	NCM
	3	29-39	LoSa	10YR5/6	B	NCM
235	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-23	LoSa	10YR4/3	A	NCM
	3	23-33	LoSa	10YR5/6	B	NCM
236	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-20	LoSa	10YR4/3	A	NCM
	3	20-35	LoSa	10YR5/6	B	NCM
237	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-32	LoSa	10YR4/3	A	NCM
	3	32-42	LoSa	10YR5/6	B	NCM
238	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-25	LoSa	10YR4/3	A	NCM
	3	25-41	LoSa	10YR5/6	B	NCM
239	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-43	LoSa	10YR4/3	A	NCM
	3	43-53	LoSa	10YR5/6	B	NCM
240	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-28	LoSa	10YR4/3	A	NCM
	3	28-38	LoSa	10YR5/6	B	NCM
241	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-26	LoSa	10YR4/3	A	NCM
	3	26-38	LoSa	10YR5/6	B	NCM
242	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-23	LoSa	10YR4/3	A	NCM
	3	23-45	LoSa	10YR5/6	B	NCM
243	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-26	LoSa	10YR4/3	A	NCM
	3	26-39	LoSa	10YR5/6	B	NCM

244	1	0-2	rootmat,leave,humus		A/O	NCM
	2	2-20	LoSa	10YR4/3	A	NCM
	3	20-roots.				
245	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-28	LoSa	10YR4/3	A	NCM
	3	28-42	LoSa	10YR5/6	B	NCM
246	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-31	LoSa	10YR4/3	A	NCM
	3	31-43	LoSa	10YR5/6	B	NCM
247	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR4/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
248	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-25	LoSa	10YR4/3	A	NCM
	3	25-35	LoSa	10YR5/6	B	NCM
249	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-26	LoSa	10YR4/3	A	NCM
	3	26-36	LoSa	10YR5/6	B	NCM
250	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-25	LoSa	10YR4/3	A	NCM
	3	25-38	LoSa	10YR5/6	B	NCM
251	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-35	LoSa	10YR4/3	A	NCM
	3	35-45	LoSa	10YR5/6	B	NCM
252	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-18	LoSa	10YR4/3	A	NCM
	3	18-28	LoSa	10YR5/6	B	NCM
253	1	0-10	rootmat,leaves,humus		A/O	NCM
	2	10-27	LoSa	10YR4/3	A	NCM
	3	27-37	LoSa	10YR5/6	B	NCM
254	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
255	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-23	LoSa	10YR4/3	A	NCM
	3	23-35	LoSa	10YR5/6	B	NCM
256	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-25	LoSa	10YR4/3	A	NCM
	3	25-40	LoSa	10YR5/6	B	NCM
257	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-33	LoSa	10YR4/3	A	NCM

	3	33-47	LoSa	10YR5/6	B	NCM
258	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
259	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-27	LoSa	10YR4/3	A	NCM
	3	27-38	LoSa	10YR5/6	B	NCM
260	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-25	LoSa	10YR4/3	A	NCM
	3	25-38	LoSa	10YR5/6	B	NCM
261	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-27	LoSa	10YR4/3	A	NCM
	3	27-37	LoSa	10YR5/6	B	NCM
262	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-31	LoSa	10YR4/3	A	NCM
	3	30-45	LoSa	10YR5/6	B	NCM
263	1	0-6	rootmat,leave,humus		A/O	NCM
	2	6-31	LoSa	10YR4/3	A	NCM
	3	31-44	LoSa	10YR5/6	B	NCM
264	1	0-8	rootmat,leaves,humus		A/O	NCM
	2	8-28	LoSa	10YR4/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
265	1	0-8	rootmat,leaves,humus		A/O	NCM
	2	8-31	LoSa	10YR4/3	A	NCM
	3	31-41	LoSa	10YR5/6	B	NCM
266	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-27	LoSa	10YR4/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
267	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-26	LoSa	10YR3/3	A	NCM
	3	26-37	LoSa	10YR5/6	B	NCM
268	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-24	LoSa	10YR3/3	A	NCM
	3	24-41	LoSa	10YR5/6	B	NCM
269	1	0-8	rootmat,leaves,humus		A/O	NCM
	2	8-32	LoSa	10YR3/3	A	NCM
	3	32-42	LoSa	10YR5/6	B	NCM
270	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-32	LoSa	10YR3/3	A	NCM
	3	32-43	LoSa	10YR5/6	B	NCM

271	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-24	LoSa	10YR3/3	A	ww
	3	24-38	LoSa	10YR5/6	B	NCM
272	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-29	LoSa	10YR3/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
273	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
274	1	0-8	rootmat,leaves,humus		A/O	NCM
	2	8-29	LoSa	10YR3/3	A	NCM
	3	29-43	LoSa	10YR5/6	B	NCM
275	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-28	LoSa	10YR3/3	A	NCM
	3	28-48	LoSa	10YR5/6	B	NCM
276	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-34	LoSa	10YR3/3	A	NCM
	3	34-47	LoSa	10YR5/6	B	NCM
277	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-26	LoSa	10YR3/3	A	NCM
	3	26-roots.				
278	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-25	LoSa	10YR3/3	A	NCM
	3	25-38	LoSa	10YR5/6	B	NCM
279	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-17	LoSa	10YR3/3	A	NCM
	3	17-roots.				
280	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-24	LoSa	10YR3/3	A	NCM
	3	24-34	LoSa	10YR5/6	B	NCM
281	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-33	LoSa	10YR3/3	A	NCM
	3	33-43	LoSa	10YR5/6	B	NCM
282	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-26	LoSa	10YR3/3	A	NCM
	3	26-39	LoSa	10YR5/6	B	NCM
283	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-34	LoSa	10YR3/3	A	NCM
	3	34-roots.				
284	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-31	LoSa	10YR3/3	A	NCM

	3	31-43	LoSa	10YR5/6	B	NCM
285	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR3/3	A	NCM
	3	28-39	LoSa	10YR5/6	B	NCM
286	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-27	LoSa	10YR3/3	A	brick
	3	27-39	LoSa	10YR5/6	B	NCM
287	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-19	LoSa	10YR3/3	A	NCM
	3	19-roots.				
288	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-38	LoSa	10YR3/3	A	NCM
	3	38-48	LoSa	10YR5/6	B	NCM
289	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-20	LoSa	10YR3/3	A	NCM
	3	20-roots.				
290	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-26	LoSa	10YR3/3	A	NCM
	3	26-40	LoSa	10YR5/6	B	NCM
291	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-28	LoSa	10YR3/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
292	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-39	LoSa	10YR3/3	A	NCM
	3	39-50	LoSa	10YR5/6	B	NCM
293	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-34	LoSa	10YR3/3	A	NCM
	3	34-48	LoSa	10YR5/6	B	NCM
294	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-37	LoSa	10YR3/3	A	NCM
	3	10-21	LoSa	10YR5/6	B	NCM
295	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-26	LoSa	10YR3/3	A	NCM
	3	26-roots.				
296	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-22	LoSa	10YR3/3	A	NCM
	3	22-roots.				
297	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-34	LoSa	10YR3/3	A	NCM
	3	34-45	LoSa	10YR5/6	B	NCM

298	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-31	LoSa	10YR3/3	A	NCM
	3	31-43	LoSa	10YR5/6	B	NCM
299	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-36	LoSa	10YR3/3	A	NCM
	3	36-48	LoSa	10YR5/6	B	NCM
300	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-34	LoSa	10YR3/3	A	NCM
	3	34-48	LoSa	10YR5/6	B	NCM
301	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-29	LoSa	10YR3/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
302	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
303	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-24	LoSa	10YR3/3	A	NCM
	3	24-roots.				
304	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-29	LoSa	10YR3/3	A	NCM
	3	29-41	LoSa	10YR5/6	B	NCM
305	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-29	LoSa	10YR3/3	A	NCM
	3	29-41	LoSa	10YR5/6	B	NCM
306	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-28	LoSa	10YR3/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
307	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-34	LoSa	10YR3/3	A	NCM
	3	34-46	LoSa	10YR5/6	B	NCM
308	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR3/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
309	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-34	LoSa	10YR3/3	A	NCM
	3	34-46	LoSa	10YR5/6	B	NCM
310	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-35	LoSa	10YR3/3	A	window glass
	3	35-47	LoSa	10YR5/6	B	NCM
311	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-31	LoSa	10YR3/3	A	NCM

	3	31-41	LoSa	10YR5/6	B	NCM
312	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-31	LoSa	10YR3/3	A	NCM
	3	31-44	LoSa	10YR5/6	B	NCM
313	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-30	LoSa	10YR3/3	A	NCM
	3	30-41	LoSa	10YR5/6	B	NCM
314	1	0-1	rootmat,leaves,humus		A/O	NCM
	2	3-26	LoSa	10YR3/3	A	NCM
	3	26-36	LoSa	10YR5/6	B	NCM
315	1	0-7	rootmat,leaves,humus		A/O	NCM
	2	7-28	LoSa	10YR3/3	A	NCM
	3	28-38	LoSa	10YR5/6	B	NCM
316	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-21	LoSa	10YR3/3	A	NCM
	3	21-33	LoSa	10YR5/6	B	NCM
317	1	0-12	rootmat,leaves,humus		A/O	NCM
	2	12-30	LoSa	10YR3/3	A	NCM
	3	30-45	LoSa	10YR5/6	B	NCM
318	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-31	LoSa	10YR3/3	A	coal
	3	31-41	LoSa	10YR5/6	B	NCM
319	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-21	LoSa	10YR3/3	A	NCM
	3	21-33	LoSa	10YR5/6	B	NCM
320	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-26	LoSa	10YR3/3	A	NCM
	3	26-36	LoSa	10YR5/6	B	NCM
321	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-28	LoSa	10YR3/3	A	NCM
	3	28-38	LoSa	10YR5/6	B	NCM
322	1	0-7	rootmat,leaves,humus		A/O	NCM
	2	7-28	LoSa	10YR3/3	A	NCM
	3	28-38	LoSa	10YR5/6	B	NCM
323	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-24	LoSa	10YR3/3	A	NCM
	3	24-34	LoSa	10YR5/6	B	NCM
324	1	0-1	rootmat,leaves,humus		A/O	NCM
	2	1-22	LoSa	10YR3/3	A	20th dump
	3	22-35	LoSa	10YR5/6	B	NCM

325	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-34	LoSa	10YR3/3	A	NCM
	3	34-44	LoSa	10YR5/6	B	NCM
326	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-31	LoSa	10YR3/3	A	NCM
	3	31-41	LoSa	10YR5/6	B	NCM
327	1	0-7	rootmat,leaves,humus		A/O	NCM
	2	7-24	LoSa	10YR3/3	A	NCM
	3	24-35	LoSa	10YR5/6	B	NCM
328	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-22	LoSa	10YR3/3	A	undec. ww
	3	22-32	LoSa	10YR5/6	B	NCM
329	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-16	LoSa	10YR3/3	A	NCM
	3	16-26	LoSa	10YR5/6	B	NCM
330	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
331	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-22	LoSa	10YR3/3	A	NCM
	3	22-34	LoSa	10YR5/6	B	NCM
332	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-26	LoSa	10YR3/3	A	NCM
	3	26-38	LoSa	10YR5/6	B	NCM
333	1	0-7	rootmat,leaves,humus		A/O	NCM
	2	7-27	LoSa	10YR3/3	A	NCM
	3	27-38	LoSa	10YR5/6	B	NCM
334	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-20	LoSa	10YR3/3	A	NCM
	3	20-34	LoSa	10YR5/6	B	NCM
335	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-17	LoSa	10YR3/3	A	NCM
	3	17-28	LoSa	10YR5/6	B	NCM
336	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-20	LoSa	10YR3/3	A	NCM
	3	20-30	LoSa	10YR5/6	B	NCM
337	1	0-7	rootmat,leaves,humus		A/O	NCM
	2	7-18	LoSa	10YR3/3	A	NCM
	3	18-28	LoSa	10YR5/6	B	NCM
338	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-24	LoSa	10YR3/3	A	NCM

	3	24-34	LoSa	10YR5/6	B	NCM
339	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-27	LoSa	10YR3/3	A	NCM
	3	27-37	LoSa	10YR5/6	B	NCM
340	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-24	LoSa	10YR3/3	A	NCM
	3	24-36	LoSa	10YR5/6	B	NCM
341	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-26	LoSa	10YR3/3	A	NCM
	3	26-38	LoSa	10YR5/6	B	NCM
342	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-26	LoSa	10YR3/3	A	NCM
	3	26-40	LoSa	10YR5/6	B	NCM
343	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-19	LoSa	10YR3/3	A	NCM
	3	19-31	LoSa	10YR5/6	B	NCM
344	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-22	LoSa	10YR3/3	A	NCM
	3	22-32	LoSa	10YR5/6	B	NCM
345	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-14	LoSa	10YR3/3	A	coal
	3	14-32	LoSa	10YR5/6	B	NCM
346	1	0-12	rootmat,leaves,humus		A/O	NCM
	2	12-25	LoSa	10YR3/3	A	NCM
	3	25-356	LoSa	10YR5/6	B	NCM
347	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-20	LoSa	10YR3/3	A	NCM
	3	20-37	LoSa	10YR5/6	B	NCM
348	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-17	LoSa	10YR3/3	A	NCM
	3	17-27	LoSa	10YR5/6	B	NCM
349	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-15	LoSa	10YR3/3	A	NCM
	3	15-25	LoSa	10YR5/6	B	NCM
350	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-18	LoSa	10YR3/3	A	NCM
	3	18-roots.				
351	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-31	LoSa	10YR3/3	A	NCM
	3	31-43	LoSa	10YR5/6	B	NCM

352	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-26	LoSa	10YR3/3	A	undec. ww
	3	26-39	LoSa	10YR5/6	B	NCM
353	1	0-10	rootmat,leaves,humus		A/O	NCM
	2	10-35	LoSa	10YR3/3	A	NCM
	3	35-47	LoSa	10YR5/6	B	NCM
354	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-24	LoSa	10YR3/3	A	NCM
	3	24-45	LoSa	10YR5/6	B	NCM
355	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-33	LoSa	10YR3/3	A	NCM
	3	33-47	LoSa	10YR5/6	B	NCM
356	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-30	LoSa	10YR3/3	A	NCM
	3	30-43	LoSa	10YR5/6	B	NCM
357	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-31	LoSa	10YR3/3	A	coal
	3	31-42	LoSa	10YR5/6	B	NCM
358	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-28	LoSa	10YR3/3	A	NCM
	3	28-roots.				
359	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
360	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-28	LoSa	10YR3/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
361	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-32	LoSa	10YR3/3	A	NCM
	3	32-45	LoSa	10YR5/6	B	NCM
362	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-29	LoSa	10YR3/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
363	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-38	LoSa	10YR3/3	A	NCM
	3	38-50	LoSa	10YR5/6	B	NCM
364	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-31	LoSa	10YR3/3	A	window glass
	3	31-44	LoSa	10YR5/6	B	NCM
365	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-15	LoSa	10YR3/3	A	NCM

	3	15-roots.				
366	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-31	LoSa	10YR3/3	A	NCM
	3	31-45	LoSa	10YR5/6	B	NCM
367	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-29	LoSa	10YR3/3	A	NCM
	3	29-41	LoSa	10YR5/6	B	NCM
368	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-15	LoSa	10YR3/3	A	NCM
	3	15-roots.				
369	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
370	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-25	LoSa	10YR3/3	A	NCM
	3	25-37	LoSa	10YR5/6	B	NCM
371	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR3/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
372	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-34	LoSa	10YR3/3	A	NCM
	3	34-46	LoSa	10YR5/6	B	NCM
373	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-15	LoSa	10YR3/3	A	NCM
	3	15-roots.				
374	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-31	LoSa	10YR3/3	A	NCM
	3	31-43	LoSa	10YR5/6	B	NCM
375	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-41	LoSa	10YR3/3	A	NCM
	3	41-51	LoSa	10YR5/6	B	NCM
376	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-26	LoSa	10YR3/3	A	NCM
	3	26-39	LoSa	10YR5/6	B	NCM
377	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-23	LoSa	10YR3/3	A	NCM
	3	23-35	LoSa	10YR5/6	B	NCM
378	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-28	LoSa	10YR3/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM

379	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-41	LoSa	10YR3/3	A	NCM
	3	41-51	LoSa	10YR5/6	B	NCM
380	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-21	LoSa	10YR3/3	A	NCM
	3	21-roots.				
381	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-30	LoSa	10YR3/3	A	NCM
	3	30-42	LoSa	10YR5/6	B	NCM
382	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-41	LoSa	10YR3/3	A	coal, scale
	3	41-52	LoSa	10YR5/6	B	NCM
383	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-15	LoSa	10YR3/3	A	NCM
	3	15-roots.				
384	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-24	LoSa	10YR3/3	A	NCM
	3	24-35	LoSa	10YR5/6	B	NCM
385	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-26	LoSa	10YR3/3	A	NCM
	3	26-38	LoSa	10YR5/6	B	NCM
386	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-28	LoSa	10YR3/3	A	window glass, porcelain
	3	28-40	LoSa	10YR5/6	B	NCM
387	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
388	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-27	LoSa	10YR3/3	A	NCM
	3	27-roots.				
389	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR3/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
390	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
391	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-26	LoSa	10YR3/3	A	NCM
	3	26-39	LoSa	10YR5/6	B	NCM
392	1	0-5	rootmat,leaves,humus		A/O	NCM

	2	5-33	LoSa	10YR3/3	A	NCM
	3	33-45	LoSa	10YR5/6	B	NCM
393	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
394	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-40	LoSa	10YR3/3	A	NCM
	3	40-roots.				
395	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-35	LoSa	10YR3/3	A	NCM
	3	35-47	LoSa	10YR5/6	B	NCM
396	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-19	LoSa	10YR3/3	A	NCM
	3	19-30	LoSa	10YR5/6	B	NCM
397	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-27	LoSa	10YR3/3	A	NCM
	3	27-40	LoSa	10YR5/6	B	NCM
398	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-26	LoSa	10YR3/3	A	NCM
	3	26-39	LoSa	10YR5/6	B	NCM
399	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-18	LoSa	10YR3/3	A	NCM
	3	18-30	LoSa	10YR5/6	B	NCM
400	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-28	LoSa	10YR3/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
401	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-30	LoSa	10YR3/3	A	NCM
	3	30-45	LoSa	10YR5/6	B	NCM
402	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-29	LoSa	10YR3/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
403	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-24	LoSa	10YR3/3	A	NCM
	3	24-39	LoSa	10YR5/6	B	NCM
404	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-35	LoSa	10YR3/3	A	NCM
	3	35-49	LoSa	10YR5/6	B	NCM
405	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM

406	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-29	LoSa	10YR3/3	A	NCM
	3	29-39	LoSa	10YR5/6	B	NCM
407	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-29	LoSa	10YR3/3	A	NCM
	3	29-40	LoSa	10YR5/6	B	NCM
408	1	0-5	rootmat,leaves,humus		A/O	NCM
	2	5-34	LoSa	10YR3/3	A	NCM
	3	34-46	LoSa	10YR5/6	B	NCM
409	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-32	LoSa	10YR3/3	A	NCM
	3	32-45	LoSa	10YR5/6	B	NCM
410	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-25	LoSa	10YR3/3	A	NCM
	3	25-35	LoSa	10YR5/6	B	NCM
411	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-29	LoSa	10YR3/3	A	NCM
	3	29-39	LoSa	10YR5/6	B	NCM
412	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
413	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-32	LoSa	10YR3/3	A	NCM
	3	32-48	LoSa	10YR5/6	B	NCM
414	1	0-1	rootmat,leaves,humus		A/O	NCM
	2	1-25	LoSa	10YR3/3	A	NCM
	3	25-38	LoSa	10YR5/6	B	NCM
415	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
416	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-24	LoSa	10YR3/3	A	NCM
	3	24-38	LoSa	10YR5/6	B	NCM
417	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-20	LoSa	10YR3/3	A	NCM
	3	20-35	LoSa	10YR5/6	B	NCM
418	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-23	LoSa	10YR3/3	A	NCM
	3	23-35	LoSa	10YR5/6	B	NCM
419	1	0-4	rootmat,leaves,humus		A/O	NCM

	2	4-25	LoSa	10YR3/3	A	NCM
	3	25-39	LoSa	10YR5/6	B	NCM
420	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-28	LoSa	10YR3/3	A	NCM
	3	28-38	LoSa	10YR5/6	B	NCM
421	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-31	LoSa	10YR3/3	A	NCM
	3	31-44	LoSa	10YR5/6	B	NCM
422	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-25	LoSa	10YR3/3	A	NCM
	3	25-39	LoSa	10YR5/6	B	NCM
423	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-36	LoSa	10YR3/3	A	NCM
	3	36-49	LoSa	10YR5/6	B	NCM
424	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-32	LoSa	10YR3/3	A	NCM
	3	32-45	LoSa	10YR5/6	B	NCM
425	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-13	LoSa	10YR3/3	A	NCM
	3	13-roots.				
426	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-30	LoSa	10YR3/3	A	NCM
	3	30-40	LoSa	10YR5/6	B	NCM
427	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-27	LoSa	10YR3/3	A	NCM
	3	27-39	LoSa	10YR5/6	B	NCM
428	1	0-2	rootmat,leaves,humus		A/O	NCM
	2	2-28	LoSa	10YR3/3	A	NCM
	3	28-40	LoSa	10YR5/6	B	NCM
429	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-30	LoSa	10YR3/3	A	NCM
	3	30-41	LoSa	10YR5/6	B	NCM
430	1	0-3	rootmat,leaves,humus		A/O	NCM
	2	3-32	LoSa	10YR3/3	A	NCM
	3	32-47	LoSa	10YR5/6	B	NCM
431	1	0-4	rootmat,leaves,humus		A/O	NCM
	2	4-29	LoSa	10YR3/3	A	NCM
	3	29-45	LoSa	10YR5/6	B	NCM
432	1	0-6	rootmat,leaves,humus		A/O	NCM
	2	6-26	LoSa	10YR3/3	A	NCM
	3	26-40	LoSa	10YR5/6	B	NCM

APPENDIX 3

TABLE OF MAP DOCUMENTED STRUCTURES

LOCATION	MAP	ON OR ADJACENT TO PROJECT AREA	OWNER	ECO-NICHE	COMMENT
southwest corner of St. Johnland & Old Dock roads	1858	adjacent	Capt. J. Smith	agricultural	Fig. 4
same as above	1873	adjacent	school	agricultural	Fig. 5
same as above	1896	adjacent	school	agricultural	Fig. 6
same as above	1904	adjacent	na	rural	Fig. 7

APPENDIX Q-2

SHPO Correspondence

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE

Andrew M. Cuomo
Governor

Rose Harvey
Commissioner

New York State Office of Parks,
Recreation and Historic Preservation

Historic Preservation Field Services Bureau • Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643
www.nysparks.com

May 03, 2011

RECEIVED
MAY 06 2011
NELSON & POPE

Kristen McCabe
Nelson, Pope & Voorhis, LLC
572 Walt Whitman Rd
Melville, New York 11747

Re: DEC
St. Johnland Continuing Care Retirement Community (CCRC) –
Proposed new construction
SW cor. of St. Johnland Rd. & Old Dock Rd.
SMITHTOWN, Suffolk County
11PR02442

Dear Ms. McCabe:

Thank you for requesting the comments of the Field Services Bureau of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Historic Preservation Act of 1980 (Section 14.09 of the New York Parks, Recreation and Historic Preservation Law). These comments are those of the Field Services Bureau and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

Based upon this review, it is the OPRHP's opinion that your project will have No Impact upon cultural resources in or eligible for inclusion in the State and National Register of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont

Ruth L. Pierpont
Acting Deputy Commissioner for Historic Preservation

APPENDIX R

ALTERNATIVE PLANS

APPENDIX R-1

Site Plan Conforming to CCRC REQUIREMENTS

Parking

	Ratio	Required	Provided
AL	2.5:1	24x2.5=60	60
IL	2.5:1	153x2.5=382.5	383
Cottages	4:1	22x4=88	88
Total		530.5	531

Building Area AL & IL

Level 54'	10,607sf
Level 65'	73,961sf
Level 76'	74,638sf
Level 87'	58,700sf
Level 98'	37,537sf
Total	255,443sf

Building Area Townhomes

Total	74,797sf

Gross Floor Area: 330,240sf

Factor of Safety: 11,706sf

Total Provided: 341,946sf

Max GFA Allowed: 341,946sf
(39.25 Acres x0.20%=341,946sf)

Building Coverage

AL & IL	82,500sf
Townhomes	44,745sf
Total	127,245sf

Max Coverage Allowed: 170,973sf
(39.25 Acres x0.10%= 170,973sf)

EGA ARCHITECTS

The Uplands at St. Johnland
Site Plan Conforming to CCRC Requirements

11-11-2011

APPENDIX R-2

STP Layout with Leaching Pools, Michael P. Chiarelli Engineering P.C, January 2012

N

LEGEND

—— LOT LINE

AREAS WITH SLOPES EQUAL TO OR GREATER THAN 15%

Site Notes

PROPOSED SEWAGE TREATMENT PLANT WILL INCORPORATE SEWAGE FROM BOTH PROPOSED ST. JOHNLAND RESIDENCES II AND EXISTING ST. JOHNLAND NURSING CENTER. THE TOTAL SEWAGE FOR BOTH SITES IS ESTIMATED TO BE 82,000 GALLONS PER DAY.

EFFLUENT RECHARGE CALCULATIONS

82,000 GPD / 10 GPD/SF = 8,200 SF

8,200 SF / 31.4 SF/VF (10'Ø) = 262 VF

262 VF / 18 VF = 15 LEACHING POOLS

SCDPW REQUIRES 200% RECHARGE AREA INSTALLED THEREFORE USE 30 LEACHING POOLS.

PROVIDE AREA FOR 100% LEACHING POOL EXPANSION (15 LEACHING POOLS).

LOT 1.6
ZONE R-43

200 FT SETBACK TO HABITABLE BUILDING

150 FT SETBACK TO PROPERTY LINE

100 FT SETBACK TO SUBSTANTIAL HUMAN USE

100% EXPANSION AREA

100% EXPANSION

STP

74'

88'

37'

REQUIRED LEACHING POOLS

N 67°19'39" W

200'

1250.41'

ST. JOHNLAND ROAD

WIN OAKS DRIVE

ACE

50 0 50 100
SCALE IN FEET

REV#	DATE	DESCRIPTION

Michael P. Chiarelli Engineer P.C.
1954 NEW YORK AVENUE, HUNTINGTON STATION, NEW YORK 11746 - 2906
PHONE (631) 673 - 3808 FAX (631) 673 - 3842

ST. JOHNLAND
TYPICAL 82,000 GPD STP
TOWN OF SMITHTOWN, NEW YORK

STP LAYOUT WITH LEACHING POOLS

DWG.SCALE:	DESIGN BY:	PROJECT NO.	DWG.NO.
1" = 50'	MPS/BG	316-001-10	1
DRAWN BY:	CHECKED BY:	DATE:	
BG	MPC	JANUARY 2012	