Draft
Environmental Impact Statement

HEADRIVER, LLC LUMBERYARD COMPLEX
Special Permit Application

North side of Suffolk County Route 58
opposite Kroemer Road

RIVERHEAD, TOWN OF RIVERHEAD
SUFFOLK COUNTY, NEW YORK

Volume 1 of 2
Main Text, Appendices & Plans

NP&V Project No. 98043

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Draft
Environmental Impact Statement

Headriver, LLC Lumberyard Complex

Special Permit Application
Riverhead, New York

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SUMMARY

SUMMARY

This document is a Draft Environmental Impact Statement (DEIS) prepared for a Special Permit application involving a lumberyard project on a 21.21 acre parcel of land in the hamlet of Riverhead, Town of Riverhead, New York. The project site is located on the north side of County Road (CR) 58, opposite Kroemer Road. The property is presently vacant wooded land.

This study was required as a result of a public scoping process, which determined the contents of a Draft Environmental Impact Statement (DEIS) which describes and discusses the proposed project, its anticipated impacts and associated measures taken to mitigate those impacts. This overall environmental review is required by the NYS Environmental Quality Review Act (SEQRA), which regulates the review of development applications in the state. The Riverhead Town Board is the Lead Agency for this application, as the application which triggered the SEQRA process is for a Special Permit, a Town Board-regulated matter. Future stages of this review include: review and acceptance of the DEIS with respect to scope and adequacy; a public hearing on both the DEIS and the overall special permit application; preparation of a Final EIS, which responds to agency and public comments received during the DEIS review period; preparation and acceptance of the Findings Statement by the lead agency, and; the Town Board decision on the application, after its review of the Final EIS and in consideration of the Findings Statement.

Background and History

The project site is presently zoned Industrial A, in which a lumberyard use is allowed by special permit. Therefore, the subject application is for a special permit to allow development of a 135,200 SF lumberyard on a portion of the 21.21-acre site. There are no other pending applications on this site.

The special permit application was filed on November 19, 1999. A Positive Declaration was issued by Resolution of the Town Board on April 18, 2000. A Scope for the DEIS was finalized on June 20, 2000.

Based on information presented in the Phase I Environmental Site Assessment (ESA I) prepared for the project site by Langan Engineering & Environmental Services of Elmwood Park, NJ (22 November, 1999), "*The subject property is currently and has historically consisted of undeveloped wooded land*".

Project Purpose, Need and Benefits

The public need for the project is related to the benefits to be derived if the project is implemented. The Applicant has designed the proposed project to achieve the highest and best use of the site based on its industrial zoning, adjacent and nearby uses and market trends.

A **Socio-Economic Impact Analysis** was prepared for the project in consideration of the existing lumberyard market and existing and proposed comparable facilities in the vicinity. The application will provide an opportunity for viable commercial growth within an area of the Town well-suited to accommodate such growth. The proposal will promote the development of an underutilized property in accordance with local comprehensive planning goals. Further, the project will address the public need for lumberyard space in the Town of Riverhead.

The project site lies within a mixed low-density residential and highway commercial area in the Town of Riverhead. The project area (within the CR 58 Corridor) reflects a mixed land use pattern, with numerous remaining properties available for development. The current Town Comprehensive Master Plan designates the site for industrial use. In addition, the site lies within an area specifically designated by the Riverhead Town Board (in 1997) for the Destination Commercial Planned Development Overlay District. Though this zoning classification was later successfully challenged in court, this prior approval suggests that the proposed project would represent an appropriate land use for the site.

The proposed project will provide for the development of a permanent, high-quality use on a property whose capacity to attract a quality use is high. The proposed project will provide a permanent use of an underutilized property in conformance with the Town's comprehensive planning goals and objectives.

The objective of the project sponsor is clearly motivated in part by the desire to produce a profitable economic return on the land investment, which would result from a high-quality commercial development that addresses a need the Applicant feels is unmet in the area. The Applicant is seeking to provide a use that will conform to the surrounding uses and at the same time have a minimal impact on the environment.

It is anticipated that the proposed project will generate a total of $238,713 annually in property taxes, which will be distributed to the various taxing jurisdictions. These monies will offset at least a portion of the increased cost to these jurisdictions to serve the site. In addition, the project will increase employment in the town, by providing an estimated 100 permanent jobs.

The benefits of the proposed project are based on social, economic and land use considerations. The project will provide an opportunity for high quality commercial use in an appropriate and desirable area of the Town of Riverhead. The community will benefit economically from the increased value of the property. The consumer will benefit from the entry of a quality lumberyard use with a variety of product lines and price values into the market. In addition, the project will generate a substantial amount of real property tax revenues to applicable taxing jurisdictions. The project will also provide a permanent land use for the site that is viable and has a high probability of success through full utilization. Finally, an estimated 50 temporary construction jobs and 100 permanent jobs will result from the project.

Location

The 21.21-acre project site is located on the north side of CR 58, east of the terminus of the Long Island Expressway (LIE), in the hamlet of Riverhead, Town of Riverhead. A NYS Department of Transportation (NYSDOT) maintenance facility is adjacent to the site to the west, and a Long Island Power Authority (LIPA) power line traverses along the site's northern boundary, in a northwest-southeast direction. To the north of this is the Adchem property, which is accessed by a roadway recently relocated to run along the eastern boundary of the project site, and intersects CR 58. Contiguous to the east of the site is property owned by the Applicant (not part of the instant application) on which construction of an Applebee's restaurant is underway, and four take-out restaurants is planned (the "OC Riverhead 58 LLC") application.

The site has approximately 1,300 feet of frontage along CR 58. The project site is identified as Suffolk County Tax Map District 600, Section 119, Block 1, part of Lot 1. The subject property is presently vacant and unoccupied.

The site is in the following service and planning districts:

- Riverhead Fire District
- Riverhead Central School District
- Riverhead Water District
- Riverhead Sewer District
- Riverhead Police Department
- Industrial A Zoning District
- Hydrogeologic Zone III
- Central Suffolk Special Groundwater Protection Area (SGPA)
- Riverhead Commercial Sewer District

The site is not within the Central Pine Barrens Zone of the Long Island Pine Barrens Protection Area, as defined by Article 57 of the New York State Environmental Conservation Law (ECL).

Project Design and Layout

Layout of Site

One structure is proposed: a 135,200 SF lumberyard facility. The structure will be sited near the northwestern corner of the property, with parking areas located to the south and north. Additional sales/display areas exterior to the building are sited adjacent to the eastern side of the structure; these areas total 38,800 SF. Lumberyard offices, restrooms and employee areas will be located in the rear of the building, in order to minimize the length of utility lines since utility services (water supply and sanitary sewers) are available along the northern boundary of the subject site. Two access points into the site (off CR 58) will be provided, each of which will be signalized. The easterly access will also serve the existing Adchem facility, which is adjacent to the north. The westerly access point will also serve the NYSDOT maintenance facility adjacent to the west.

Structures

The proposed one-story lumberyard building will be sited in the northwestern corner of the property and oriented facing south, toward CR 58; a truck loading and receiving area are both located in the rear (north side) of the building. A 530-space parking area will be located between the structure and CR 58, with additional (62-space) parking areas in the rear and east sides of the building. On the eastern side of the building are the following outdoor areas:

- Covered Area 9,400 SF
- Open Area 23,800 SF
- Shade Structure 5,600 SF

Thus, the entire proposed lumberyard facility includes a total of 174,000 SF of floor area, of which 135,200 SF are indoors and 38,800 SF are outdoors.

Access, Road System and Parking

Two access points into the site will be available, both of which will be controlled by traffic signals. The main entry is located along the eastern property line, to be shared with the existing access drive for the Adchem facility, and a secondary access will be placed along the western property line, to serve the site and the adjacent NYSDOT facility. From the eastern access roadway, two curb cuts will be provided in a northwesterly direction: one toward the center of the main parking area, and a second (running along the site's northern boundary) to allow truck access to the rear of the structure. The western access will provide an access to the west, for improved accessibility for NYSDOT vehicles; this access will also run northward to circle the lumberyard structure.

Based on Town Code, a minimum of 482 parking spaces are required for the lumberyard. The proposed project will provide a total of 654 parking spaces, which is well in excess of this requirement.

Recharge System

An on-site drainage system will be utilized to handle and recharge all stormwater runoff originating on the property. This system will be composed of subsurface leaching pools distributed in appropriate lower elevation collection areas on the developed portions of the site. The system will be designed, engineered and installed in conformance with applicable Town regulations and standards, which includes the accommodation of a 2-inch rainfall.

Water Supply and Wastewater Treatment

The proposed building will be served with water by the Riverhead Water District, via an extension of the existing 12 inch main which traverses the adjacent OC Riverhead 58 site to the east. This extension will run in a northwest-southeast direction along the subject site's northern boundary, beneath the proposed northerly truck access road. The Applicant will grant an easement to the Riverhead Water District for this extension.

Based on SCDHS design criteria for wastewater system sizing, the proposed 135,200 SF building will, for the proposed use, generate 5,408 gallons of wastewater daily (gpd); therefore, it is assumed that this same volume of water will be supplied to the building daily as potable water. However, based on metered water consumption values from other lumberyard facilities nationwide, the Applicant anticipates that this building will consume significantly less potable water.

Sanitary wastewater generated on the site will total 5,408 gpd, though, as discussed above, it is anticipated that actual wastewater generation will be significantly less. This volume will be conveyed via an 8-inch sewer connection to the existing force main beneath the eastern access road. From this point, wastewater will be conveyed into an existing 10-inch gravity sewer beneath CR 58, thence to the Riverhead Sewer District STP at River Avenue off Riverside Drive approximately 4 miles east of the subject property.

Site Landscaping and Amenities

A total of approximately 1.82 acres of irrigated landscaping will be provided, to be located along the site's northern, southern and western boundaries. A complete Landscaping Plan will be provided as part of the Site Plan application; in general, it is anticipated that groundcover grasses and low shrubs will be used throughout, with supplemental tree plantings located along the site perimeter and within the parking areas.

Construction Period and Site Operations

Construction Period

The construction process will begin with establishment of flagged clearing limits, followed by installation of staked hay bales and silt fencing in critical areas for erosion control purposes. Then, the site clearing operation can begin; construction equipment and vehicles will be parked and loaded/unloaded within the site. "Rumble strips" will be placed at the site construction entrance, to prevent soil on truck tires from being tracked onto CR 58. It is anticipated that this construction entrance will be located along the western site boundary, which will remain signalized when the construction phase is completed.

Grading operations will take place next. In order to minimize the time span that denuded soil is exposed to erosive elements, excavations for the curbs, roads, building foundation, wastewater system, drainage system and utilities will take place immediately after grading operations have been completed. Construction of the building can then begin, concurrent with the utility connections and paving of the parking areas and aisles. Once heavy construction is complete, finish grading will occur, followed by soil preparation using topsoil and installation of the landscaping, which will be performed while the structure is completed.

CR 58 will be used for the only site access for construction vehicles. The Adchem access roadway will not be used for construction equipment and vehicle/material storage or construction worker parking. As a result, no significant or long-term construction impacts to this facility are anticipated.

Construction activities will not occur outside weekday daytime hours (7 AM to 6 PM). It is anticipated that the construction period (clearing, grading, construction and finishing) will take approximately 10-12 months.

Site Operations

Based on information provided by the applicant, it is anticipated that the proposed lumberyard will be open from 6 AM to 10 PM Monday through Saturday, and from 8 AM to 9 PM on Sunday. Deliveries are usually conducted on weekdays, between the hours of 7 AM and 7 PM; occasionally, if a truck arrives too late to be completely unloaded prior to closing time, the trailer may be detached and left overnight, to be unloaded after the store is closed. Deliveries take place on the average about 3 to 4 times per week, though this may be increased during busy seasons or following busy weekends. In order to provide an additional level of vehicle separation, a separate truck delivery access and roadway, and unloading area are shown in the **Conceptual Site Plan**.

Permits and Approvals Required

This DEIS is intended to provide the Riverhead Town Board with the information necessary to render a decision on the Headriver, LLC Lumberyard Complex Special Permit application. This document is intended to comply with SEQRA requirements as administered by the Town of Riverhead. Once accepted, the document will be the subject of public review, followed by the preparation of a Final Environmental Impact Statement (FEIS) for any substantive comments on the DEIS. Upon completion of the FEIS, the Riverhead Town Board will be responsible for the preparation of a Statement of Findings, which will form the basis for the final decision on the Special Permit application. Following this process, the following additional approvals would have to be obtained prior to commencement of project construction:

- Town Planning Board - Site Plan review
- Town Dept. of Buildings, Engineering and Housing - Building Permit
- Riverhead Water District - Water Supply Connection
- Riverhead Sewer District - Sewer Connection
- Suffolk County Dept. of Public Works - Roadwork Permit
- Suffolk County Dept. Of Health Services - Sanitary Code Article 7 (Water Pollution Control)
- Suffolk County Dept. of Health Services - Sanitary Code Article 4 (Water Supply)

- Suffolk County Dept. of Health Services - Sanitary Code Article 6 (Realty Subdivisions, Development and Other Construction Projects)

Significant Environmental Impacts

Geological Resources

Subsurface Geology

Cut/fill operations (to provide proper grades for construction, as well as excavations for the subsurface leaching pools, utility trenches and building foundation) are anticipated to disturb approximately 16.39 acres. No estimates of cut/fill volumes are available at present; these values will be determined during the preparation of the Site Plan. However, it is anticipated that the maximum amount of cut material will be retained on-site to be used as fill, particularly in the lower southwestern corner of the property. The applicant's goal is to result in a "balanced site" in terms of cut and fill volumes. If sufficient fill is not available from within the site, fill will be obtained from off-site, possibly from the adjacent property to the north. In this way, impact to area roadways is eliminated, as no trucks will traverse public roads. It is not anticipated that there will be excess material to be exported from the site. However, if such material occurs, it will be sold as fill (if it displays acceptable properties for this use). If the exported material is not acceptable as fill, it will be disposed of in an approved construction & demolition landfill, and acceptable fill will be imported to the site.

Grading for the project is not anticipated to significantly extend into the subsurface soils beneath the subject site. Therefore, there should be no impacts related to or from subsurface geological features. However, the characteristics and lithology of subsurface geology at the project site influence the movement of groundwater and transport of recharged runoff through the subterranean environment.

Surface Soils

The surface soils found on the subject site are not expected to pose a significant constraint on the proposed development based on review of soil constraints provided in the Suffolk County Soil Survey. Topsoil will be stockpiled and re-utilized in landscaped areas in order to minimize adverse affects associated with long term exposed soils. The site is comprised of Montauk-Haven-Riverhead Association soils which are deep, nearly level to strongly sloping, well drained to moderately well drained with moderately coarse textured and medium-textured soils. The constraints associated with the soils are predominantly minor. Constraints on the construction of sewage systems, homesites, streets and parking lots are slight. The Soil Survey notes that due to the rapid permeability of the soil types existing at the site, under certain conditions development may present potential pollution problems to lakes, springs or shallow wells. However, for the project site, the depth to groundwater is more than adequate for leaching of sanitary waste and there are no lakes, springs or shallow wells on or in the immediate vicinity of the subject site. Thus, the permeability of the soils should not constrain development. Severe constraints exist for landscaping and lawns due to the sandy surface layer in the Plymouth loamy sands present at the site. Soil can be enriched for landscape installation and therefore this should not adversely impact development of the site. The establishment of homesites, streets, lawns and commercial development is typical for the area where the subject site is located.

Topography

The project site is generally flat with a slight slope to the west; the topography of the site does not impose any constraints on development. An estimated 16.39 acres of grading (of which 14.13 acres will be cleared vegetation, and 2.26 acres are presently bare soil) will be necessary for construction of the lumberyard facility, parking areas and landscaping. Creation of steep slopes will not be necessary to provide the proposed facilities, and none will be present following construction of the project.

Filling operations will be required in the southwestern portion of the site, to raise this area to that of the adjacent NYSDOT property. The small amount of steep slopes in this area which will be eliminated are the result of a lower elevation area, grading for the NYSDOT facility, and the effects of the NYSDOT facility's drainage system emptying onto the subject site.

Water Resources

The primary water resource impacts expected as a result of development of the project site involve changes in groundwater quality. There is no surface water on the site (with the exception of several small drainage areas along the western portion of the site), and thus no significant impacts to surface water are expected. Reduction of groundwater quality is typically the result of sanitary discharge and degradation of recharge on the site. An increase in the amount of water that is recharged is also expected as a result of the increase in impervious surfaces on site, although this will not result in a significant change in the regional hydrogeologic regime. The following analyzes changes in water quality and quantity, which may result from implementation of the proposed project.

Hydrology

The SONIR model was run to determine the existing and proposed water budget resulting from recharge. Under the proposed development the project site will recharge a total of 19.03 MGY resulting in an increase of 7.21 MGY. Analysis of the computer model results indicate that 99.6% of total site recharge under proposed conditions would result from precipitation, with the final 0.4% resulting from irrigation. Increases in recharge are primarily the result of reduction of natural area which are replaced with impervious surfaces. This results in a reduction of evapotranspiration by vegetation and the concentration of surface water available for recharge. This increase is not expected to cause a significant adverse impact since the depth to groundwater beneath the site is a minimum of approximately 11 feet below ground surface (bgs) and will not result in flooding-related concerns.

Groundwater Quality

Wastewater will be generated as a result of the proposed project; however, all sanitary effluent will be disposed of off-site via public sanitary sewers of the Riverhead Sewer District. This form of disposal is allowed provided the projected wastewater design flow does not exceed standards established by the SCDHS, which were developed to protect groundwater resources within the County. The proposed project will conform to SCDHS standards in order to limit the impact to groundwater quality, as is discussed below.

The SONIR model was run to determine the concentration of nitrogen in recharge which would be expected following residential and commercial development under the proposed density. The model accounts for the following primary nitrogen sources: precipitation, sanitary waste, fertilizer and water supply. In addition, the model accounts for recharge from the following sources: lawn and landscaped area recharge, natural area recharge, irrigation recharge, impervious area recharge, unvegetated area recharge and wastewater recharge.

The printout indicates that the concentration of nitrogen in recharge resulting from precipitation and fertilization (since sanitary wastewater will be conveyed to the Riverhead STP) will be 0.02 mg/l. The anticipated concentration of nitrogen contributed by the site following the proposed development is less than the NYSDEC drinking water standard of 10 mg/l. Therefore, the proposed project is not expected to result in significant adverse effects to groundwater quality with regard to nitrogen loading.

<u>Groundwater Management</u>

The project will generate a total of 5,408 gpd of sanitary wastewater. As the site is within Hydrogeologic Zone III, the maximum of 300 gpd/acre of wastewater allowance specified in that plan, or 6,363 gpd for the site, will not be exceeded. Therefore, an on-site STP or connection to a public STP is not required. However, because of the presence of the Riverhead Sewer District, the proposed project will extend the sewer lines of that district to service the site. In this way, management of site-generated wastewater will provide protection of groundwater quality.

Use of an on-site drainage system will ensure that the potential for impact to groundwater quality from runoff is minimized. Finally, while the 1.82 acres of landscaping are anticipated to be irrigated and fertilized, the SONIR computer model indicates that the overall nitrate/nitrogen concentration in recharge originating on the site will be unchanged from its pre-development level of 0.02 mg/l. This concentration is well within the NYS standard.

The proposed project does not include any use or manufacture of potentially hazardous chemicals such as VOC's, so that the potential for impact to groundwater quality from accidental release or spillage is eliminated.

<u>Surface Water and Drainage</u>

The proposed actions at the project site may result in alteration of drainage flow or surface water patterns through the creation of impervious surfaces. However, it should be noted that the site has low slopes with few swales which could concentrate runoff into pools, and is underlain by soils having good percolation characteristics. In accordance with Town requirements all surface run-off generated on-site must be contained on-site, therefore all run-off will be directed to stormwater leaching pools designed to accommodate a minimum 2-inch storm.

The western boundary of the site includes the remnants of an intermittent stream with several low-lying areas that accumulate site run-off and some run-off from the adjacent NYSDOT site. Low-lying areas on-site will be filled, and any existing site run-off and additional run-off from the proposed development will be collected and recharged in the stormwater system on the subject site. Run-off from the NYSDOT site will need to be contained on that site.

It is noted that a wetland system, which includes a tiger salamander breeding pond, is located approximately 600 feet south of (downgradient from) the project site. There is no direct connection between the subject site and this system by culvert or overland flow, as CR 58, a county highway, separates the two sites. The proposed site use will not alter drainage in the area, and will in fact reduce that low component of overland flow that may travel off the site by containing and recharging run-off within the proposed site drainage systems. Water recharged on-site will not adversely impact groundwater quality. According to the NURP Study, water recharged in drainage systems of commercial developments will not cause significant elevated concentrations of metals, hydrocarbons, bacteria or viruses as the potential contaminants are either volatilized or attenuated in the soil. The 11-foot depth to groundwater is more than enough to permit this soil attenuation to occur in connection with the proposed project. There is no sanitary discharge on-site, as all such wastewater will be conveyed to the Riverhead STP. As a result, the SONIR model predicts no significant change in the nitrogen in recharge concentration of 0.02 mg/l. The wetlands downgradient of the project site are sustained by regional groundwater proximate to the land surface. Since the proposed project will not change regional groundwater levels, due to the permeability of the soils and the distribution of stormwater leaching pools throughout the site, no impact on the hydrology of downgradient wetlands is expected. As a result, it is concluded that the proposed project will not in any way adversely affect the water quality or hydrology of the downgradient wetlands.

Air Resources

Carbon monoxide is a colorless, odorless gas, produced by incomplete combustion of fuels. CO is the most prevalent air contaminant, particularly in urban areas, and is primarily associated with motor vehicle exhaust. The nature of commercial uses and the Long Island consumer shopping patterns promotes use of vehicles to gain access to various destinations, particularly outside of a downtown area. The proposed project will produce additional vehicle trips on area roadways, and the increase in traffic and potential increase in congestion could locally degrade air quality. This is particularly true near intersections where project generated traffic may idle due to traffic delays, thereby increasing local carbon monoxide (CO) emissions. The degree to which this may occur is based on the increase of vehicles at intersections affected by the proposed project.

Increased CO emissions could affect those vulnerable to poor air quality, particularly individuals who suffer from angina, lung disease, anemia or cerebral-vascular problems, in those instances where individuals with such conditions come in contact with site generated increased CO levels. Other impacts may be to sensitive receptors including hospitals, nursing homes, and schools. A field inspection of the site and surrounding area found that there are no sensitive receptors in the vicinity of the project site. Specifically, there are no homes, hospitals, nursing homes or schools within a 1,000' radius of the site. The nearest sensitive receptors are the residential homes located approximately 1,050' northeast of the property boundary.

The proposed use will not generate emissions as a result of the operations on site. The sole potential source of increased air pollutants is thus related to increases in traffic generated by the project. The project site is located in an area with relatively level topography and is not in a basin or between large rows of buildings which would tend to accumulate air pollutants. This combined with the prevailing winds and atmospheric instability described in the Setting Section, allows for good air movement to disperse carbon monoxide resulting from vehicle trips generated by the redevelopment of this site.

A full analysis of potential traffic impacts has revealed that the proposed project will not result in a dramatic increase in vehicular traffic. The mitigation proposed will prevent significant changes in delays at area intersections thereby minimizing congestion related to the project. Thus, the increase in traffic resulting from the development of the proposed project will not generate significant additional volume or delays at intersections in proximity to the subject site; and no further air quality analysis is warranted.

Ecological Resources

A total of 14.13 acres of natural vegetation will be removed from the site to allow for the development. This represents a loss of approximately 67% of the existing natural vegetation on the site. Thus, the impacts of the proposed project should be assessed in relation to a direct change in habitat, fragmentation and an increase in human activity. The proposed development plan would require clearing the majority of the site, with two small portions of woodland remaining in the eastern portion of the site which are intersected by the proposed site access. A small portion of the natural vegetation will be replanted with landscaping species. Although the majority of the will be re-established in building coverage, parking areas and access roads. Additionally, both small ponded areas located within the existing drainage gully on the west part of the site will be filled as a result of development. It should be noted that the existing drainage gully does not remain functional off-site, and is currently isolated by area roadways and developments and existing topography.

The subject property is generally fragmented under existing conditions, and has been subject to several man-made disturbances throughout the past. There are several larger tracts of woodland in the immediate area, and thus relatively slight impacts are expected as a result of the proposed clearing and development. However, these effects are cumulative and need to be considered in light of regional planning. The following examines in detail the impact of the proposed site use and development with regard to both vegetation and wildlife.

Vegetation

The project site is approximately 21.21 acres in size, of which approximately 77% will be developed following the construction of the proposed project. The existing coverages will be increased to 14.57 acres of building and pavement area, 1.82 acres of landscaping/turf, with the remaining 4.82 acres left in its natural state. Although the natural vegetation removed adjacent to the proposed parking areas and structure will be replaced by some landscaping species, the development of the site will have localized impacts on vegetation. Regional impacts will be negligible, as the site is small in size and represents only a small portion of the natural vegetation in the area. Additionally, the site has been subject to several past man-made disturbance events, and does not represent a mature natural community.

The proposed development will require clearing the majority of the site, although approximately 4.82 acres (or 23%) of the existing woodland will remain. The remaining woodland habitat would be present within the eastern portion of the property, and would consist of two areas transected by the proposed access drive. The vegetation located along the site perimeter will be replaced by landscaping species. This will create a large proportion of edge habitat, which would typically favor growth of understory species which require greater light penetration. The remaining forested area would further be fragmented, and the existing woodland on site would no longer provide suitable corridors required by some wildlife species.

Additionally, the project would require the drainage depressions to be filled, which would require the loss of approximately 0.02 acres of ACOE classified wetlands. The wetlands on site are small in size, and are expected to have been created as a result of past human disturbance on site and runoff from the NYSDOT property. The depressions are not hydrologically or topographically connected, and do not provide viable wetland habitat utilized by numerous wildlife species. Several natural freshwater wetlands exist in the vicinity, and significant impacts would not be expected as a result of the removal of these site drainage features.

The loss of woodland habitat on the property will be partially mitigated by site landscaping. Landscaping and turf will be the dominant vegetation surrounding the structure and associated drives and parking areas, with native or near native species used. Planting of native tree species such as oaks, maples, beech, and tulip trees would help accelerate the process of succession, while minimizing the potential for colonization by introduced species. Evergreens, including white pine and Douglas fir, may be used to provide screening on site, and could be planted as a supplement to the proposed wooded buffers where necessary. A variety of evergreen and deciduous shrubs could be utilized as foundation plantings, with flowers and mixed turf where needed.

The existing woodland habitat in the area is somewhat fragmented due to the surrounding developed areas. Similar wooded forest habitat is found throughout the general area, and there are several large contiguous blocks of woodland and wetland habitat, particularly farther south of the site. The property is not be expected to act as a refuge for rare native flora, and impacts to plant species should be minimal. Bayberry and spotted wintergreen are the only exploitably vulnerable, protected species expected on the property. Exploitable vulnerable species are protected primarily because they are indiscriminately collected, rather than due to rarity within the State. The presence of these plants would not preclude development of the site, as a property owner is permitted to remove exploitably vulnerable plant species from a site.

In conclusion, approximately 23% of the existing woodland will be retained in the eastern portion of the site under the proposed plan. Approximately 1.82 acres of landscaping/turf will replace this vegetation, and will incorporate native as well as ornamental species. The majority of the vegetation on the property is currently dominated by successional and somewhat mature woodland. Regional impacts will be negligible, as the project site has experienced several events of prior disturbance, is small in size and represents only a small portion of the natural vegetation in the area.

<u>Wildlife</u>
The vegetation on the project site provides habitat for a wide variety of wildlife, although the surrounding developments and adjacent roadways are expected to exclude some species found in larger tracts of open space, such as those to the northeast and those farther to the south. Most of the species expected on the property are at least somewhat tolerant of human activity, but others will be impacted by the proposed clearing and increase in human activity. The proposed project will remove some of the existing woodland habitat on the property. As was discussed in the preceding section, the woodland found on site is somewhat fragmented, although there are large contiguous tracts of similar woodland habitat found throughout the general area. The proposed project will favor those species that prefer edge and isolated woodland habitats and those that are tolerant of human activity.

In determining impacts upon the existing wildlife populations, it can be assumed that an equilibrium population size is established for each species as determined by availability of resources in the habitat. Thus, the removal of habitat resulting from the proposed project will cause a direct impact on the abundance and diversity of wildlife using the site. Although the assumption that species are at equilibrium is an oversimplification, and population sizes of many species are controlled below the carrying capacity by other factors, it does provide a worst-case scenario in determining the impact of habitat loss. In addition to this direct impact, the increased intensity of human activity on the site will cause an indirect impact on the abundance of wildlife that will remain on the site and in the area, under post-development conditions.

In the short term, lands adjacent to the subject property will experience an increase in the abundance of some wildlife populations due to displacement of individuals by the construction phase of the proposed project. Ultimately, competition with both conspecifics and other species already utilizing the resources of the surrounding lands should result in a net decrease in population size for most species. The effect on the density and diversity of both local and regional populations should be minimal, as the area represents only a small portion of the forested habitat available in the vicinity. The impacts of habitat losses are cumulative, however, and impacts need to be considered in light of regional planning.

Transportation

<u>Capacity Analyses</u>
Intersection capacity analyses were first conducted for 2000 Existing conditions. The existing conditions were based on 1999 or 2000 traffic counts taken during the peak summer months or on 1999 or 2000 traffic counts adjusted to reflect traffic during the peak summer months.

The 2000 existing traffic counts were then projected to the 2001 build year using a 3% per year growth factor. Traffic volumes expected to be generated by the approved Applebee’s and by the Ralph Lauren Polo Store being constructed at Tanger Factory Outlet Center II were added to projected 2001 traffic volumes. The 2001 No Build analyses were then performed. Roadway improvements associated with the Applebee’s restaurant were included as part of the No Build conditions.

The results of these analyses indicate that some degradation of LOS will occur in the future, even with the roadway improvements associated with the other development project.

Unsignalized intersection capacity analyses were performed at the intersection of NYS Route 25 at Kroemer Avenue. The results of these analyses indicate that marginal operating conditions exist at the intersection during the PM peak hour, and that these conditions will deteriorate to unacceptable levels in the future No-Build condition.

It is recommended that the Town of Riverhead contact the NYSDOT to discuss this condition. Although the deterioration in levels of service is due, not to the addition of traffic from the proposed development, but to the projected normal traffic growth combined with the traffic from other area developments, the applicant is willing to participate in reasonable improvements at this location as might be requested by NYSDOT.

<u>Public Transportation</u>
It should be noted that, with certain modifications, existing bus routes provide bus service that can be utilized by both the customers and employees of the proposed development. This bus service permits residents of the surrounding areas to obtain transportation to the LIRR station as well as downtown Riverhead. The use of this bus service by both customers and employees of the proposed development will also reduce the traffic impact of the proposed development on the surrounding street network.

Land Use, Zoning and Plans

<u>Land Use</u>
The proposed project will change the land use of the site from vacant land to a lumberyard use. However, as the existing land use pattern in the vicinity, particularly across the CR 58 corridor to the south, is predominantly vacant, industrial, commercial and retail in nature, no significant impact to this land use pattern is anticipated. In addition, as the Adchem site to the north will remain in place, the proposed project will act as an appropriate transitional use between the commercial/retail uses of the CR 58 corridor and this industrial site.

<u>Zoning</u>
As the proposed project does not require a zone change, no impact to the existing zoning of the site or the zoning pattern in the area is anticipated. A Special Permit will be required for the lumberyard operation, from the Town Board. However, as adjacent and nearby sites are already developed, or are presently being developed, it is not anticipated that the issuance of a special permit for the proposed project will significantly impact the existing potential for redevelopment of other sites by use of special permits.

While the Town’s Destination Commercial Planned Development District classification no longer exists, the proposed project would nevertheless have been in conformance with such a designation. The Overlay District was based on yields and uses of the underlying zoning; since the proposed project conforms with the existing zoning of the site, the proposed project would also conform to the Overlay District.

Land Use Plans
Town Comprehensive Master Plan (1973) - The proposed project conforms with the general intent of the Town as depicted for the "Urbanized Development Band" of the 1973 Plan, but does not conform with specific use of "Commercial Industrial Park", as this use is defined to exclude the retail use characteristic of the proposed project. However, it should be noted that this recommendation has not been followed elsewhere in the vicinity, as attested by the presence of the Tanger Shopping Center immediately across CR 58, and other nonconforming uses in the vicinity.

Comprehensive Plan Update: A Plan for the Route 58 Corridor (1983) - The proposed project conforms to all applicable goals of the Update. The proposed project is not representative of a "*…large land consuming non-industrial non-retail use*" planned for the area in the Update; however, it is a similar, though less-intensive use than would be provided in accordance with the Update.

Community Services

Fiscal Considerations and Tax Revenue
The total value of the subject property is anticipated to increase with the construction of the proposed facilities and thus increase tax revenue generated by the site. This increase will be disbursed to the individual taxing districts offsetting some of the additional expenses incurred by these services due to the proposed action.

Based on client provided information, the market value is anticipated to be $7,436,000. Adjusting the estimated value by the current equalization rate yields an assessed value of $2,295,493.20 ($7,436,000 x 0.3087 = $2,295,493.20).

The proposed facility will result in an approximate increase of $219,781.77 for a total tax revenue generation of $238,712.94.

Educational Facilities
As all proposed development at the subject property will be commercial; no school-aged children will be generated. Therefore, the projected increase in tax revenue generated by the proposed project ($124,877.35) will benefit the School District with no increase in burden to the district.

Police Protection
As indicated previously, the project site is located within the Riverhead Police Department specifically within the boundaries of Sector 603. The proposed development of the site will increase the potential for emergencies to which the Riverhead Police Department will have to respond. According to Chief of Police, Joseph Grattan:

> *It is impossible to accurately place a number of the additional calls that will come to our department; however based on previous experience, it may well be noted that calls for services will increase somewhat.*

However, the additional tax revenue generated by the project will assist in offsetting any additional service that may be incurred by the Department as a result of this project.

Fire Protection

The Riverhead Fire District has the capacity to provide fire protection services to the proposed project from stations throughout the District. The completion of the proposed project will generate approximately $7,657.77, in tax revenue thereby partially offsetting any increase in District expenditures associated with the project.

Solid Waste Disposal

The proposed project is estimated to generate approximately 400 lbs of solid waste per day with an expected 300 lbs eligible for recycling purposes.

It is anticipated that the existing solid waste facility on Youngs Avenue has sufficient capacity to handle the additional solid waste generated by the proposed project with no adverse impacts to the Town of Riverhead.

Water Supply and Wastewater Treatment

Gary Pendzick, Superintendent of the Riverhead Water District, indicated that the District is able to provide water service to the project site. The proposed building will be served via an extension of the existing 12-inch main which traverses the adjacent OC Riverhead 58 site to the east. This extension will run in a northwest-southeast direction along the site's northern boundary, beneath the proposed northerly truck access road. The Applicant will grant an easement to the Riverhead Water District for this extension.

Based on SCDHS design criteria for wastewater system sizing, the proposed 135,200 SF building will generate 5,408 gallons of wastewater daily (135,200 SF X 0.04 gpd/acre). This volume will be conveyed via an 8-inch sewer connection to the existing force main beneath the eastern access road. From this point, wastewater will be conveyed into an existing 10-inch gravity sewer beneath CR 58, then to the Riverhead Sewer District STP.

The Malcolm Pirnie Inc. Commercial Sewer District Extension Map and Plan (1996) allocated 17,214 gpd to this parcel of the District inclusive of the adjoining 2.71-acre subject property currently being developed with an Applebee's restaurant. Based on this allotment, it is anticipated that the Riverhead Sewer District STP has adequate capacity to handle the site generated wastewater of 5,408 gpd plus the 5,940 gpd generated by the Applebee's Restaurant for a total of 11,348 gpd.

The District further indicated that this additional flow would not drastically increase the nitrogen load currently processed at the STP. The existing SPDES permit allows the STP to discharge to the Peconic River Estuary system. It is not anticipated that the proposed project will elevate the current nitrogen levels of effluent discharged to the Peconic River. In addition, as indicated by correspondence received from the Riverhead Sewer District, a letter of sewer availability will be issued only after the plans have been approved.

Electrical and gas services are anticipated to be provided in the project area by LIPA and BUG. Design engineer Michael Randazzo indicated that LIPA will provide gas and electric service to the site.

Socio-Economic Conditions

The **Socio-Economic Impact Analysis** indicates that the proposed project is anticipated to generate, based on the applicant's experience, $45 million in annual sales, of which $36 million would be residential purchases and $9 million would be commercial sales.

The Analysis provides a "market capture analysis", which includes the market effect of the Home Depot currently under application in the vicinity. In the capture analysis, a "market capture rate", or percentage of the "unsatisfied retail demand" which the proposed project is anticipated to address. The sales attributable to only the proposed project would address a portion of the existing and future unsatisfied retail demand in the market area ($103.58 million and $112.85 million annually, respectively). The capture analysis indicates that the proposed project, as well as the proposed Home Depot, will satisfy the majority of the existing and anticipated future levels of unsatisfied retail demand. There is sufficient unsatisfied retail demand in the market area to accommodate not only the anticipated sales from the proposed project, but the sales from the other similar project in the area. This analysis suggests that the proposed project, even in consideration of the Home Depot, will not over saturate the lumberyard market in the area.

As a result, no significant impact to the socio-economic character of the lumberyard market in the market area is anticipated.

Construction of the project will create a number of job opportunities. Short-term construction jobs and long-term employment opportunities will be created, with consequent direct positive economic impacts from the income, property and sales taxes generated by the new employees. In addition, indirect positive economic impacts will be realized, arising from:

- the potential for an increase in the number of jobs at the local material suppliers patronized during the construction process,
- the increased monetary flow into these suppliers from material purchases during this phase, and
- the increased potential for these suppliers to experience long-term increased sales from customers attracted to the area due to the proposed project.

In sum, the above indirect impacts are known as the "multiplier effect", which refers to the increased economic activity resulting from development. In this concept, for every dollar spent in constructing and or generated by the operation of a project, several dollars are generated at businesses in the area as a result of their services to the project, or as benefits from the increased customer base generated by that project.

Community Character

Visual Resources

The proposed project will significantly change the visual appearance and character of the site for observers along CR 58. The property will become a developed lumberyard site, with paved parking areas fronting CR 58 and a single, 1-story structure located in the rear, northwestern portion of the site. A large amount of existing natural vegetation will be retained in the eastern part of the property, pending future development in this area. A professionally-designed landscaping plan will be developed which will visually buffer the parking areas from observers along CR 58.

Cultural Resources

Correspondence to and from the NYS Office of parks, recreation and Historic Preservation (OPRHP) indicates that, as the site has no prehistoric or historic cultural resources, no impact to such resources is anticipated from construction of the propose project.

Noise

The existing noise environment for the project site and surrounding area is characteristic of the surrounding land use and proximity to major roadways. Under existing conditions, the project site and surrounding uses are subject to significant noise levels generated by traffic on CR 58.

The American National Standards Institute provides land use compatibility guidelines which are generally accepted for analyzing impact based on annoyance levels. For the proposed use, noise levels <65 dBA are considered to be compatible, 65-75 dBA are considered marginally compatible and areas with levels exceeding 70 dBA are considered incompatible. The area of proposed development is located towards the northern property line, where the noise levels are currently in the range of 52 - 57 dBA. The removal of attenuating vegetation to the south will invariably result in an increase in the ambient noise environment on site, however, this increase is expected to be approximately 5 dBA. Thus, the proposed use is compatible with the ambient noise environment.

Construction Period

The construction process will begin with establishment of flagged clearing limits, followed by installation of staked hay bales and silt fencing in critical areas for erosion control purposes. Then, site clearing and grading operations can begin; initially, construction equipment and vehicles will be parked and loaded/unloaded along CR 58, but this will be moved within the site as soon as clearing/grading operations allow. It is estimated that approximately 16.39 acres, or 77.3% of the site, will be cleared. This includes areas for the new building, parking areas and landscaping. “Rumble strips” will be placed at the site construction entrance, to prevent soil on truck tires from being tracked onto CR 58.

In order to minimize the time span that denuded soil is exposed to erosive elements, excavations for the curbs, parking areas, building foundation, utility trenches and drainage system will take place immediately after grading operations have been completed. Construction of the single structure can then begin, concurrent with the utility connections and paving of the parking areas. Once heavy construction is complete, finish grading will occur, followed by soil preparation using topsoil and installation of the landscaping, which will be performed while the structure is completed.

CR 58 will only be used for site access. As a result, no significant or long-term construction impacts to the adjacent properties are anticipated. Construction activities will not occur outside weekday daytime hours (approximately 7 AM to 6 PM).

It is anticipated that the construction period (clearing, grading, construction and finishing) will take approximately 10-12 months.

Cumulative Development

Water Use/Wastewater Generation
As mentioned previously, the 21.21-acre subject property is, together with the 2.71-acre site adjacent to the east, allotted 17,214 gpd of sanitary wastewater by the Riverhead Sewer District. The proposed development of the lumberyard facility is estimated to generate 5,408 gpd of wastewater. The development of a 198-seat Applebee's and 144-seat take-out restaurant are estimated to generate 5,940 gpd and 4,320 gpd, respectively. This results in a total wastewater flow of 15,668 gpd, leaving 1,526 gpd below the allotment.

Therefore, pursuant to the development of the Applebee's restaurant and four take-out restaurants, the total sanitary flow will increase to 15,668 gpd. The existing allocation is sufficient to permit the connection of these proposed sites to the Riverhead Sewer District in accordance with the Malcolm Pirnie, Inc. plan. It is further noted that the addition of full development of the site including a 45,500 SF office use and a 6,500 SF (225 seat) restaurant would cause wastewater flow to exceed the allocation. Therefore, full development would not be permitted to connect to the District until such time as re-allocation or increased allocation is available or it is demonstrated that the proposed uses meet the allocated flow.

Capacity Analysis
Intersection capacity analyses were first conducted for 2000 Existing conditions. The existing conditions were based on 1999 or 2000 traffic counts taken during the peak summer months or on 1999 or 2000 traffic counts adjusted to reflect traffic during the peak summer months.

The 2000 existing traffic counts were then projected to the 2001 build year using a 3% per year growth factor. Traffic volumes expected to be generated by the approved Applebee's and by the Ralph Lauren Polo Store being constructed at Tanger Factory Outlet Center II were added to projected 2001 traffic volumes.

The results of these analyses indicate that excellent levels of service will be achieved for the proposed cumulative development once the proposed geometric and signalization changes are made.

Unsignalized intersection capacity analyses were performed at the intersection of NYS Route 25 at Kroemer Avenue. The results of these analyses indicate that marginal operating conditions exist at the intersection during the PM peak hour, and that these conditions will deteriorate to unacceptable levels in the future No-Build condition.

It is recommended that the Town of Riverhead contact the NYSDOT to discuss this condition. Although the deterioration in levels of service is due, not to the addition of traffic from the proposed development, but to the projected normal traffic growth combined with the traffic from other area developments, the applicant is willing to participate in reasonable improvements at this location as might be requested by NYSDOT.

Public Transportation
It should be noted that, with certain modifications, existing bus routes provide bus service that can be utilized by both the customers and employees of the proposed development. This bus service permits residents of the surrounding areas to obtain transportation to the LIRR station as well as downtown Riverhead. The use of this bus service by both customers and employees of the proposed development will also reduce the traffic impact of the proposed development on the surrounding street network.

Mitigation Measures

Geological Resources

- The Site Plan will be designed so that, to the greatest degree practicable (commensurate with site elevation requirements to provide for proper drainage and wastewater flow), excavated material will be reused within the site as fill, reducing the need for importation of fill. However, if fill material from off-site is required, the adjacent property to the north will be investigated to supply this material, thereby minimizing the use of CR 58 by construction vehicles.

- Erosion preventive measures to be taken during the construction period may include: use of groundcovers (vegetative or artificial), drainage diversions, soil traps, minimizing the area of soil exposed to erosive elements at one time, and minimizing the time span that soil is exposed to erosive elements.

- Dust raised during grading operations may be minimized and controlled by the use of water sprays, a truck cleaning station at the construction exit, and implementation of any dust suppression systems specified by the appropriate Town agencies.

- Truck movements and construction activities will be undertaken on the site during the hours of approximately 8 AM-5 PM or as specified by the Town Code.

Water Resources

- The proposed project will consist of a lumberyard use; therefore no toxic or hazardous chemicals are anticipated to be present or utilized on the site. Consequently, no impact to groundwater quality is anticipated from this source.

- The lumberyard will utilize the public sewer system for disposal of sanitary wastes. The overall nitrogen concentration in recharge of 0.02 mg/l will result from irrigation and stormwater runoff. The anticipated concentration is less than the NYSDEC drinking water standard of 10 mg/l and therefore, the proposed project is not expected to result in significant adverse effects to groundwater quality with regard to nitrogen loading.

- SONIR computer model results for the proposed project indicate that a total of 19.03 MG/yr of water will be recharged on the site. Of this anticipated recharge volume, stormwater will account for 99.6% of the total recharge with irrigation contributing 0.4%. In conformance with the Town requirements, all stormwater runoff generated on developed surfaces will be retained on-site, to be recharged to groundwater in proposed stormwater catchbasins and leaching pools.

- The project site will utilize public water, to be supplied by the Riverhead Water District via an existing main beneath CR 58. The potable water requirement of the project, 5,408 gpd, is not anticipated to impact the ability of the RWD to serve the public in the vicinity.

- Where applicable, construction will utilize water-saving plumbing fixtures and systems.

- An on-site irrigation system will be utilized for the 1.82 acres of landscaping proposed; it may be equipped with moisture sensors to further reduce the volume of water required for irrigation.

Air Resources

- As no impacts to air quality are anticipated from the proposed project or the increase in vehicle traffic, no mitigation is necessary or proposed.

Ecological Resources

- Regional impacts to vegetation and habitat will be negligible, as the project site has experienced several events of prior disturbance, is small in size and represents only a small portion of the natural vegetation in the area.

- The majority of the 18.95 acres of natural vegetation on the property are dominated by successional and somewhat mature woodland. Approximately 23% of this woodland will be retained, in the eastern portion of the property. Approximately 1.82 acres of landscaping/turf will replace a portion of this removed vegetation, and will incorporate native as well as ornamental species.

Transportation

Based on analyses in the TIS, it has been concluded that the construction of the proposed lumberyard complex will not adversely affect traffic conditions on the street network in the vicinity of the site. Although the proposed development will add traffic to the surrounding street system, the impact of additional traffic will be minimized and accommodated by roadway and signalization modifications. The following points should be recognized.

1. Access points to the site are located and designed such that site-generated traffic will be serviced without adversely affecting CR 58. In keeping with good access management practices, both access driveways will provide combined access to adjacent properties on CR 58.
2. Access points to the site will be clearly visible to traffic on CR 58, and no sight distance problems will exist in the vicinity of the driveways.
3. Most locations in the vicinity of the site have a history of minimal accident occurrence. In combination with recommended roadway modifications, traffic volumes generated by the proposed development will not have an adverse impact on current accident experience.
4. Capacity analyses indicate that intersections in the vicinity of the proposed development will operate well once the following roadway modifications are made:

<u>CR. 58 at the Tanger Factory Outlet Center II Driveway</u>

a. A southbound approach will be added to this intersection to act as access to the site. The southbound approach should have one twelve-foot left-turn lane, one twelve-foot thru thru/right-turn lane, and one sixteen-foot lane for traffic moving away from the intersection.
b. The two-way left-turn lane on CR 58 west of the Tanger driveway should be re-striped as an exclusive left-turn bay for eastbound traffic into the site.
c. The right-most of the two existing northbound left-turn lanes should be changed to a northbound combination left/thru lane.
d. One twelve-foot right-turn lane should be added to the westbound approach.
e. The traffic signal should be modified to provide split-phased operation for the northbound and southbound approaches.
f. The traffic signal timing and cycle length should be adjusted to provide optimal intersection performance and progression.

<u>CR 58 at Kroemer Avenue</u>

a. The improvements currently proposed in connection with the Applebee's application will be constructed. These include:
b. Mill Road will be re-striped and any raised medians removed or re-shaped to add ten-foot or wider northbound and southbound exclusive left-turn lanes.
c. The traffic signal will be modified to provide a leading northbound phase.
d. The traffic signal timing and cycle length will be adjusted to provide optimal intersection performance and progression.

It should be noted that the geometric changes at this intersection have also been recommended in conjunction with the development of the proposed Riverhead Centre. Since Riverhead Centre will have a more direct impact on this intersection than the proposed lumberyard complex, it is suggested that changes be made by Riverhead Centre if approval of Riverhead Centre is imminent.

<u>NYS Route 25 at Kroemer Avenue</u>

Capacity analyses results indicate that poor levels of service can be expected to prevail at this intersection whether or not this development is approved. It is recommended that the Town of Riverhead contact the NYSDOT to discuss this condition. Although the deterioration in levels of service is due to the projected normal traffic growth combined with the traffic from other area developments, rather than to the addition of traffic from the proposed development, the applicant is willing to participate in reasonable improvements at this location as might be requested by NYSDOT.

5. The existing S-62 bus route provides service that can be utilized by both the customers and employees of the proposed development. The use of this bus service will reduce the traffic impact of the proposed development on the surrounding street network.

Land Use, Zoning and Plans

- As no significant impact to the land use pattern in the vicinity is anticipated, no mitigation measures are necessary or proposed. The proposed structure has been sited in the portion of the site farthest from CR 58, minimizing the effect of the anticipated land use change of the site relative to adjacent and nearby land uses. The proposed project will act as an appropriate transitional use between the commercial/retail uses of the CR 58 corridor and the Adchem industrial site.

- As no impact to the existing zoning of the site or the zoning pattern in the area is anticipated, no mitigation measures are necessary or proposed. The proposed project has been designed to conform with all applicable zoning regulations and requirements, including setbacks, yards and building height. It is not anticipated that the issuance of the required special permit for the proposed project will significantly impact the existing potential for redevelopment of other sites by use of special permits.

- While the Town Board-approved "Destination Commercial Planned Development District" classification no longer exists in the town, the prior designation of the project site for this zoning category suggests that the proposed project can be considered appropriate for this site. In addition, the Overlay District was based on yields and uses of the underlying zoning; since the proposed project conforms with the existing zoning of the site, the proposed project would also conform to the Overlay District.

- While the proposed project conforms with the general intent of the "Urbanized Development Band" of the 1973 Town Comprehensive Master Plan, it does not conform with the specific use of "Commercial Industrial Park" (this use is defined to exclude the retail use characteristic of the proposed project). However, it should be noted that this recommendation has not been followed elsewhere in the vicinity, as attested by the presence of the Tanger Shopping Center immediately across CR 58, and other nonconforming uses in the vicinity.

- The proposed project conforms to all applicable goals of the 1983 Comprehensive Plan Update, though the proposed project is not representative of a "*…large land consuming non-industrial non-retail use"* planned for the area. However, the proposed project is a similar, though less-intensive use than would be provided in accordance with the Update.

Community Services

- The significant increase in property taxes paid by the project (as well as the increase in sales taxes provided by the lumberyard) will offset at least a portion of the increased costs to police, fire/ambulance and other public services caused by the project.

- The proposed project will provide a significant positive benefit in terms of tax revenues to the Riverhead School District, particularly as the site presently and will in the future generate no school-age children. The proposal will provide a large increase (of approximately $219,800/year) in property taxes generated by the site.

- Provision of security alarms for the lumberyard will increase the level of security on the entire property.

- Use of fire resistant building materials, as well as adherence to the NYS Fire Code will increase the level of safety from fires and minimize the potential for use of ambulance services.

- Use of water-saving plumbing fixtures and equipment will minimize the increase in water use on the property.

- The volume of wastewater generated by the project (5,408 gpd) is anticipated to be well below the volume anticipated for the site by the Malcolm Pirnie Engineering Study prepared for the overall property (17,214 gpd). Design and installation of such systems will be subject to the review and approval of the SCDHS.

- The solid waste generated on the site is not anticipated to contain any toxic or hazardous substances, as such materials are not expected to be used, stored or sold by the project.

- Use of energy-conserving equipment and building materials will minimize the increase in the use of electrical and natural gas resources.

Socio-Economic Conditions

- The capture analysis prepared as part of the **Socio-Economic Impact Analysis** indicates that the proposed project, as well as the proposed Home Depot, will satisfy the majority of the existing and anticipated future levels of unsatisfied retail demand. There is sufficient unsatisfied retail demand in the market area to accommodate not only the anticipated sales from the proposed project, but the sales from the other similar project in the area. This analysis suggests that the proposed project, even in consideration of the Home Depot, will not over saturate the lumberyard market in the area. As the proposed project is not anticipated to result in any significant impacts to the existing socio-economic character of the lumberyard market in the vicinity, no mitigation measures are necessary or proposed.

Community Character

- The potential visual impact of the proposed development will be mitigated due to the design and layout of the project, the use of a professionally-designed landscaping plan, and by the limited view of the site from most points to the east, west and north. In addition, the project will include an attractive lighting design that will heighten the attractiveness of the site for individuals viewing it from CR 58.

- The visual character of the site will be changed as a result of the proposed project; however, this change will be in keeping with the existing visual character of the adjacent and nearby commercial and utility areas.

Construction Period

- Impacts anticipated the construction period will be mitigated by use of water sprays and a truck cleaning station (to reduce dust), limiting construction operations to the hours of 7 AM to 6 PM, and the relatively short length of the construction process (approximately 10-12 months).

Cumulative Development

- Pursuant to the development of the Applebee's restaurant and four take-out restaurants on the adjacent property, the total sanitary flow (with the proposed project) will increase to 15,668 gpd. The existing allocation for sanitary wastewater (17,214 gpd) is sufficient to permit the connection of these proposed sites to the Riverhead Sewer District in accordance with the Malcolm Pirnie, Inc. plan. It is further noted that the addition of full development of the project site (a 45,500 SF office building and a 6,500 SF, 225-seat restaurant) would cause wastewater flow to exceed the allocation. Therefore, full development would not be permitted to connect to the District until such time as re-allocation or increased allocation is available or it is demonstrated that the proposed uses meet the allocated flow.

- The results of the cumulative traffic analyses indicate that excellent levels of service will be achieved for the proposed cumulative development once the proposed geometric and signalization changes are made.

- Unsignalized intersection capacity analyses were performed at the intersection of NYS Route 25 at Kroemer Avenue. The results of these analyses indicate that marginal operating conditions exist at the intersection during the PM peak hour, and that these conditions will deteriorate to unacceptable levels in the future No-Build condition. It is recommended that the Town of Riverhead contact the NYSDOT to discuss this condition. Although the deterioration in levels of service is due, not to the addition of traffic from the proposed development, but to the projected normal traffic growth combined with the traffic from other area developments, the applicant is willing to participate in reasonable improvements at this location as might be requested by NYSDOT.

- It should be noted that, with certain modifications, existing bus routes provide bus service that can be utilized by both the customers and employees of the proposed development. This bus service permits residents of the surrounding areas to obtain transportation to the LIRR station as well as downtown Riverhead. The use of this bus service by both customers and employees of the proposed development will also reduce the traffic impact of the proposed development on the surrounding street network.

Alternatives

The State Environmental Quality Review Act requires the investigation of alternatives to a proposed project in order to determine the merits of the project as compared to other possible uses, site locations and technologies. The discussion and analysis of each alternative should be conducted at a level of detail sufficient to allow for the comparison of various impact categories by the decision-making agencies. For this document, the alternatives include the following:

- **Alternative 1: No Action-**the site remains in its present use and condition
- **Alternative 2: Full Site Development-**the site is developed with an additional 6,500 SF, 225-seat restaurant and 45,500 SF of office use
- **Alternative 3: Alternative Site Use-**the site is developed with 369,000 SF of office space

1.0 DESCRIPTION OF THE PROPOSED PROJECT

This document is a Draft Environmental Impact Statement (DEIS) prepared for a Special Permit application involving a lumberyard project on a 21.21 acre parcel of land in the hamlet of Riverhead, Town of Riverhead, New York. The project site is located on the north side of County Road (CR) 58, opposite Kroemer Road. The property is presently vacant wooded land.

The proposed lumberyard project will not utilize all of the development potential of this site. Therefore, in order to provide the lead agency with sufficient information to render an informed decision, Alternative 2 of this document (**Section 7.2**) assumes that the remainder of the site will be developed with a hypothetical 45,500 SF of office use and a 6,500 SF/225-seat restaurant (which is also allowed by special permit). In addition, as per the Town Board Resolution issuing the Positive Declaration which required this DEIS, this document includes a discussion of the cumulative impacts associated with the development of four take-out restaurants totaling 7,200 SF on the adjacent 2.71-acre site to the east (as these two properties are under common ownership, are proximate to each other, and these sites may share some common impacts related to traffic and sanitary wastewater flow). An approved Applebee's restaurant is presently under construction on this site.

This study was required as a result of a public scoping process, which determined the contents of a Draft Environmental Impact Statement (DEIS) which describes and discusses the proposed project, its anticipated impacts and associated measures taken to mitigate those impacts. This overall environmental review is required by the NYS Environmental Quality Review Act (SEQRA), which regulates the review of development applications in the state. The Riverhead Town Board is the Lead Agency for this application, as the application which triggered the SEQRA process is for a Special Permit, a Town Board-regulated matter. Future stages of this review include: review and acceptance of the DEIS with respect to scope and adequacy; a public hearing on both the DEIS and the overall special permit application; preparation of a Final EIS, which responds to agency and public comments received during the DEIS review period; preparation and acceptance of the Findings Statement by the lead agency, and; the Town Board decision on the application, after its review of the Final EIS and in consideration of the Findings Statement.

1.1 Project Purpose, Need and Benefits

1.1.1 Background and History

The project site is presently zoned Industrial A, in which a lumberyard use is allowed by special permit. Therefore, the subject application is for a special permit to allow development of a 135,200 SF lumberyard on a portion of the 21.21-acre site. There are no other pending applications on this site.

The special permit application was filed on November 19, 1999 (see **Appendix A-1**). A Positive Declaration was issued by Resolution of the Town Board on April 18, 2000 (see **Appendix A-2**). A Scope for the DEIS was finalized on June 20, 2000, and is presented in **Appendix A-3**.

Based on information presented in the Phase I Environmental Site Assessment (ESA I) prepared for the project site by Langan Engineering & Environmental Services of Elmwood Park, NJ (22 November, 1999), "*The subject property is currently and has historically consisted of undeveloped wooded land*".

1.1.2 Project Need

The public need for the project is related to the benefits to be derived if the project is implemented. The Applicant has designed the proposed project to achieve the highest and best use of the site based on its industrial zoning, adjacent and nearby uses and market trends.

A **Socio-Economic Impact Analysis** (see **Appendix B**) was prepared for the project in consideration of the existing lumberyard market and existing and proposed comparable facilities in the vicinity. This Analysis concluded the following:

> In order to conclude that the retail customer base in the defined sub-market areas can absorb the proposed Headriver, LLC lumberyard complex, and planned Home Depot, it is necessary to consider the projected sales expected to occur at these regional centers. Based on information received from the applicant, it is estimated that a successful operation will result in sales totaling $45 million annually. Further, it is anticipated that approximately twenty (20) percent of total sales will be comprised of commercial sales, thereby reducing the total retail sales component to an estimated $36 million annually. Therefore, in order to absorb the proposed project and planned Home Depot, it will be necessary for the greater market area serving both facilities to accommodate a total of approximately $72 million in retail sales.
>
> As demonstrated in the conservative estimates generated via the market capture rates and unsatisfied retail demand for the subject market areas, it is projected that the retail market base for lumber yard and hardware goods can currently absorb over $76 million in new sales. This observation, along with the projected growth in demand expected to occur through the year 2004, supports the conclusion that the subject market areas will support both the planned Headriver, LLC lumberyard complex and Home Depot in the Town of Riverhead.

In conclusion, the application will provide an opportunity for viable commercial growth within an area of the Town well-suited to accommodate such growth. The proposal will promote the development of an underutilized property in accordance with local comprehensive planning goals. Further, the project will address the public need for lumberyard space in the Town of Riverhead (see also **Section 1.1.4**).

1.1.3 Project Purpose and Project Sponsor Objectives

The project site lies within a mixed low-density residential and highway commercial area in the Town of Riverhead. The project area (within the CR 58 corridor) reflects a mixed land use pattern, with numerous remaining properties available for development. The current Town Comprehensive Master Plan designates the site for industrial use. In addition, the site lies within an area specifically designated by the Riverhead Town Board (in 1997) for the Destination Commercial Planned Development Overlay District. Though this zoning classification was later successfully challenged in court, this prior approval suggests that the proposed project would represent an appropriate land use for the site.

The proposed project will provide for the development of a permanent, high-quality use on a property whose capacity to attract a quality use is high. The proposed project will provide a permanent use of an underutilized property in conformance with the Town's comprehensive planning goals and objectives.

The objective of the project sponsor is clearly motivated in part by the desire to produce a profitable economic return on the land investment, which would result from a high-quality commercial development that addresses a need the Applicant feels is unmet in the area. The Applicant is seeking to provide a use that will conform to the surrounding uses and at the same time have a minimal impact on the environment.

1.1.4 Benefits of the Project

As presented in **Section 3.7.1,** it is anticipated that the proposed project will generate a total of $238,713 annually in property taxes, which will be distributed to the various taxing jurisdictions. These monies will offset at least a portion of the increased cost to these jurisdictions to serve the site. In addition, the project will increase employment in the town, by providing an estimated 100 permanent jobs.

As stated in the **Socio-Economic Impact Analysis**:

> It is clearly shown … that there currently is a high level of unsatisfied retail demand in the subject market areas for the merchandise lines under consideration. It is estimated that for the year 2000 there will be a total of $103,581,390 in expenditures for these goods by local consumers outside the subject market areas. Assuming the same level of local retail opportunities, this total is projected to grow to $112,853,598 by the year 2004.
>
> In order to <u>conservatively estimate</u> the capacity of the subject market areas to absorb the projected sales of the proposed Headriver, LLC lumberyard complex, and planned Home Depot, a market capture analysis was prepared for each sub-market area. This analysis applies a market capture rate or percentage, to the unsatisfied demand or projected retail sales that will be available to new entries into the market area. A higher percentage is utilized based on the proximity of the potential customers in a designated area to the project location. In addition, local competitors are also an important consideration in determining a market capture rate. In order to reduce market

penetration, and thereby create a conservative estimate of the available retail demand in each sub-market area, the following percentages were applied: Sub-Area 1 – 85%, Sub-Area 2 - 75%, and Sub-Area 3 – 65%.

The results of the analysis indicate that even reducing the available retail demand for the subject merchandise lines via the application of a market capture rate, there is still considerable unsatisfied demand for lumber yard and hardware goods in the market areas under consideration. The unsatisfied retail demand is currently estimated to be $76,179,743 in the subject market areas, and projected to increase to $82,969,396 by the year 2004.

In conclusion, the benefits of the proposed project are based on social, economic and land use considerations. The project will provide an opportunity for high quality commercial use in an appropriate and desirable area of the Town of Riverhead. The community will benefit economically from the increased value of the property. The consumer will benefit from the entry of a quality lumberyard use with a variety of product lines and price values into the market. In addition, the project will generate a substantial amount of real property tax revenues to applicable taxing jurisdictions. The project will also provide a permanent land use for the site that is viable and has a high probability of success through full utilization. Finally, an estimated 50 temporary construction jobs and 100 permanent jobs will result from the project.

1.2 Location

1.2.1 Geographic Boundaries of Site

The 21.21-acre project site is located on the north side of CR 58, east of the terminus of the Long Island Expressway (LIE), in the hamlet of Riverhead, Town of Riverhead. **Figure 1-1** is provided as a general location map for the subject site. A NYS Department of Transportation (NYSDOT) maintenance facility is adjacent to the site to the west, and a Long Island Power Authority (LIPA) power line traverses along the site's northern boundary, in a northwest-southeast direction. To the north of this is the Adchem property, which is accessed by a roadway recently relocated to run along the eastern boundary of the project site, and intersects CR 58. Contiguous to the east of the site is property owned by the Applicant (not part of the instant application) on which construction of an Applebee's restaurant is underway, and four take-out restaurants is planned (the "OC Riverhead 58 LLC") application.

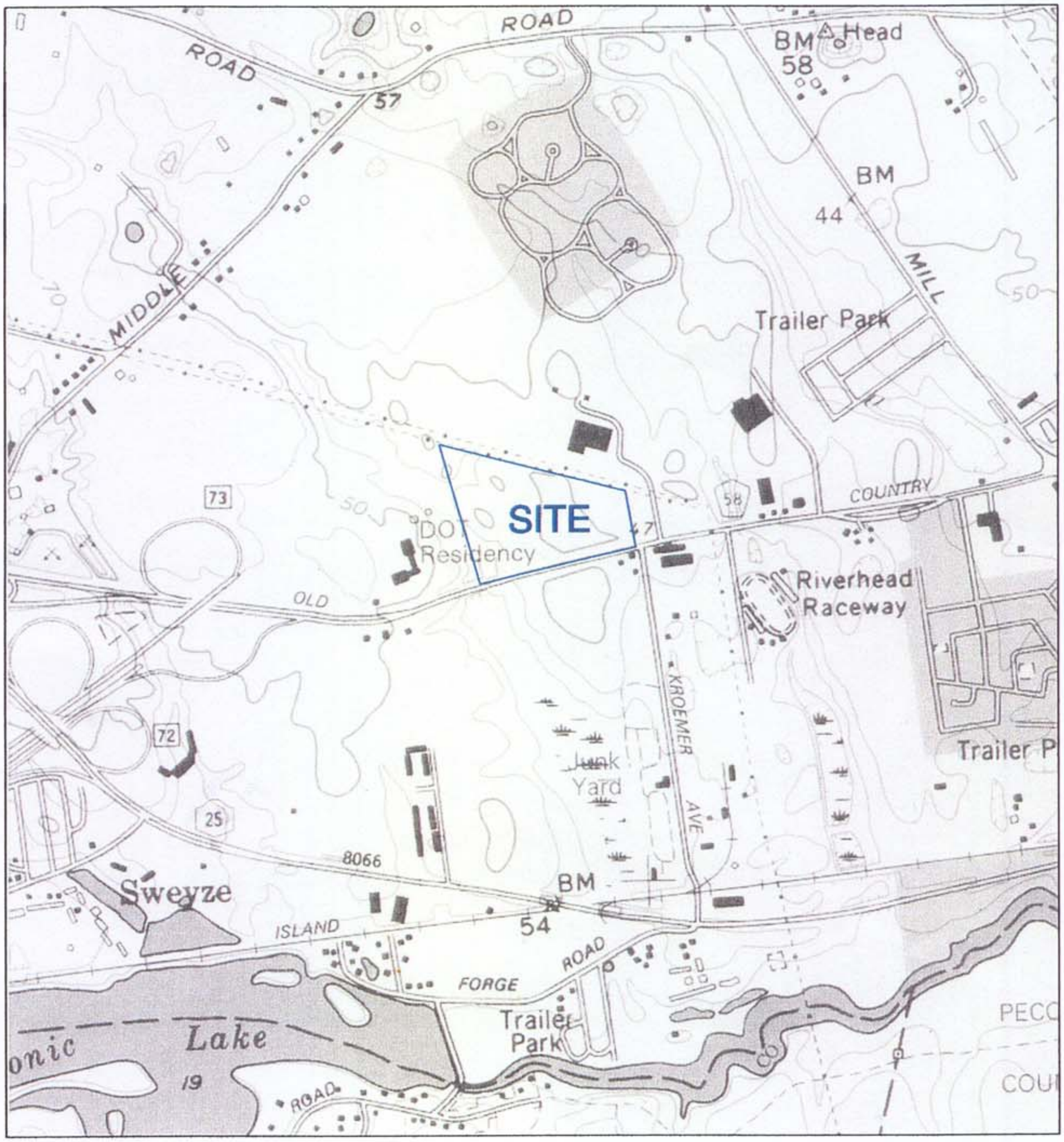
The site has approximately 1,300 feet of frontage along CR 58. The project site is identified as Suffolk County Tax Map District 600, Section 119, Block 1, part of Lot 1. The subject property is presently vacant and unoccupied.

The site is in the following service and planning districts:

- Riverhead Fire District
- Riverhead Central School District
- Riverhead Water District
- Riverhead Sewer District
- Riverhead Police Department

FIGURE 1-1

LOCATION MAP



Source: NYS DOT
Scale: 1" = 1,200'

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- Industrial A Zoning District
- Hydrogeologic Zone III
- Central Suffolk Special Groundwater Protection Area (SGPA)
- Riverhead Commercial Sewer District

The site is not within the Central Pine Barrens Zone of the Long Island Pine Barrens Protection Area, as defined by Article 57 of the New York State Environmental Conservation Law (ECL).

1.2.2 Site Access

There are at present no vehicle access points into the site, as it is undeveloped and vacant. Pedestrian access is available along the site's southerly frontage along CR 58, and via the access driveway to the Adchem facility, which has recently been relocated to run along the eastern boundary of the subject site. On the eastern side of this driveway is the 2.71-acre site on which the approved Applebee's restaurant is presently under construction.

1.2.3 Site Zoning

The subject site is located within an Industrial A zoning district. Uses permitted with a special permit (from the Town Board) in this zone include airport, sports arena, motel, non-nuisance industry, wholesale business, camps, tavern, outdoor theater, golf driving range, archery, outdoor swimming pool, lumberyard, national cemetery, motor vehicle repair shop and body and fender repair shop. Other uses allowed by special permit (from the Town Board of Appeals) include: restaurants and dog and horse training facilities. **Section 1.3.7** contains a listing of the special permit standards applicable to this district, along with an analysis of the proposed project's conformance with these standards.

The minimum lot size in this district is 40,000 SF, with a minimum width of 200 feet and a maximum building area of 40%. Buildings in the district are limited to a maximum height of 35 feet. Dimensional restrictions for building setbacks are as follows: minimum front yard: 50 feet; minimum side yard: 25 feet (minimum combined side yards of 50 feet); and minimum rear yard: 25 feet.

1.3 Project Design and Layout

1.3.1 Layout of Site

Refer to the **Conceptual Site Plan** (in folder at rear) for a depiction of the project; **Table 1-1** presents a listing of existing and anticipated future site and project characteristics. One structure is proposed: a 135,200 SF lumberyard facility. The structure will be sited near the northwestern corner of the property, with parking areas located to the south and north. Additional sales/display areas exterior to the building are sited adjacent to the eastern side of the structure;

TABLE 1-1
SITE AND PROJECT CHARACTERISTICS

Parameter	Existing Conditions	Proposed Conditions
Coverages:	---	---
Building	0 acres	3.10 acres
Impervious/Paved	0 acres	11.47 acres
Unpaved/Pervious	2.26 acres	0 acres
Landscaped	0 acres	1.82 acres
Natural Vegetation	18.95 acres	4.82 acres
TOTAL	21.21 acres	21.21 acres
Trip Generation:	---	---
AM Peak Hour	0 vph	257 vph
PM Peak Hour	0 vph	500 vph
Saturday Peak Hour	0 vph	940 vph
Water Resources:	---	---
Water Use/Wastewater Gnrtn	0 gpd	5,408 gpd (1)
Recharge Volume	11.82 MGY	19.03 MGY
Nitrogen Concentration	0.02 mg/l	0.02 mg/l
Miscellaneous:	---	---
Solid Waste Generation	0 lbs/day	400 lbs/day
Recyclable	0 lbs/day	300 lbs/day
Employees	0 capita	100 capita
Parking Spaces	0 spaces	654 spaces

(1) Based on SCDHS design criteria for wastewater system sizing; actual consumption (based on national averages for this type of facility) is anticipated to be substantially less.

these areas total 38,800 SF. Lumberyard offices, restrooms and employee areas will be located in the rear of the building, in order to minimize the length of utility lines since utility services (water supply and sanitary sewers) are available along the northern boundary of the subject site. Two access points into the site (off CR 58) will be provided, each of which will be signalized. The easterly access will also serve the existing Adchem facility, which is adjacent to the north. The westerly access point will also serve the NYSDOT maintenance facility adjacent to the west.

1.3.2 Structures

The proposed one-story lumberyard building will be sited in the northwestern corner of the property and oriented facing south, toward CR 58; a truck loading and receiving area are both located in the rear (north side) of the building. A 530-space parking area will be located between the structure and CR 58, with additional (62-space) parking areas in the rear and east sides of the building. On the eastern side of the building are the following outdoor areas:

- Covered Area 9,400 SF
- Open Area 23,800 SF
- Shade Structure 5,600 SF

Thus, the entire proposed lumberyard facility includes a total of 174,000 SF of floor area, of which 135,200 SF are indoors and 38,800 SF are outdoors.

1.3.3 Access, Road System and Parking

Two access points into the site will be available, both of which will be controlled by traffic signals (see **Figure 1-2**). The main entry is located along the eastern property line, to be shared with the existing access drive for the Adchem facility, and a secondary access will be placed along the western property line, to serve the site and the adjacent NYSDOT facility. From the eastern access roadway, two curb cuts will be provided in a northwesterly direction: one toward the center of the main parking area, and a second (running along the site's northern boundary) to allow truck access to the rear of the structure. The western access will provide an access to the west, for improved accessibility for NYSDOT vehicles; this access will also run northward to circle the lumberyard structure.

Based on Town Code, a minimum of 482 parking spaces are required for the lumberyard. The proposed project will provide a total of 654 parking spaces, which is well in excess of this requirement.

1.3.4 Recharge System

An on-site drainage system will be utilized to handle and recharge all stormwater runoff originating on the property. This system will be composed of subsurface leaching pools distributed in appropriate lower elevation collection areas on the developed portions of the site. The system will be designed, engineered and installed in conformance with applicable Town regulations and standards, which includes the accommodation of a 2-inch rainfall.

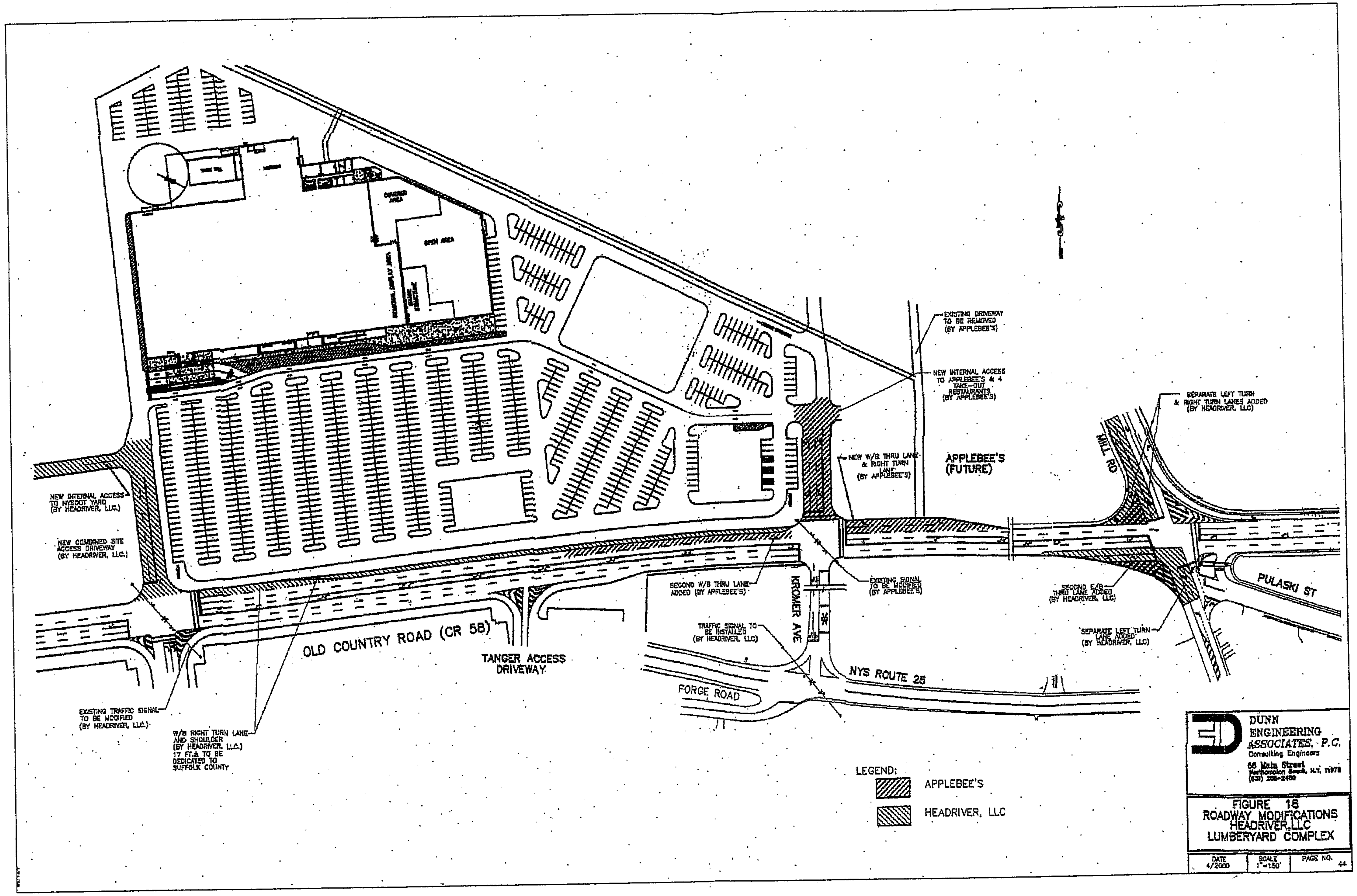
1.3.5 Water Supply and Wastewater Treatment

The proposed building will be served with water by the Riverhead Water District, via an extension of the existing 12 inch main which traverses the adjacent OC Riverhead 58 site to the east. This extension will run in a northwest-southeast direction along the subject site's northern boundary, beneath the proposed northerly truck access road. The Applicant will grant an easement to the Riverhead Water District for this extension.

Based on SCDHS design criteria for wastewater system sizing, the proposed 135,200 SF building will, for the proposed use, generate 5,408 gallons of wastewater daily (gpd); therefore, it is assumed that this same volume of water will be supplied to the building daily as potable water. However, based on metered water consumption values from other lumberyard facilities nationwide, the Applicant anticipates that this building will consume significantly less potable water.

FIGURE 1-2

ROADWAY IMPROVEMENTS



Source: Dunn Engineering, Traffic Impact Study
Scale: NTS

NORTH

Sanitary wastewater generated on the site will total 5,408 gpd, though, as discussed above, it is anticipated that actual wastewater generation will be significantly less. This volume will be conveyed via an 8-inch sewer connection to the existing force main beneath the eastern access road. From this point, wastewater will be conveyed into an existing 10-inch gravity sewer beneath CR 58, thence to the Riverhead Sewer District STP at River Avenue off Riverside Drive approximately 4 miles east of the subject property.

1.3.6 Site Landscaping and Amenities

A total of approximately 1.82 acres of irrigated landscaping will be provided, to be located along the site's northern, southern and western boundaries. A complete Landscaping Plan will be provided as part of the Site Plan application; in general, it is anticipated that groundcover grasses and low shrubs will be used throughout, with supplemental tree plantings located along the site perimeter and within the parking areas.

1.3.7 Compliance with Special Permit Requirements

Article I, Chapter 108-3 of the Code of Town of Riverhead contains the regulations governing Town Board-issued Special Permits. Following are the individual standards which the Town Board and Town Planning Board shall review in their considerations of the application, along with a brief description of how the proposed project will conform with each:

(3) The Town Board shall determine that:

(a) The use will not prevent or substantially impair either the reasonable and orderly use or the reasonable and orderly development of other properties in the neighborhood.

The proposed lumberyard will not prevent or impair the use or development of any contiguous or nearby properties, due to its conformance with all applicable Town and County design standards and regulations, which include the amount of developed surfaces, square footage of building area, building height and setbacks, generation of wastewater, and number of off-street parking spaces.

(b) The hazards or disadvantages to the neighborhood from the location of such uses at the property are outweighed by the advantage to be gained either by the neighborhood or the town.

As related above, the proposed project does not present any hazards or disadvantages to the neighborhood due to its adherence to all applicable Town and County design standards and regulations.

(c) The health, safety, welfare, comfort, convenience and order of the town will not be adversely affected by the authorized use.

The proposed lumberyard does not contain any uses which would compromise the health, safety, comfort, convenience or order of the Town or neighborhood.

(d) Such use will be in harmony with and promote the general purposes and intent of this chapter.

The lumberyard proposed for the subject property promotes the general purposes of this chapter of the Town Code, by providing a needed land use on a site deemed appropriate for such a use, upon the consideration and approval of the Town Board and the Town Planning Board.

(4) The Town Board and the Planning Board may consider, among other matters or factors which either board may deem material, whether:

(a) The site is particularly suitable for the location of such use in the community.

The project site is zoned Industrial A, which is a zoning category intended for such a use by the Town Board (as evidenced by its designation of this zone for such a use, by special permit). In addition, the adjacent land uses are similar or complementary in nature to that of the proposed project. Finally, the location of the site on a major regional artery would indicate the appropriateness of the proposed use on this site, rather than on a quieter, more residential street, where a lumberyard would not be consonant with residential uses.

(b) The plot area is sufficient, appropriate and adequate for the use and the reasonably anticipated operation and expansion thereof.

The acreage of the project site is more than adequate for the proposed lumberyard use, as evidenced by the substantial amount of development potential remaining for the site.

(c) The characteristics of the proposed use are not such that its proposed location would be unsuitably near to a church, school, theater, recreational area or other place of public assembly.

There are no schools, churches, theaters or recreational sites adjacent or in the immediate vicinity which could be impacted by the proposed project.

(d) Access facilities are adequate for the estimated traffic from public streets and sidewalks, so as to assure the public in relation to the general character of the neighborhood and other existing or permitted uses within it, and to avoid traffic congestion; and further that vehicular entrances and exits shall be clearly visible from the street and not be within seventy-five (75) feet of the intersection of street lines at a street intersection except under unusual circumstances.

Vehicular access to the site shall be adequate to provide for safe and efficient access for vehicles and pedestrians; the Site Plan will be subject to the review and approval of the appropriate Town and County agencies. Sidewalks are not provided, as no pedestrians are anticipated in this area; no sidewalks currently exist in the immediate area of the site on CR 58. However, if so required by the appropriate Town or County agencies, sidewalks will be provided. The main site access has been located opposite Kroemer Avenue, so that a four-way intersection is created, enabling signalization.

(e) All proposed curb cuts and street intersections have been approved by the street or highway agency which has jurisdiction.

The Applicant will provide all roadway improvements required by the appropriate agencies, as specified during the Site Plan review process.

(f) Adequate provisions have been made for emergency conditions.

The Applicant will provide all roadway improvements (including those addressing emergency access) required by the appropriate agencies, as specified during the Site Plan review process.

(g) There are off-street parking and truck loading spaces at least in the number required by the provisions of this chapter, but in any case, an adequate number for the anticipated number of occupants, both employees and patrons or visitors; and further, that the layout of the spaces and driveways are convenient and conducive to safe operation.

The project includes a number of parking spaces in excess of the number of parking spaces required by the Town Code for the use proposed; the truck loading spaces are located in the rear of the structure and away from the parking spaces, thereby assuring safe operation.

(h) Adequate buffer yards, landscaping, walls, fences and screening are provided where necessary to protect adjacent properties and land uses.

The proposed project will conform to all applicable yard setbacks and landscaping requirements, where appropriate in consideration of adjacent land uses.

(i) Where necessary, special setback, yard, height and building area coverage requirements, or easements, right-of-way or restrictive covenants, shall be established.

If required by the appropriate agency having jurisdiction, the proposed project will comply with special setback, yard, height or building area restrictions.

(j) Where appropriate, a public or semipublic plaza or recreational or other public areas will be located on the property.

As the proposed project is a commercial lumberyard, a public or semipublic area is not appropriate on the site.

(k) *Adequate provisions will be made for the collection and disposal of stormwater runoff from the site and of sanitary sewage, refuse or other wastes, whether liquid, solid, gaseous or other character.*

In accordance with Town and County regulations, an on-site drainage system will be installed to handle and recharge all site-generated runoff. The sanitary wastewater generated on-site will be conveyed to an off-site sewage treatment plant (STP) of the Riverhead Sanitation District, via public sanitary sewers. The system will be reviewed and approved by the appropriate Town and County agencies.

(l) *Existing municipal services and facilities are adequate to provide for the needs of the proposed use.*

This document establishes that the pertinent existing or expanded municipal services and facilities (project-required expansions to be provided by the Applicant) are or will be adequate to properly serve the project.

(m) *The use will tend to generate or accumulate dirt or refuse or tend to create any type of environmental pollution, including vibration, noise, light, or electrical discharges, odors, smoke or irritants, particularly where they are discernable on adjacent properties or boundary streets.*

The proposed project will not accumulate dirt or refuse, and will not create environmental pollution such as noise, electrical discharges, odor or smoke. It is anticipated that the traffic generated by the project will incrementally increase roadway noises, and fugitive light from parking areas may be discernable to nearby observers. However, such impacts are commonly associated with development of the type proposed, and are consonant with existing similar development in the vicinity.

(n) *The construction, installation or operation of the proposed use is such that there is a need for regulating the hours, days or similar aspects of its activity.*

The nature of this commercial lumberyard facility is such that there is no need for the Town to apply additional regulations on its hours of operation beyond those already extant, particularly in view of the site and area conditions along the CR 58 corridor.

(o) *The proposed use recognizes and provides for the further special conditions and safeguards required for particular uses as may be determined by the Town Board or the Planning Board.*

The project will provide for any and all special conditions and/or safeguards specified required by the Town Board or the Town Planning Board.

(p) *The design, layout and contours of all roads and right-of-way encompassed within the site of the application are adequate and meet town specifications.*

The Site Plan for the project, when prepared, will be reviewed and approved by the appropriate Town and County agencies having jurisdiction, which review includes the conformance of the design, layout and roadway contours.

(q) *Adequate provisions have been made for the collection and disposal of solid wastes, including but not limited to the screening of all containers.*

Solid wastes generated within the building will be retained in a fenced compactor area in the rear of the building.

(r) *The proposed number of units is justified in light of the number of units otherwise proposed, built, occupied or vacant within the Town of Riverhead.*

This standard refers to residential development; the proposed project is commercial in nature. However, as established in the **Socio-Economic Impact Analysis**, the size and use of the proposed structure is appropriate based on market considerations which support the conclusion that no adverse socio-economic impact is expected.

1.4 Construction Period and Site Operations

1.4.1 Construction Period

The construction process will begin with establishment of flagged clearing limits, followed by installation of staked hay bales and silt fencing in critical areas for erosion control purposes. Then, the site clearing operation can begin; construction equipment and vehicles will be parked and loaded/unloaded within the site. “Rumble strips” will be placed at the site construction entrance, to prevent soil on truck tires from being tracked onto CR 58. It is anticipated that this construction entrance will be located along the western site boundary, which will remain signalized when the construction phase is completed.

Grading operations will take place next. In order to minimize the time span that denuded soil is exposed to erosive elements, excavations for the curbs, roads, building foundation, wastewater system, drainage system and utilities will take place immediately after grading operations have been completed. Construction of the building can then begin, concurrent with the utility connections and paving of the parking areas and aisles. Once heavy construction is complete, finish grading will occur, followed by soil preparation using topsoil and installation of the landscaping, which will be performed while the structure is completed.

CR 58 will be used for the only site access for construction vehicles. The Adchem access roadway will not be used for construction equipment and vehicle/material storage or construction worker parking. As a result, no significant or long-term construction impacts to this facility are anticipated.

Construction activities will not occur outside weekday daytime hours (7 AM to 6 PM). It is anticipated that the construction period (clearing, grading, construction and finishing) will take approximately 10-12 months.

1.4.2 Site Operations

Based on information provided by the applicant, it is anticipated that the proposed lumberyard will be open from 6 AM to 10 PM Monday through Saturday, and from 8 AM to 9 PM on Sunday. Deliveries are usually conducted on weekdays, between the hours of 7 AM and 7 PM; occasionally, if a truck arrives too late to be completely unloaded prior to closing time, the trailer may be detached and left overnight, to be unloaded after the store is closed. Deliveries take place on the average about 3 to 4 times per week, though this may be increased during busy seasons or following busy weekends. In order to provide an additional level of vehicle separation, a separate truck delivery access and roadway, and unloading area are shown in the **Conceptual Site Plan**.

1.5 Permits and Approvals Required

This DEIS is intended to provide the Riverhead Town Board with the information necessary to render a decision on the Headriver, LLC Lumberyard Complex Special Permit application. This document is intended to comply with SEQRA requirements as administered by the Town of Riverhead. Once accepted, the document will be the subject of public review, followed by the preparation of a Final Environmental Impact Statement (FEIS) for any substantive comments on the DEIS. Upon completion of the FEIS, the Riverhead Town Board will be responsible for the preparation of a Statement of Findings, which will form the basis for the final decision on the Special Permit application. Following this process, the following additional approvals would have to be obtained prior to commencement of project construction:

- Town Planning Board - Site Plan review
- Town Dept. of Buildings, Engineering and Housing - Building Permit
- Riverhead Water District - Water Supply Connection
- Riverhead Sewer District - Sewer Connection
- Suffolk County Dept. of Public Works - Roadwork Permit
- Suffolk County Dept. Of Health Services - Sanitary Code Article 7 (Water Pollution Control)
- Suffolk County Dept. of Health Services - Sanitary Code Article 6 (Realty Subdivisions, Development and Other Construction Projects)
- Suffolk County Dept. of Health Services - Sanitary Code Article 4 (Water Supply)

2.0 ENVIRONMENTAL SETTING

2.1 Geological Resources

This section describes the subsurface, surface and topographic features of the subject property. Information for this section was obtained from the Suffolk County Soil Survey (**Warner et al., 1975**), Geological Survey Hydrologic Investigation Atlas HA-709 (**Smolensky, et al, 1989),** other relevant papers of the US Geological Survey, topographic maps, on-site field inspections and the Phase I and Phase II ESA's undertaken for the site.

2.1.1 Subsurface Geology

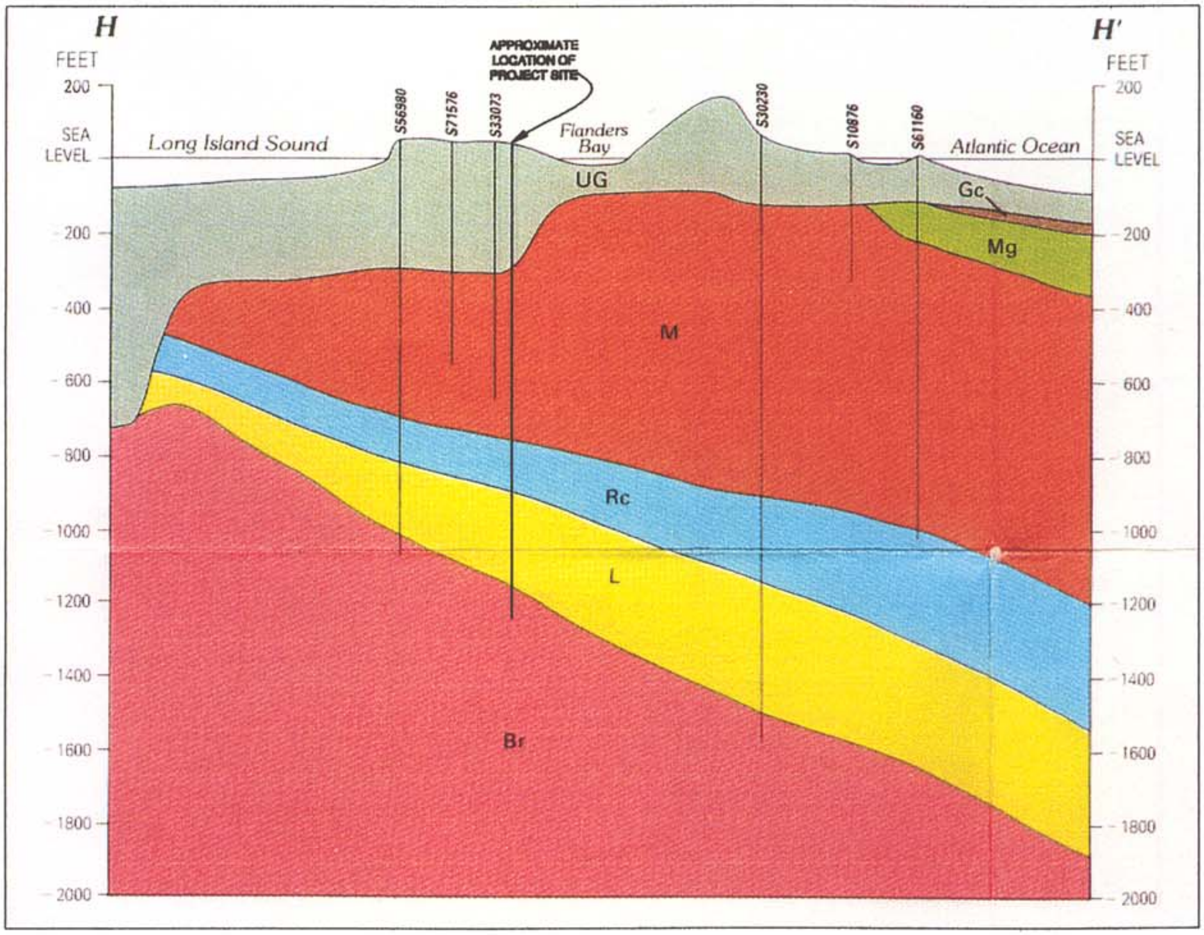
Long Island is located within the Atlantic Coastal Plain, a general physiographic province in which substantial sediment deposits overlie the base, or bedrock (**Fuller, 1914**). The surface topography of the Island is primarily a product of glacial history and subsequent human activity. Understanding the geologic history and stratigraphy of Long Island is important in relating potential impacts of the project to hydrogeologic resources and their importance in Long Island's future.

The bedrock beneath Long Island consists of a complex of igneous and metamorphic rock of Precambrian age that strikes to the east-northeast with a southeastward trending slope of approximately 80 feet per mile. The elevation of the top of the bedrock is approximately 1,150 feet below sea level in the area of the site. Bedrock is overlain by sediments of Cretaceous and Quaternary age containing three major aquifers consisting of the Lloyd, Magothy and Upper Glacial **(Lubke, 1964)**. **Figure 2-1** provides a cross section of Long Island for a profile running from Long Island Sound to the Atlantic Ocean in the vicinity of the project site **(Smolensky, et al, 1989)**.

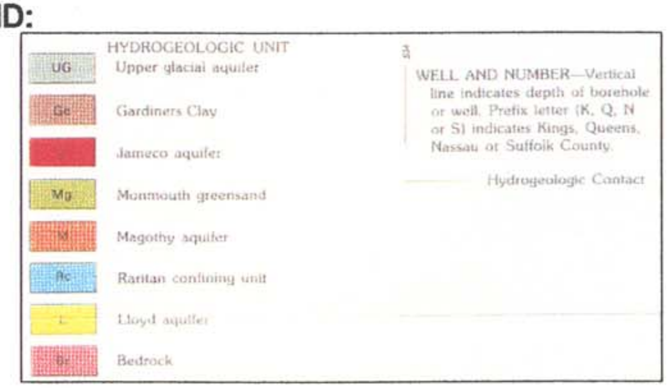
The primary Cretaceous deposits on Long Island are the Raritan and Magothy Formations, which were deposited atop the bedrock during the mid to late Cretaceous period (138 to 65 million years ago) as a result of sediment transport from highlands to the north of the Island **(Koszalka, 1983)**. The deposits directly overlying the bedrock consist of the Raritan formation that is comprised of the Lloyd Sand Member and the overlying Raritan Clay **(Lubke, 1964)**. The Lloyd Aquifer is contained within the Lloyd Sand Member and rests unconformably on bedrock at an elevation of approximately 900 feet below sea level in the area of the site indicating a thickness of 250 feet. Sediments within this formation consist of white to pale yellow fine to coarse-grained sands and gravel with some clay and layers of silt and clay. The clay member of the Raritan formation that overlies the Lloyd Sand Member is located at an elevation of 750 feet below sea level and indicating a thickness of 150 feet. This deposit is composed chiefly of beds of gray, white and red variegated clay and silt, with interbedded layers of sand in some places. The material of this clay layer is of relatively low permeability and acts as an aquiclude which confines the water in the underlying Lloyd and retards interchange of water from overlying formations **(Lubke, 1964)**.

FIGURE 2-1

GEOLOGIC CROSS-SECTION



LEGEND:



Source: Jensen and Soren, 1974

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Resting above the Raritan Clay lies the Magothy Formation and Matawan Group which form the Magothy Aquifer, and were deposited in the late Cretaceous approximately 75 million years ago following a period of erosion of the Raritan Clay. These deposits are found in the vicinity of the site at an elevation of 300 feet below sea level, indicating a thickness of approximately 450 feet (**Lubke, 1964**). The lower portion of the Magothy rests directly on the clay member of the Raritan formation and consists largely of brown and gray coarse sand, gravel with some clay. The upper portion of the Magothy includes white, gray and brown interbedded clay, fine to medium sand and silt and some lignite.

During the Tertiary period (65 million to 2 million years ago) there was erosion of Cretaceous deposits over much of Long Island due to hydrologic processes such as stream formation. Sea level was low, and a large valley formed north of Long Island in what is now Long Island Sound. Most of the surface sediments evident on Long Island were deposited during the glacial advances of the Pleistocene epoch, Quaternary period (2 million years ago to 10,000 years ago). The Pleistocene was marked by cycles of glacial advance and subsequent retreat producing morainal and glaciofluvial (outwash) sediments on top of the Magothy Formation and Matawan Group. These Quaternary sediments, which consist of clay, silt, sand, gravel, and boulders, comprise the deposits of the Upper Glacial Aquifer. The glacial outwash deposits of the Upper Glacial Aquifer are found at an elevation of 50 feet above sea level corresponding to the land surface indicating a thickness of 350 feet **(Lubke, 1964)**. These sediments predominantly consist of brown, yellow and gray sands and gravels with localized clay lenses. The east-west trending Harbor Hills and Ronkonkoma terminal moraines were deposited as part of this Upper Glacial deposit along the north shore and spine of Long Island, respectively as the glaciers retreated during the Wisconsin stage of the Late Pleistocene (approximately 25,000 to 10,000 years ago) **(Koszalka, 1983, p. 15)**. Low, flat outwash plains formed south of each of these moraines as erosional processes carried sediments away from the moraines. The project site is located south of the Harbor Hill moraine and north of the Ronkonkoma moraine.

2.1.2 Surface Soils

The USDA Soil Survey of Suffolk County, New York **(Warner et al., 1975)** provides a complete categorization, mapping and description of soil types found in Suffolk County. Soils are classified by similar characteristics and depositional history into soil series, which are in turn grouped into associations. These classifications are based on profiles of the surface soils down to the parent material, which is changed little by leaching or the action of plant roots. An understanding of soil character is important in environmental planning as it aids in determining vegetation type, slope, engineering properties and land use limitations. These descriptions are general, however, and soils can vary greatly within an area, particularly soils of glacial origin. The slope identifiers noted in this subsection are generalized based upon regional soil types; the more detailed subsection on topography should be consulted for analysis of slope constraints.

The soil survey identifies the subject site as lying within an area characterized by Haven-Riverhead Association soils **(Warner et al., 1975).** These are deep, nearly level to gently sloping, well drained, medium textured and moderately coarse textured soils on outwash moraines.

A total of six (6) soil types have been identified on-site; the locations of these soils are depicted in **Figure 2-2**. Specific descriptions of the soils found on-site follow **(Warner et al., 1975).**

Carver and Plymouth sands, 0-3% slopes (CpA) - These soils are mainly on outwash plains; however, they are also on some flatter hilltops and intervening draws on moraines. A small part of this mapping unit is slightly undulating. The hazard of erosion is slight on the soils in this unit. These soils are droughty. Natural fertility is low. These soils are not well suited to the crops commonly grown in the county. Because these soils tend to be droughty, lawns and shrub plantings are difficult to establish and maintain. Almost all of this unit has been left in woodland or in brush. Many areas previously cleared for farming are now idle. Most areas in the western part of the county are used for housing developments.

Carver and Plymouth sands, 3-15% slopes (CpC) - These soils are mainly on rolling moraines; however, they are also on the side slopes of many drainage channels on the outwash plains. Individual areas of this mapping unit are large on the rolling topography of the Ronkonkoma moraine, and in these areas slopes are complex. On the outwash plain, this unit is in long, narrow strips parallel to drainageways. The hazard of erosion is slight to moderate on the soils in this unit. These soils are droughty, and natural fertility is low. In some places, slope is a limitation to use. These soils are not well suited to crops commonly grown in the county. These sandy soils severely limit installation and maintenance of lawns and landscaping shrubs. Almost all of these soils are in woodland. Many areas in the western part of the county, particularly along the north shore, are used as homesites.

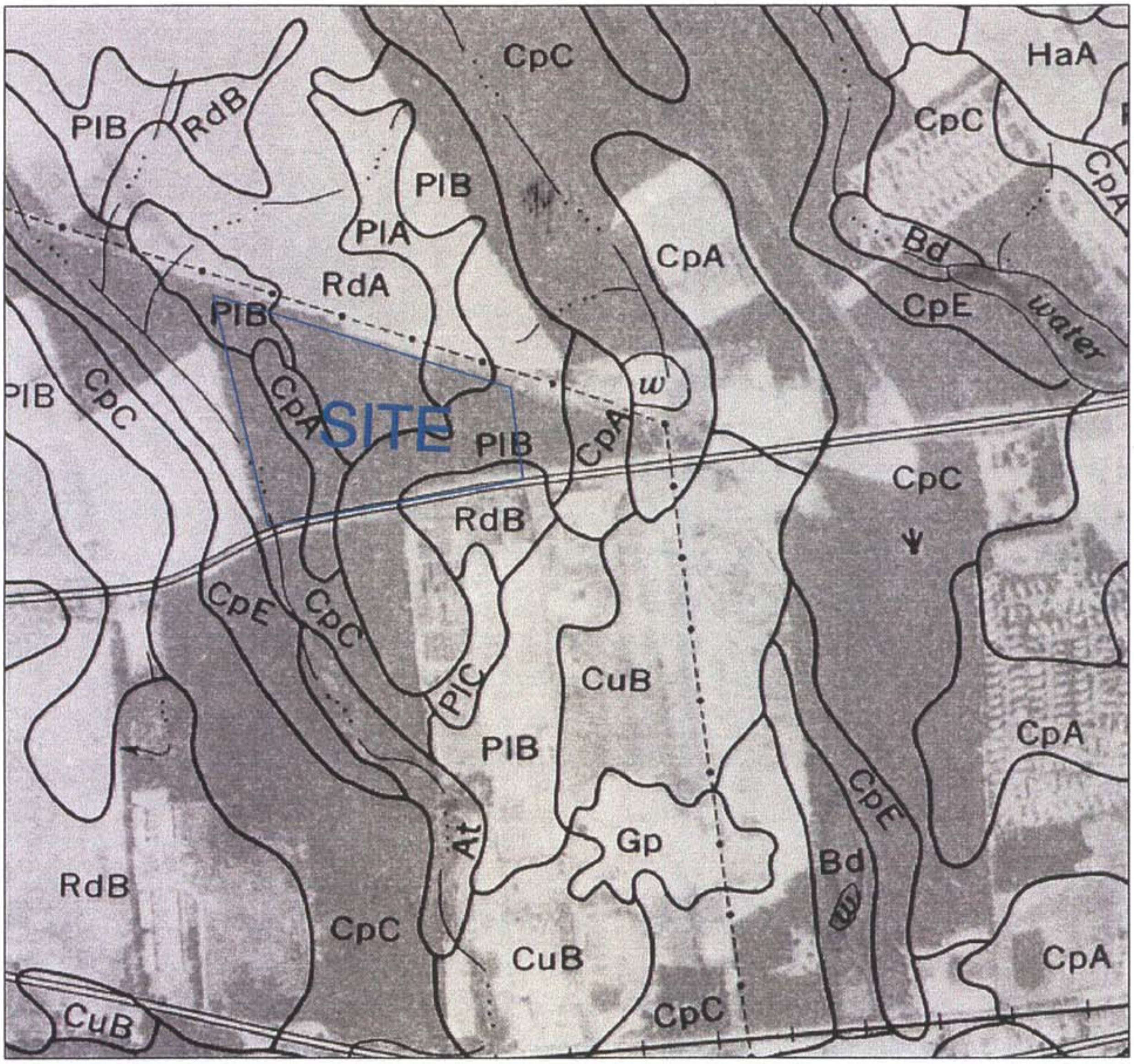
Plymouth loamy sand, 0 to 3% slopes (PlA) - These soils consist of deep, excessively drained, coarse-textured soils that formed in a mantle of loamy sand or sand over thick layers of stratified coarse sand and gravel. These soils are located mainly on outwash plains south of the Ronkonkoma moraine but are also located on flat hill tops and in drainageways on morainic deposits. The hazard of erosion is slight. These soils have a low to very low available moisture capacity with naturally low fertility. Permeability is rapid in all of these soils except where silty substratum is present. Internal drainage is good.

Plymouth loamy sand, 3 to 8% slopes (PlB) - The description of these soils is similar to that of the *PlA* soils described above. This soil type is located on moraines and outwash plains. Slopes are undulating, or they are comprised of single slopes along the sides of intermittent drainageways. The undulating areas are generally large. The areas along intermittent drainageways follow the drainage channel and are narrow and long. The hazard of erosion is slight and tends to be droughty. The available moisture capacity, fertility, permeability and drainage are similar to that described for *PlA* soils.

Riverhead sandy loam, 0 to 3% slopes (RdA) - These soils consist of deep, well-drained, moderately coarse textured soils that formed in the mantle of sandy loam or fine sandy loam over thick layers of coarse sand and gravel. These soils occur in rolling or steep areas on moraines and in level to gently sloping areas on outwash plains. These soils range from nearly level to steep; however, they generally are often nearly level to gently sloping. The hazard of erosion is slight and is limited only by moderate droughtiness in the moderately coarse textured strata. These soils

FIGURE 2-2

SOIL MAP



Source: Suffolk County Soil Survey
Scale: 1" = 800'

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> have a moderate to high available moisture capacity with good internal drainage. Permeability is moderately high in the surface layer and subsoil and very rapid in the substratum. Natural fertility is low.
>
> *Riverhead sandy loam, 3-8% slopes (RdB)* - This soil is on moraines and outwash plains. It generally is in areas along shallow, intermittent drainageways . Slopes generally are moderately short, but large areas on moraines are undulating. The hazard of erosion is moderate to slight on this riverhead soil. The main concerns of management are controlling runoff and erosion and providing adequate moisture. The soil is well suited to all crops commonly grown in the count, and it is used mainly for this purpose. Most areas in the western part of the county, however, are used for housing developments and as industrial sites.

The soil survey was also consulted for information on the potential limitations on development which the soils may present. The constraints on development posed by these soils are summarized in **Table 2-1**. As noted in the table, the six soils which occupy the property present slight to severe limitations for development, due to their slopes, permeability, presence of a sandy surface layer and high water table.

In January, 2000, a Phase II ESA was prepared for the site by Langan Engineering & Environmental Services. The Phase II ESA was prepared subsequent to a Phase I ESA which found no recognized environmental conditions, but recommended some limited soil testing to demonstrate that adjacent uses had not adversely impacted the subject site. A series of three (3) test borings were installed on the western and central portions of the site in order to determine whether soil or groundwater resources of the site had been impacted by contaminant migration originating on either of the adjacent NYSDOT or Adchem sites. The Findings/Results section of this ESA II stated:

> As there was no visual evidence of contamination and no elevated PID [photo-ionization device] measurements observed/recorded during completion of test borings/monitoring wells, no soil samples were submitted for laboratory analyses.

2.1.3 Topography

Regionally, the site lies within a glacial outwash plain, which exhibits gently sloping topography (<1%). The site has a maximum elevation of 50 feet above mean sea level (msl, in the eastern portion of the property) and a low elevation of 31 feet above msl, toward the west. The majority of the property is relatively flat, and slopes gently downward to the west.

More steeply-sloping surfaces are encountered in limited portions of the western section of the property, where an existing linear drainage feature extends roughly north-south along the site's western boundary. This feature slopes downward toward the southwestern corner of the property, where it terminates at CR 58. Along the westerly side of this channel (abutting the NYSDOT facility), slopes are low on the north, and gradually steepen toward the south, reaching in excess of 15% at CR 58. These slopes are the result of grading performed when the NYSDOT facility was constructed. The easterly side slopes are also low at the northerly end and increases

TABLE 2-1
SOIL LIMITATIONS

<table>
<tr><th>SOIL FEATURES AFFECTING:</th><th>Carver and Plymouth sands, 0-3% slopes (CpA)</th><th>Carver and Plymouth sands, 3-15 % slopes (CpC)</th><th>Plymouth loamy sand, 0 to 3% slopes (PlA)</th><th>Plymouth loamy sand, 3 to 8% slopes (PlB)</th><th>Riverhead sandy loam, 0 to 3%% slopes (RdA)</th><th>Riverhead sandy loam, 3-8% slopes (RdB)</th></tr>
<tr><td>Highway location</td><td>Poor trafficability</td><td>Poor trafficability; extensive cuts and fills likely</td><td>*</td><td>*</td><td>*</td><td>*</td></tr>
<tr><td>Embankment foundation</td><td colspan="6">Strength generally adequate for high embankments; slight settlement</td></tr>
<tr><td>Foundations for low buildings</td><td colspan="2">Low compressibility; large settlement possible under vibratory load</td><td colspan="4">Low compressibility</td></tr>
<tr><td>Irrigation</td><td>Very low available moisture capacity; rapid water intake.</td><td>Very low available moisture capacity; rapid water intake; moderate and moderately steep to steep slopes</td><td colspan="2">Very low available moisture capacity; rapid water intake.</td><td colspan="2">Moderate to rapid water intake; moderate available moisture capacity.</td></tr>
<tr><td>LIMITS FOR:</td><td>---</td><td>---</td><td>---</td><td>---</td><td>---</td><td>---</td></tr>
<tr><td>Sewage disposal fields</td><td rowspan="3">Slight</td><td rowspan="2">Slight to moderate: slopes in places</td><td colspan="3">Slight, possible pollution hazards to lakes, springs or shallow wells in these rapidly permeable soils.</td><td>Slight</td></tr>
<tr><td>Homesites</td><td colspan="4">Slight</td></tr>
<tr><td>Streets and parking lots</td><td>Moderate to severe: slopes</td><td colspan="3">Slight</td><td>Moderate: slopes</td></tr>
<tr><td>Lawns and landscaping</td><td colspan="4">Severe: sandy surface layer.</td><td colspan="2" rowspan="4">Slight</td></tr>
<tr><td>Paths and trails</td><td colspan="2">Severe: sandy surface layer.</td><td colspan="2">Severe: high water</td></tr>
<tr><td>Picnic/play areas</td><td colspan="2">Severe: sandy surface layer.</td><td colspan="2">Moderate: sandy surface layer</td></tr>
<tr><td>Athletic fields and intensive play areas</td><td colspan="2">Severe: sandy surface layer.</td><td colspan="2">Moderate: sandy surface layer</td></tr>
</table>

* Per Soil Survey, not included because characteristics are too variable to estimate.

towards the south, though the slopes on this side are less steep than those on the west side. In general, the difference in elevation between the drainage feature and the terrain adjacent is low at the northerly end, and reaches an estimated 15 feet on the west side along CR 58, though the elevation difference is somewhat less along the easterly side.

2.2 Water Resources

This section describes the groundwater and surface water resources in the vicinity of the site. Information for this section was obtained from relevant papers and publications of the SCDHS **(1985 and 1987-92)**, the United State Geological Survey **(Lubke, 1964, Jensen and Soren, 1974 and Koszalka, 1983)** and the Long Island Regional Planning Board **(Koppelman, 1992)** as well as on-site field inspections, review of topographic maps, review of the Phase I and II ESA's and the Riverhead Water District.

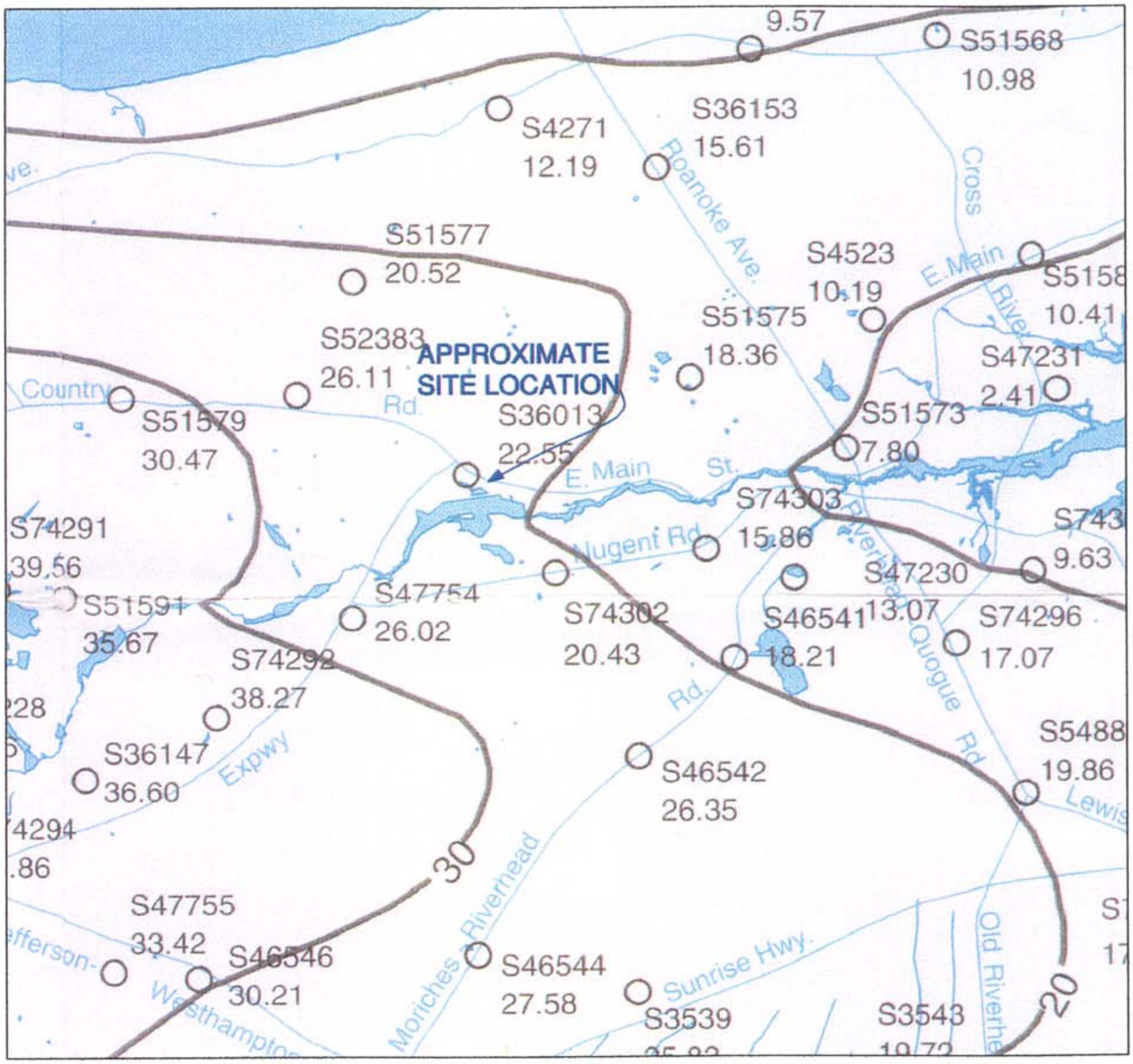
2.2.1 Hydrology

Groundwater on Long Island is derived from precipitation. Precipitation entering the soils in the form of recharge passes through the unsaturated zone to a level below which all strata are saturated. This level is referred to as the water table. In general, the groundwater table coincides with sea level on the north and south shores of Long Island, and rises in elevation toward the center of the Island. The high point of the parabola is referred to as the groundwater divide. Differences in groundwater elevation create a hydraulic gradient which causes groundwater to flow perpendicular to the contours of equal elevation, or generally toward the north and south shores from the middle of the Island **(Freeze and Cherry, 1979)**. Near the shore, water entering the system tends to flow horizontally in a shallow flow system through the Upper Glacial Aquifer to be discharged from subsurface systems into streams or marine surface waters as subsurface outflow. Water that enters the system farther inland generally flows vertically to deeper aquifers before flowing toward the shores (**Krulikas, 1986**). Regionally groundwater flows horizontally toward the southeast **(Figure 2-3)**. Groundwater present beneath the site is encountered at an elevation of approximately 20 feet above sea level, or a minimum of approximately 11 feet below surface grade (in the northwestern corner of the site).

There are three major water-bearing units beneath the site, which are comprised of the Upper Glacial, Magothy and Lloyd aquifers **(Jensen and Soren, 1974; Koszalka, 1983).** The top altitude of the Upper Glacial aquifer is equal to the topographic elevation of the property which is approximately 50 feet above sea level. The sediments within this aquifer consist of moderately to highly permeable outwash and ice-contact deposits, which yield groundwaters that are generally fresh and unconfined. Groundwater from this aquifer is utilized as the chief source of water for domestic, public-supply, industrial and agricultural purposes in the region surrounding the site. The top of the Magothy lies at an elevation of approximately 300 feet below sea level, with a saturated thickness of 450 feet **(Lubke, 1964)**. The sediments of the

FIGURE 2-3

WATER TABLE CONTOUR MAP



Source: USGS Water Resources Investigation Report 98-4019
Scale: 1" = 7,500'

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Magothy are moderately to highly permeable with the more permeable soils found in the lower portions of the formation. The Magothy formation is also a primary source of subsurface water used for domestic and industrial purposes. The upper contact of the Lloyd aquifer lies at an elevation of 900 feet below sea level with a saturated thickness of 250 feet in the vicinity of the site **(Lubke, 1964)**. These sediments are considered moderately permeable and may be utilized as sources of water supply but currently are not extensively developed. Bedrock is present at a depth of about 1,150 feet below sea level. The bedrock formation is relatively impermeable resulting in low water-yielding potential. As a result bedrock is not utilized as a source of groundwater.

The Long Island Regional Planning Board, in conjunction with other agencies, prepared a management plan for Long Island groundwater resources in 1978 under a program funded by Section 208 of the 1972 Federal Water Pollution Control Act Amendments. The purpose of the 208 Study was to investigate waste disposal options and best practice for ground and surface water protection. The study delineated Hydrogeologic Zones for the formulation of management plans based on groundwater flow patterns and quality **(Koppelman, 1978)**. The subject site is located in Groundwater Management Zone III, a system characterized as a deep aquifer recharge area as delineated by the SCDHS for the purpose of 208 recommendation implementation **(1985)**. Water recharged in this zone is likely to contribute to the middle and lower portions of the Magothy Aquifer, and is a primary source of drinking water in Suffolk County. Groundwater in this zone is of exceptionally high quality and is a source of potentially high yields.

The groundwater budget for an area is expressed in the hydrologic budget equation, which states that recharge equals precipitation minus evapotranspiration plus overland runoff. This indicates that not all rain falling on the land is recharged. Loss in recharge is represented by the sum of evapotranspiration and overland runoff. The equation for this concept is expressed as follows:

$$\mathbf{R = P - (E + Q)}$$

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

Nelson, Pope & Voorhis, LLC (NP&V) has utilized a microcomputer model developed for its exclusive use in predicting both the water budget of a site and the concentration of nitrogen in recharge. The model, named **SONIR** (**S**imulation **O**f **N**itrogen **I**n **R**echarge), utilizes a mass-balance concept to determine the nitrogen concentration in recharge. Critical in the determination of nitrogen concentration is a detailed analysis of the various components of the hydrologic water budget, including recharge, precipitation, evapotranspiration and overland runoff. The basis for this method of nitrogen budget analysis is well established, and 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 (BURBS - A Simulation of the Nitrogen Impact of Residential Development on Groundwater). The **SONIR** model includes four sheets of computations: 1) Data Input Field; 2) Site Recharge Computations; 3) Site Nitrogen Budget; and 4) Final Computations. There are a number of variables, values and assumptions concerning hydrologic principles, which are discussed in detail in a user manual developed for the SONIR Model and provided in **Appendix C-1.**

The model was run to obtain the existing water budget and nitrogen concentration in recharge. The run was based on current site conditions and land use coverages (see **Table 1-1**). The 21.21-acre site currently has a total site recharge of 11.82 million gallons per year (MGY), with a total nitrogen concentration of 0.02 milligrams per liter (mg/l). The results of this analysis are presented in **Appendix C-2.** At present, all of the site recharge and nitrogen results from regional precipitation.

2.2.2 Groundwater Quality

Table 2-2 lists the results of the water quality test results for the Riverhead Water District's Well #2, which is the nearest public supply well to the site; it is located approximately 2.5 miles to the east-southeast, on Pulaski Street. As can be seen, water pumped at this well meets all applicable standards; in particular, no nitrates were detected at this well, indicating a concentration of 0 mg/l.

As part of the ESA II, a series of three (3) monitoring wells were installed on the western and central portions of the site in order to determine whether groundwater resources of the site had been impacted by contaminant migration originating on either the NYSDOT or Adchem sites adjacent. The Findings/Results section of this ESA stated:

The analytical results revealed that volatile organic compounds were not detected at any of the onsite well locations.

2.2.3 Groundwater Management

The Long Island Regional Planning Board (LIRPB) in conjunction with other agencies, prepared a management plan for Long Island groundwater resources in 1978 in accordance with Section 208 of the 1972 Federal Water Pollution Control Act Amendments (the "208 Study"). The purpose of the 208 Study was to investigate waste disposal options and best practice for ground and surface water protection. The study delineated Hydrogeologic Zones for the formulation of management plans based on groundwater flow patterns and quality **(Koppelman, 1978).** The subject site is located in Groundwater Management Zone III as delineated by the SCDHS for the purpose of implementing the 208 Study recommendations **(SCDHS, 1985).** Zone III is the portion of the groundwater system that is a deep aquifer recharge area. This zone is characterized as a deep flow system possessing considerable potential for water supply development due to good groundwater quality and the high hydraulic conductivites in both the Upper Glacial and Magothy aquifers **(SCDHS, 1985)**. It is recommended that development in this zone utilize on-site wastewater treatment(s) where the proposed total wastewater generation rate is less than 300 gpd/acre; development generating wastewater in excess of this value must

TABLE 2-2
WATER QUALITY DATA

PARAMETERS	MAX. CONT. LEVEL	DETECT. LIMIT	WELL #2 (S-7261) MAX. RESULTS
INORGANIC	---	---	---
ARSENIC	0.050 mg/l	0.003 mg/l	0.0037
BARIUM	2.0 mg/l	0.2 mg/l	ND
CADMIUM	0.005 mg/l	0.005 mg/l	ND
CHROMIUM	0.10 mg/l	0.01 mg/l	ND
FLUORIDE	2.2 mg/l	0.1 mg/l	0.13
LEAD	[0.015]mg/l	0.001 mg/l	ND
MERCURY	0.002 mg/l	0.0002 mg/l	ND
SELENIUM	0.01 mg/l	0.005 mg/l	ND
SODIUM	20/270 mg/l	0.2 mg/l	4.4
SPECIFIC CONDUCTIVITY	None	None	75.0
ZINC	5.0 mg/l	0.02 mg/l	ND
COLOR	15 units	5 units	ND
ODOR	3 units	0 units	ND
IRON	0.3 mg/l	0.02 mg/l	0.65
MANGANESE	0.3 mg/l	0.01 mg/l	0.03
AMMONIA	None	0.02 mg/l	ND
NITRITE	1.0 mg/l	0.1 mg/l	ND
NITRATE	10.0 mg/l	0.1 mg/l	ND
CHLORIDE	250 mg/l	2.0 mg/l	4.0
pH (BEFORE TREATMENT)	None	None	56.9
SULFATE	250 mg/l	5.0 mg/l	ND
ANTIMONY	0.006 mg/l	0.0059 mg/l	ND
BERYLLIUM	0.004 mg/l	0.0003 mg/l	ND
NICKEL	0.1 mg/l	0.04 mg/l	ND
CYANIDE	0.2 mg/l	0.010 mg/l	ND

TABLE 2-2
WATER QUALITY DATA (cont'd)

PARAMETERS	MAX. CONT. LEVEL	DETECT. LIMIT	WELL #2 (S-7261) MAX. RESULTS
VOLATILE ORGANICS (VOC)	---	---	---
DICHLORODIFLUOROMETHANE	5 ug/l	0.5 ug/l	ND
CHLOROMETHANE	5 ug/l	0.5 ug/l	ND
VINYL CHLORIDE	2 ug/l	0.5 ug/l	ND
BROMOMETHANE	5 ug/l	0.5 ug/l	ND
CHLOROETHANE	5 ug/l	0.5 ug/l	ND
FLUOROTRICHLOROMETHANE	5 ug/l	0.5 ug/l	ND
1,1-DICHLOROETHENE	5 ug/l	0.5 ug/l	ND
METHYLENE CHLORIDE	5 ug/l	0.5 ug/l	ND
TRANS-1,2-DICHLOROETHENE	5 ug/l	0.5 ug/l	ND
1,1-DICHLOROETHANE	5 ug/l	0.5 ug/l	ND
CIS-1,2 DICHLOROETHENE	5 ug/l	0.5 ug/l	ND
2,2-DICHLOROPROPANE	5 ug/l	0.5 ug/l	ND
BROMOCHLOROMETHANE	5 ug/l	0.5 ug/l	ND
CHLOROFORM	50 ug/l	0.5 ug/l	ND
1,1,1-TRICHLOROETHANE	5 ug/l	0.5 ug/l	ND
CARBON TETRACHLORIDE	5 ug/l	0.5 ug/l	ND
1,1-DICHLOROROPENE	5 ug/l	0.5 ug/l	ND
1,2-DICHLOROETHANE	5 ug/l	0.5 ug/l	ND
TRICHLOROETHENE	5 ug/l	0.5 ug/l	ND
1,2-DICHLOROPROPANE	5 ug/l	0.5 ug/l	ND
DIBROMOMETHANE	5 ug/l	0.5 ug/l	ND
BROMODICHLOROMETHANE	50 ug/l	0.5 ug/l	ND
TRANS-1.3-DICHLOROPROPENE	5 ug/l	0.5 ug/l	ND
CIS-1,3-DICHLOROPROPENE	5 ug/l	0.5 ug/l	ND
1,1,2-TRICHLOROETHANE	5 ug/l	0.5 ug/l	ND
TETRACHLOROETHENE	5 ug/l	0.5 ug/l	ND
1,3-DICHLOROPROPANE	5 ug/l	0.5 ug/l	ND
CHLORODIBROMOMETHANE	50 ug/l	0.5 ug/l	ND
CHLOROBENZENE	5 ug/l	0.5 ug/l	ND
1,1,1,2-TETRACHLOROETHANE	5 ug/l	0.5 ug/l	ND
BROMOFORM	50 ug/l	0.5 ug/l	ND
BROMOBENZENE	5 ug/l	0.5 ug/l	ND
1,1,2,2-TETRACHLOROETHANE	5 ug/l	0.5 ug/l	ND
1,2,3-TRICHLOROPROPANE	5 ug/l	0.5 ug/l	ND
2-CHLOROTOLUENE	5 ug/l	0.5 ug/l	ND
4-CHLOROTOLUENE	5 ug/l	0.5 ug/l	ND
M-DICHLOROBENZENE	5 ug/l	0.5 ug/l	ND

TABLE 2-2
WATER QUALITY DATA (cont'd)

PARAMETERS	**MAX. CONT. LEVEL**	**DETECT. LIMIT**	**WELL #2 (S-7261) MAX. RESULTS**
VOLATILE ORGANICS (VOC)	---	---	---
P-DICHLOROBENZENE	5 ug/l	0.5 ug/l	ND
O-DICHLOROBENZENE	5 ug/l	0.5 ug/l	ND
1,2,4-TRICHLOROBENZENE	70 ug/l	0.5 ug/l	ND
HEXACHLOROBUTADIENE	5 ug/l	0.5 ug/l	ND
1,2,3-TRICHLOROBENZENE	5 ug/l	0.5 ug/l	ND
BENZENE	5 ug/l	0.5 ug/l	ND
TOLUENE	5 ug/l	0.5 ug/l	ND
ETHYLBENZENE	5 ug/l	0.5 ug/l	ND
1,3-XYLENE	5 ug/l	0.5 ug/l	ND
1,4-XYLENE	5 ug/l	0.5 ug/l	ND
1,2-XYLENE	5 ug/l	0.5 ug/l	ND
STYRENE	5 ug/l	0.5 ug/l	ND
ISOPROPYLBENZENE	5 ug/l	0.5 ug/l	ND
N-PROPYLBENZENE	5 ug/l	0.5 ug/l	ND
1,3,5-TRIMETHYLBENZENE	5 ug/l	0.5 ug/l	ND
TERT-BUTYLBENZENE	5 ug/l	0.5 ug/l	ND
1,2,4-TRIMETHYLBENZENE	5 ug/l	0.5 ug/l	ND
SEC-BUTYLBENZENE	5 ug/l	0.5 ug/l	ND
P-ISOPROPYLTOLUENE(P-CUMENE)	5 ug/l	0.5 ug/l	ND
N-BUTYLBENZENE	5 ug/l	0.5 ug/l	ND
NAPHTALENE	5 ug/l	0.5 ug/l	ND
TOTAL TRIHALOMETHANES	100 ug/l	0.5 ug/l	ND
METHYL TERT. BUTYL ETHER	5 ug/l	0.5 ug/l	ND

Cont.-Contaminant
ND-Not Detected

utilize an on-site community treatment system, or connect to public sanitary sewers. In addition, the 208 Study recommends: 1) that stormwater runoff be controlled on-site by preventing sediments, nutrients, metals, organic chemicals and bacteria from reaching surface and, eventually, ground waters; and 2) fertilizer use should be minimized on lawn areas.

The Suffolk County Comprehensive Water Resources Management Plan **(SCDHS, 1987-2)** provides information on water quality from 0 to 100 feet below the water table based on observation wells as well as public and private water supply and well monitoring. With respect to nitrate-nitrogen at a depth into the aquifer of between 0 and 100 feet, the Plan shows the subject site as lying within a "good" area in terms of water quality (1 to 6 mg/l of nitrogen) **(SCDHS, 1987-2; Plate 4).** Insufficient nitrate-nitrogen concentration information is available for depths of 100 to 400 feet beneath the site to draw conclusions regarding water quality beneath the site. The Plan also provides information regarding concentrations of Volatile Organic Compounds (VOC's) in groundwater. Groundwater quality in the vicinity of the site is also "good" (less than 60% of applicable guidelines), although there are detectable levels of some compounds at a depth of 0 to 100 feet **(SCDHS, 1987-2; Plate 6).** Insufficient water quality information is available from the area of the site for water at a depth of 100 to 400 feet. VOC's are synthetic organic compounds such as degreasers, oil additives, solvents and pesticides. They are typically introduced to groundwater through chemical manufacturing, dry cleaning, fuel spills, agricultural practices and improper disposal of both household and industrial wastes.

2.2.4 Surface Water and Drainage

There are no permanent surface water bodies located on the site. Within the site, run-off flows to the west along the surface and across the property's topographic contours to the existing low area, where it is recharged in place. Two NYS-designated freshwater wetlands are in the vicinity: R-38 is located approximately 2,000 feet to the southeast, and R-39 is an estimated 600 feet to the south. Both wetlands are separated from the project site by CR 58 and developed properties. However, both wetlands lie downgradient from the project site; recharge generated on the project site flows in the direction of these wetlands, and may enter the hydrologic regime of these bodies. As the project site presently generates recharge having a very low nitrate/nitrogen concentration, it is anticipated that no adverse impact to these wetlands occurs from this volume, since no significant levels of contaminants are generated on-site.

Stormwater runoff generated on impervious surfaces such as parking areas, roofs, and sidewalks may carry such pollutants as heavy metals, petroleum hydrocarbons, bacteria, and nitrogen. Extensive monitoring associated with the Nationwide Urban Runoff Program (NURP) study **(Koppelman, 1982)** found a significant reduction in concentrations of heavy metals, hydrocarbons, and bacteria, indicating that such contaminants are attenuated in soil or volatilized in stormwater transport **(Koppelman, 1982, p. 116).** The findings of the NURP study are applicable to this project. Under the NURP Study, a number of different land use sites were studied to determine the impact of stormwater recharge on groundwater, including: strip commercial development, a shopping mall parking lot, low density residential development, a major highway, and medium density residential development. The land use included in the NURP report that is most like the proposed use would be strip commercial (NYS Route 25, in Centereach). The NURP study results for this land use type are shown in **Table 2-3.**

TABLE 2-3
STORMWATER IMPACTS FROM LAND USE
NURP STUDY

Parameter	Strip Commercial	Standard
Spec. Cond (umhos)	104	[n]
pH	--	6.5-8.5
Turbidity (NTU)	5.45	5
Hardness (mg/l)	33.0	[n]
Calcium (mg/l)	7.5	[n]
Magnesium (mg/l)	1.4	[n]
Sodium (mg/l)	9.5	[n]
Potassium (mg/l)	1.65	[n]
Sulfate (mg/l)	11.0	250
Fluoride (mg/l)	0.10	1.5
Chloride (mg/l)	8.1	250
Nitrogen-Total (mg/l)	0.91	10
Phosphorus (mg/l)	0.01	[n]
Cadmium (ug/l)	1.0	10
Chromium (ug/l)	1.0	50
Lead (ug/l)	4.5	50
Arsenic (ug/l)	--	25
Coliform (MPN)	3	[n]
Coliform, fecal	3	[n]

Source: Koppelman, 1982, p. 26-29
[n] - no standard for parameter

None of the parameters examined within the NURP study exceeded standards for the reported constituents at the site, with the exception of turbidity. As expected, slightly elevated levels of heavy metals were detected; however, their concentrations were significantly reduced through attenuation and did not exceed standards.

The NURP Study found that chloride concentrations in stormwater generally increase by two orders of magnitude during the winter months. Chloride is not attenuated in soils like lead and chromium **(Koppelman, 1982, p. 115),** and thus it is anticipated that the amount of chloride contributed to groundwater will be correlated with the amount of salt applied to roadways and parking areas within the stormwater drainage area, during winter months.

2.3 Air Resources

2.3.1 Climate

This section will describe the meteorological setting for eastern Long Island, which includes the subject site, and existing air quality based on published air quality monitoring data. These conditions are important in terms of analyzing project-related impacts to air resources.

Temperature

Long Island lies within the humid continental climatic region, and is characterized by four seasons with precipitation occurring throughout the year. Winter temperatures tend to be relatively severe with the average temperature during the coldest month at 32 degrees Fahrenheit or below. Summer tends to be long and hot with temperatures above 72 degrees Fahrenheit. Winters on Long Island tend to be warmer than on the surrounding mainlands due to the moderating effect of the Atlantic Ocean (because of its mass, the temperature of the water is very slow to change). Summers tend to be cooler, which is due to the moderating effect of sea breezes and the presence of the ocean (**Navarra, 1979**).

Wind

Because air pollutants are carried and dispersed by wind, local air quality is directly affected by the local wind speed and direction. The prevailing ground level winds on Long Island are from the southwest in the summer, northwest in the winter, and close to equal distribution from these two directions during the spring and fall. **Table 2-4** provides the frequency of wind from various directions on an annual basis for the years 1979 to 1988. **Figure 2-4** provides a wind rose for a graphic illustration of annual wind direction for the same period (**Brown, 1991**).

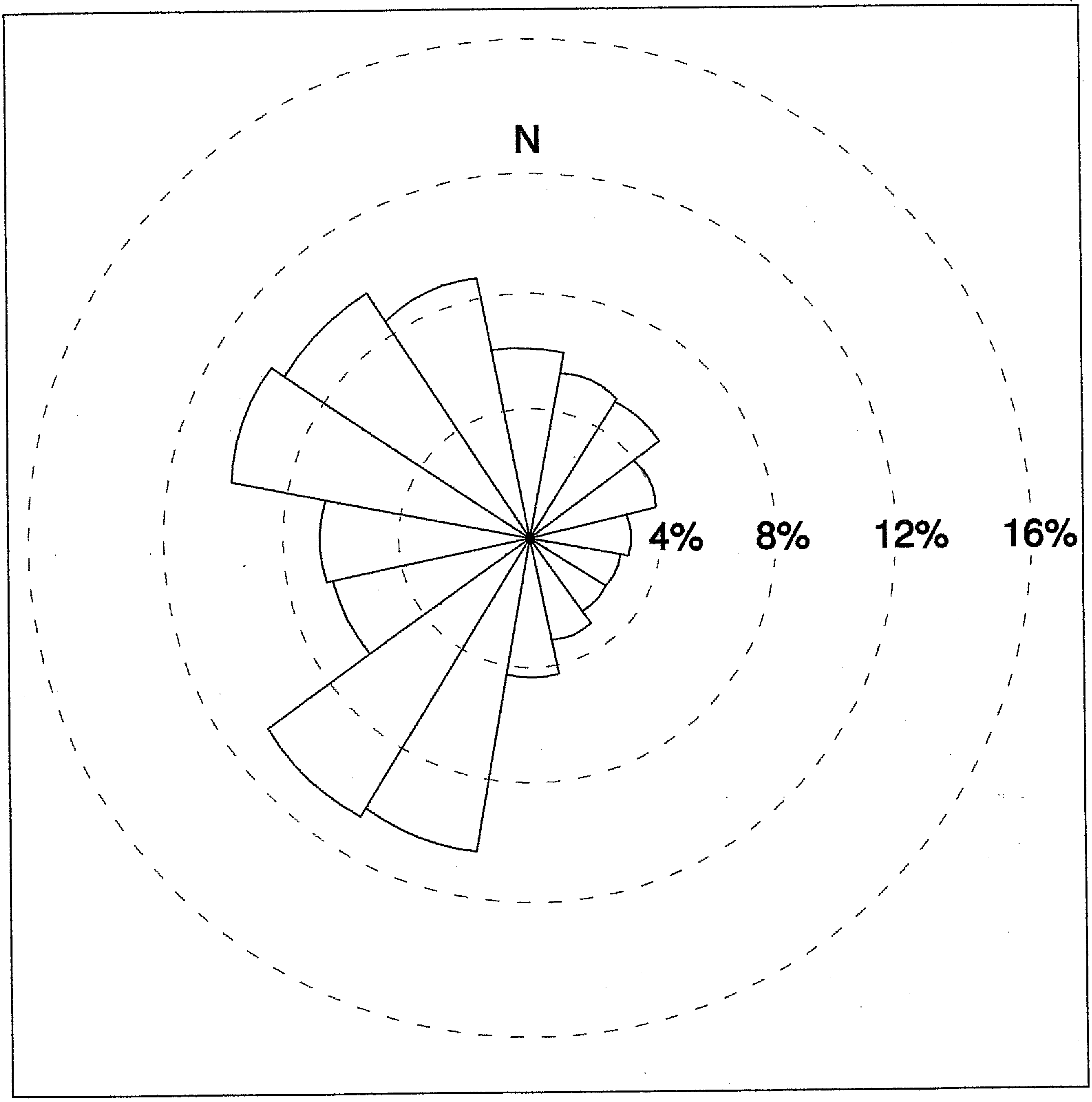
TABLE 2-4
WIND DIRECTION

Wind Direction	Annual Frequency (%)	Wind Direction	Annual Frequency (%)
N	5.95	S	4.59
NNE	5.16	SSW	10.36
NE	5.01	SW	10.67
ENE	4.01	WSW	6.68
E	3.15	W	6.95
ESE	2.95	WNW	10.13
SE	2.98	NW	9.61
SSE	3.45	NNW	8.35

Wind speed and gustiness are effective indicators of Long Island meteorological conditions and are monitored at Brookhaven National Laboratory (BNL) in Upton. **Table 2-5A** provides the wind speed for this period, as well as an indication of wind gustiness/stability, based upon the percent of time wind occurred within each specified range. Wind speed monitoring conducted at BNL finds that wind speed is between 5 and 16 miles per hour (mph) 63.95 percent of the time, with peak wind speeds of 1-12 mph 96.47 percent of the time and 3-9 mph 77.26 percent of the time (**Nagle, 1975; Brown, 1992**). It is important to note the rare occurrences of wind speeds less than 1 mph (1.17%). **Table 2-5B** provides a record of wind stability for the period 1979-1988 as recorded at BNL. Unstable wind conditions were recorded 54.22% of the time indicating a high potential for atmospheric mixing.

FIGURE 2-4

WIND ROSE



Source: Brown, 1991

NORTH

TABLES 2-5A AND 2-5B
WIND SPEED AND GUSTINESS

Table 2-5A
Wind Speed (1979-1988)

Wind Speed (mph)	Frequency (in %)
<1	1.17
1-3	10.20
3-5	24.44
5-7	31.86
7-9	20.96
9-12	9.01
12-16	2.12
>16	0.23

Table 2-5B
Gustiness (1979-1988)

Gustiness	Frequency (in %)
Very Unstable (BNL GC: A and B_2)	11.16
Unstable (BNL GC: B_1)	43.06
Neutral Instability (BNL GC: C)	13.04
Stable (BNL GC: D)	32.72

Source: Robert Brown, BNL Meteorologist Revision Date 2-21-91
Notes: Height of wind vane changed from 355 ft. to 290 ft. in May 1981.
BNL GC is the acronym for Brookhaven National Lab Gustiness Classification (A and B_2 represent the very unstable case; B_1, the typical daytime unstable case; C, the strong wind-speed neutral stability case; and D, the nighttime stable case).

2.3.2 Air Quality

The NYSDEC operates continuous and manual ambient air monitoring systems throughout the State to establish air quality. Air quality is compared to the National Ambient Air Quality Standards (NAAQS) and New York State standards. Air quality monitoring data is published by the NYSDEC Division of Air Resources. The most recent available report was published in 1999 and contains air quality monitoring data through 1998.

The nearest air quality monitoring station to the project site is located on Sound Road in Riverhead, and monitors ground level ozone. A facility in Babylon monitors the following pollutants on a continuous basis: sulfur dioxide (SO_2), ozone (O_3), and inhalable particulates (PM_{10}). **Table 2-6** provides the most recent reported annual air quality monitoring data for these parameters (**NYSDEC, 1999**).

TABLE 2-6
1999 AIR MONITORING DATA

BABYLON STATION			
Pollutant	**Standard Value**	**High values for 1999**	
Suffer Dioxide (SO_2)			
Annual Arithmetic Mean	0.030 ppm	0.007 ppm	
24-hour average	0.140 ppm	0.036 ppm	
3-hour average	0.500 ppm	0.056 ppm	
Ozone			
1-hour average	0.124 ppm	0.145 ppm	
# of days w/1-hour avg. >.124 ppm	3.3 days expected	2 days	
Inhalable Particulates (PM_{10})		Sulfate fraction	Nitrate fraction
Annual Arithmetic mean	50 $\mu g/m^3$	4.5 $\mu g/m^3$	0.6 $\mu g/m^3$
Highest Value	150 $\mu g/m^3$	16.3 $\mu g/m^3$	3.5 $\mu g/m^3$
RIVERHEAD STATION			
Pollutant	**Standard Value**	**High values for 1999**	
Ozone			
1-hour average	0.124 ppm	0.129 ppm	
# of days w/1-hour avg. >.124 ppm	2.2 days expected	1 day	

Notes: Ppm: Parts per million
ug/m^3: Micrograms per cubic meter

The data indicates generally excellent air quality west of the subject site where continuous monitoring is conducted. The single infraction of the NAAQS is for ground level ozone. Ground-level ozone is considered a secondary pollutant, since it is formed through a photochemical reaction between nitrogen oxides and reactive hydrocarbons (VOCs) in the presence of elevated temperatures and ultraviolet light. The sources of the primary pollutants that form ozone include automobiles, trucks and buses, large combustion sources such as utilities, fuel stations, print shops, paints and cleaners, and engines (including construction and lawn equipment) (**EPA website, 1999, www.epa.gov/airnow/consumer.html).** Ozone level concentrations that exceed the NAAQS usually occur on hot sunny summer days with little to no wind. Implementation of more stringent emission controls and vehicle inspection requirements are strategies the State has initiated which are expected to contribute to the reduction of ozone concentrations.

The present air quality in the vicinity of the site is expected to be excellent for the majority of the year, with the exception of a few days in summer when ozone levels are higher than normal. There are no major sources of air pollutants in the vicinity of the subject site. The site lies in an area with relatively level topography and is not in a basin or between large rows of buildings that would tend to accumulate air pollutants. As a result, the previously described prevailing summer and winter winds promote dispersion thereby providing excellent air quality in the vicinity of the site.

2.4 Ecological Resources

2.4.1 Vegetation

The site under review is 21.21 acres in size, and consists of successional old field, successional hardwood forest, and pitch pine-oak forest as defined within a classification system developed by the NYS Department of Environmental Conservation **(Reschke, 1990).** The habitats found on site are all in various stages of succession, although were classified under the above listed categories for purposes of this report. More recently disturbed areas on site contain more "successional" vegetation and/or characteristics, and the remainder of the site generally consists of forested vegetation. The majority of the woodland on site is somewhat mature, although many areas exhibit recent disturbance, which will be classified under the individual habitat types discussed above. The site is transected by several cleared trails, some of which are beginning to be colonized by early successional vegetation. Additionally, two small areas where runoff accumulates exist near the western property boundary and are associated with low points in the existing drainage gully. These drainage features and potential regulatory authority are further discussed below. The existing site habitat quantities are listed in **Table 2-7.** These coverages were determined by aerial photography (1999) and field inspections by NP&V. **Figure 2-5** presents a map of the vegetation community types found at the site.

TABLE 2-7
SITE QUANTITIES

Site Coverage	**TOTAL SITE AREA**	
Pervious Roads/Paths	2.26 acres	10.7%
Successional Old Field	2.95 acres	13.9%
Successional Forest	2.17 acres	10.2%
First Growth Woods	2.09 acres	9.8%
Pitch Pine-Oak Forest	11.72 acres	55.3%
Ponded Depression*	0.02 acres	0.1%
TOTAL	**21.21 acres**	**100%**

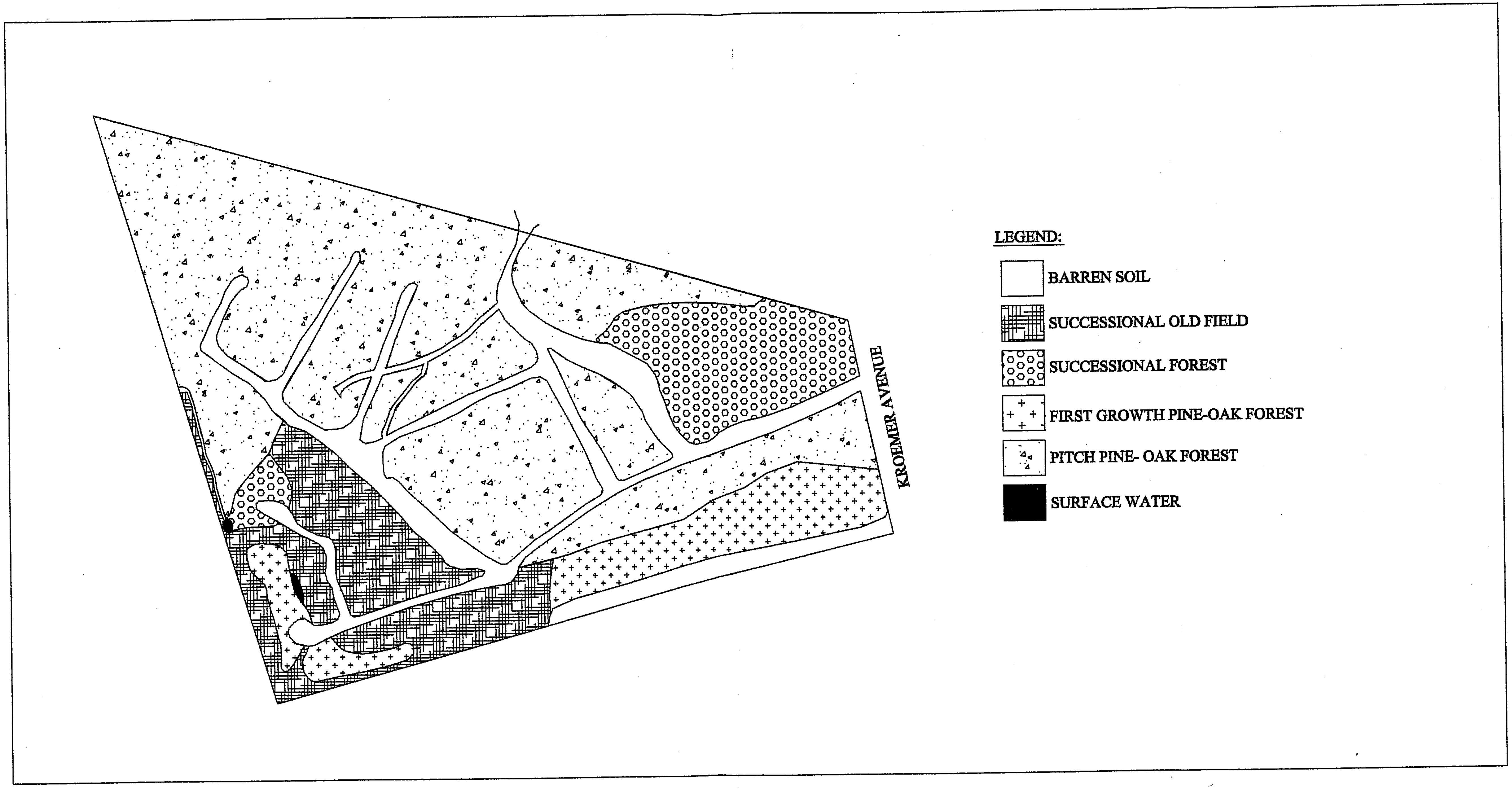
*temporarily contains stormwater

The site is generally surrounded by developed land, although similar tracts of undeveloped woodland are located to the northeast and northwest of the site, as well as to the south, on the south side of Old Middle Country Road (CR 58). Additionally, there are several larger contiguous blocks of woodland in the general area, particularly farther south of the site.

As previously stated, the vegetation on site is in various stages of succession, with more early successional habitats found in more recently disturbed areas. Historical aerial photographs were reviewed (1955, 1966, 1978, 1988, and 1997) to determine the extent of past disturbance on site. The 1955 and 1966 aerial photographs reviewed depict the site as vacant woodland, with only a small portion cleared along the site frontage located just west of Kroemer Avenue. Additionally, there is a small foot path which traverses the width of the site near the eastern property boundary.

FIGURE 2-5

HABITAT MAP



Source: Aerial Photograph, 1999
Scale: 1" = 200'

NORTH

The 1978 aerial photograph depicts the entire property as sparsely vegetated, with areas of somewhat barren soil existing. A small strip of vegetation exists along the western property boundary, and the remainder of the site appears to be undergoing the early stages of succession. Based on this, it is concluded that the vegetation on site, with the exception noted above, was entirely cleared prior to 1978. The 1988 aerial photograph shows the majority of the property as more maturely vegetated, although several areas of additional disturbance are present. These include two unvegetated paths/roads that traverse the center of the site and lead to a large cleared and unvegetated area in the southwestern corner of the property. Two additional cleared areas exist, both of which appear sparsely vegetated; the first is located along the remaining length of the site frontage, and the second is located along the northern property boundary in the eastern portion of the site. The 1997 aerial photograph generally shows the property existing under similar conditions, with the exception of several cleared paths and the northerly extension of Kroemer Avenue. The cleared areas noted above appear to be undergoing early stages of succession. The current ecological site conditions are described in greater detail below.

During several site inspections of the subject property during the summer of 2000, standing water was observed in two small areas within a small drainage gully located along the western property boundary. Water levels appear to fluctuate with the presence/absence of rainfall. The first “water retention” area is characterized by barren soil. This area is associated with a low point within the drainage gully that extends the length of the southern portion of the western property boundary. Erosion and siltation are evident, presumably due to run-off via culverts located on the NYSDOT property adjacent to the site. There is an additional small gully that extends toward this low point, although does not appear to be directly connected. A small portion of this drainage area also contained standing water during early field inspections. This ponded area is characterized by steep slopes and is somewhat vegetated. Several small, eroded drainage areas are also associated with this retention area, although they are currently vegetated with upland species. These water retention/drainage areas are located within the successional old field habitat classification, and will be discussed further below.

Successional Habitats

Successional hardwood forest, shrubland and old field habitats are stages in the process of secondary succession. Secondary succession is the process by which an area which has been cleared or otherwise disturbed reverts to the original vegetation. The first species to colonize a cleared area are generally herbaceous weeds and other plants with wide seed dispersal. These early successional species are replaced first by woody shrubs, then by saplings of tree species which seed in from adjacent wooded habitat or landscaped areas. As time progresses, the trees dominate in both abundance and height, and light penetration is reduced. The tree and shrub species which first colonized the area are then replaced by more shade tolerant species. The resulting forest generally resembles the original forest, although there may be significant differences in species composition, particularly if non-native species have been introduced in the surrounding area. This final habitat is referred to as a climax community.

Successional old field is the initial stage in the process of succession, which is the reversion of disturbed habitats to a climax forest. The habitat generally supports a wide variety of weedy species that colonize readily, such as goldenrods, grasses, timothy, ragweed and asters. **Reschke (1990)** defines an old field as "*a meadow dominated by forbs and grasses that occurs on sites that have been cleared or plowed, and then abandoned"*. Woody species may be present, but coverage by trees and shrubs is less than 50 percent as defined by **Reschke (1990)**. Old field vegetation is primarily located in the southwestern portion of the site and characteristic vegetation is also located interspersed among the remaining successional habitat type and along the dirt paths. This area occupies approximately 2.95 acres, or 13.9% of the site.

The majority of the successional old field habitat type found on site is in the later stages of early succession. Pitch pine saplings are beginning to colonize, and even dominate many areas within this habitat type classification. However, it is estimated that tree coverage is slightly less than 50%. The majority of this area is dominated by sweetfern, brambles, bluestem, ragweed, toadflax, indigo and other grasses and herbaceous species. Small shrubs and saplings, such as multiflora rose, black cherry, blueberry, and bayberry are also interspersed throughout this habitat type. As discussed above in the historical review of the property, this area appears completely cleared in 1978, again in 1988, and then was allowed to undergo succession at some point prior to 1997.

Trees occupy at least 60 percent of the canopy of woodland habitat as defined by the NYSDEC. **Reschke (1990)** describes successional southern hardwood habitat as *"a hardwood or mixed forest that occurs on sites that have been cleared or otherwise disturbed."* Any one of a number of species may dominate the canopy of successional forest habitat, depending on the original forest and nearby tree species. Oaks, beech and tulip-tree are the most common native species on Long Island. Also common are the introduced black locust, buckthorn and tree-of-heaven.

The successional hardwood forest is generally characterized by small sized trees and a dense understory, although large specimen trees may be present if the site was originally landscaped. The dense understory exists because the tree canopy is open, allowing high levels of light penetration. Given sufficient time, the trees more fully occupy the canopy, and the dense understory will no longer exist. This area occupies approximately 2.17 acres of the site (10.2%) and is associated with a previously cleared area near the western property boundary and a previously disturbed area near the northeastern portion of the property. There are several variations within this habitat classification on site, each of which will be discussed below, although is classified herein as a single habitat type do to the relatively small area, species composition and relative abundance.

Within the successional forested habitat found along the western property boundary, species composition is comprised of Norway maple, black cherry, oaks, and pitch pine with an understory of brambles, rose, and herbaceous weedy species. There are dirt piles and other evidence of disturbance associated within this area. More variation exists within the northeastern portion of the property, where small areas of successional old field, successional shrubland, successional hardwood forest, and first growth pine-oak woods exist. As such, a small area dominated by bluestem and other grasses exists along the dirt path, beyond which lies a small area dominated by multiflora rose with cherry and pitch pine saplings also present. An additional area within this habitat type is dominated by honey locust, cherry, and cedar, with scattered oaks also present; this area contains a relatively open understory, consisting of multiflora rose, garlic mustard, nettle, poison ivy, and grasses. Finally, a small portion has begun to revert back to the original pitch pine-oak forest habitat, and is dominated by pitch pine saplings, bracken fern, and blueberry.

Pitch Pine-Oak Forest

As previously established, the majority of the site was entirely cleared prior to 1978, with additional areas of clearing occurring prior to 1988. The majority of the site has generally reverted back to the original pitch pine oak forest habitat, as defined by **Reschke (1990).** This habitat covers approximately 11.72 acres, or 55.3%, of the site. Within this habitat, variation also exists due to the extent and timing of past disturbance events. There are two areas classified as first growth woods, which exhibit an early forested stage of a more mature pitch pine-oak forest. It is expected that the portion of the old field habitat previously discussed will quickly follow this level of succession.

The subject site is not within the designated Central Pine Barrens Zone, as defined by Article 57 of the NYS ECL. Pine Barrens habitats occur in dry areas where a high degree of disturbance and nutrient poor soils exist. These habitats are characterized by pitch pine, oaks and other vegetation which are tolerant of dry, acidic conditions. The habitat types found within the pine barrens of Long Island include Dwarf Pine Plains (or Barrens), Pitch Pine-Scrub Oak Barrens, Pitch Pine-Oak-Heath Woodlands, Pitch Pine-Oak Forest and various wetlands as defined by the NYSDEC **(Reschke, 1990).** Species composition varies little between the upland habitats **(Olsvig *et al*., 1979).** The relative abundance of each species within a community is a result of influences such as fire frequency, soil moisture, soil fertility and type, exposure to salt spray, and depth to groundwater. In this case however, it is expected that relative abundance and species composition is due to past disturbance of the site. The forest habitats are defined by at least 60 percent tree cover, while the woodlands and barrens are dominated by shrubs and scrub trees and have less than 60 percent cover by full sized trees **(Reschke, 1990)**.

The extensive pine barrens of Long Island are a result of the interacting effects of fire, drought and soil character. The pine barrens habitats identified above are subject to relatively high degrees of disturbance due to periodic fires, and all except the Dwarf Pine Plains appear to be successional stages maintained by fires **(Olsvig *et al*., 1979; Reschke, 1990).** Fire "sets back" the vegetation to an earlier phase of succession, and the pine barrens habitats appear to be a series of successional stages that follow fires or other disturbance, although soil conditions may also affect the species composition at some sites **(Olsvig *et al*., 1979).** Pitch pine and scrub oak are fire tolerant, and are generally the first species to recover after a fire. Individual pitch pines can withstand heat levels which destroy other types of trees. This species is dependent on fire to open its pine cones to release seeds. Therefore, pine barrens habitats with high fire frequency, such as pine-oak-heath woodland, are typically dominated by pitch pine and scrub oak. As the period between fires becomes longer, less fire tolerant trees such as white and scarlet oaks become dominant (**Olsvig, *et al*., 1979**), and few pine seedlings reach maturity, resulting in a Pine-Oak forest habitat. Fertilization and the absence of drought also favors dominance by oaks, and the presence of pine barrens habitats in some areas may be determined more by soil conditions than fire frequency.

Pitch Pine-Oak forest has the lowest fire frequency of the pine barrens habitats defined by **Reschke (1990**), and typically burns only once in several decades. Pitch Pine-Scrub Oak Barrens have a fire frequency of 6 to 15 years, and Pitch Pine-Oak-Heath Woodland probably experiences more than 15 years between fires **(Reschke, 1990)**. In the absence of fire, oaks would be expected to dominate, and few, if any, pitch pines would exist in the canopy. Understory species would be limited to those which are able to withstand shade conditions or require more moisture.

In addition to the periodic "set back" of vegetative succession in the pine barrens and associated habitats, fires also impact soil conditions. Little humus is present in most pine barrens habitats due to the high acidity caused by the release of tannic acid from fallen pine and oak leaves. Because of the poor moisture retention, pine barrens have a longer and drier drought conditions than other habitats on Long Island. This creates conditions that favor more frequent and potentially more severe forest fires. Ground fires burn the thick accumulations of organic material, often peat, which overlies mineral soil. The coarse sand-loam soils of Long Island's outwash plains have a lower moisture and nutrient retention capacity than soils in other areas of Long Island. Following a fire, the amount of available minerals is increased, at least temporarily, however, the soil acidity and the supply of total nitrogen is reduced. The direct effect of the change in soil moisture and temperature, and the availability of necessary nutrients directly affects the plant species which recolonize the area **(Olsvig *et al.*, 1979).**

The forest may have originally resembled a pitch pine-scrub oak barrens habitat, but through long periods of fire suppression and based on past disturbance, has more increasingly become dominated by oak species. Within this habitat type, there are several variations with regards to species dominance and succession. Areas on site are more dominated by oaks, with relatively few pitch pines in the canopy, with other areas dominated by pitch pines, with comparatively fewer oaks in the canopy. As previously stated, the pitch-pine oak forest found on site is in various stages of succession. Within this habitat type, two areas are classified as first growth woods, which resemble the pitch pine-oak forest in terms of species composition, although are in earlier stages of succession. The first area is located in the southeastern portion of the site along the site frontage, and is dominated by sassafras, pitch pine, oaks, and blueberry. The second area is located in the southwestern portion of the site, and is dominated by young pitch pines. The historical aerial review indicated that this area was cleared prior to 1977, and again at some point prior to 1988.

As defined by **Reschke (1990)**, Pitch Pine-Oak Forest is *"a mixed forest that typically occurs on well drained, sandy soils of glacial outwash plains or moraines. The dominant trees are pitch pine, mixed with one or more of the following oaks: scarlet oak, white oak, red oak or black oak. The relative proportions of pines and oaks are quite variable within this community type."* **Reschke (1990)** includes a range of assemblages within this habitat type, including oak dominated forests with only scattered emergent pines as well as nearly pure stands of pitch pine. Other authors have classified these extremes as separate habitat types **(Olsvig *et al.*, 1979)**, and the mature, oak dominated woodlands commonly found in central Suffolk County do not fit well within **Reschke's (1990**) classification. **Milazzo (1995)** acknowledges this issue, adding that the best description of the hardwood forests in the pine barrens is Pine–Oak Forest with pitch pine absent.

Reschke (1990), describes the shrub layer of the Pine-Oak Forest as a well developed heath layer, with scattered clusters of dense scrub oak. In more mature, oak dominated stands, the understory may be sparse due to interception of light by oaks in the canopy. Other typical understory species include oak seedlings, black huckleberry and blueberry, while bracken fern, wintergreen, trailing arbutus, bearberry, Pennsylvania sedge and mosses are typical of the sparse herbaceous layer (**Reschke 1990)**.

<u>Ponded Depressions/Wetlands</u>
As discussed above, there are several eroded "drainage" areas within the successional old field habitat type, which lead to the low lying area along the southern portion of the western property boundary. Although this area is expected to be a historical drainage way, it is expected that past disturbance and prior lack of vegetation has created erosion and drainage patterns not previously associated with the site. Review of the Suffolk County Soil Survey **(Warner, 1975)** indicates the presence of an intermittent stream along the western property boundary within the southern portion of the site. The intermittent stream begins northwest of the site, extends through the NYSDOT property to the subject site, where it extends farther south to a freshwater wetland system (NYSDEC designated freshwater wetland R-39), and eventually to the Peconic River. Currently, it does not appear that the intermittent stream functions on the property, although the drainage area exists based on existing topography. In the immediate vicinity of the subject site, the intermittent stream has been isolated by the development of the NYSDOT property, creating a termination point to the northwest, and by NYS CR. 58 to the south, due to the elevation of the roadway and lack of drainage structures which would allow flow farther south. The existing topography would prohibit flow/drainage from the north, northeast, east and west. At least two culverts were identified on the NYSDOT property near the western property boundary in the central portion of the site, and are expected to discharge overflow from the NYSDOT property into this drainage area. Discharge from this property has resulted in erosion and sedimentation along the western property boundary, further altering the former natural drainage way.

The possible presence of wetlands was considered in connection with these drainage features. These low lying areas are not classified as wetlands by the NYSDEC and do not appear on the official NYSDEC freshwater wetlands maps. The Army Corps Of Engineers has jurisdiction over filling of wetlands that exhibit characteristics that define the surface waters of the United States. Limited filling of such wetlands is permitted under certain restrictions.

Wetland boundaries are generally defined by hydrology, hydric soils and significant numbers of indicator plant species which are typical of wetland habitats. These three parameters, hydrology, soil and vegetation, are the sole basis for the Army Corps of Engineers (ACOE) to determine the limits of the waters of the United States, or wetlands. To define a wetland in terms of hydrology, "the area is inundated either permanently or periodically at mean water depths of less than 6.6 feet, or the soil is saturated to the surface at some time during the growing season of the prevalent vegetation". Hydric soils are soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation. Hydric soils that occur in areas having positive indicators of hydrophytic vegetation and wetland hydrology are wetland soils. When referring to wetland vegetation, an indicator species is a plant species that typically characterizes a prescribed environment or situation and determines or aids in determining whether or not certain stated circumstances exist **(ACOE wetlands delineation manual, 1987)**.

The wetland indicator categories are assigned by the US Fish and Wildlife service for wetland plants within the Northeast Region, and are intended to help standardize the process of wetland delineation, as well as provide information on the degree to which each species is dependant on hydric conditions. Facultative species are those which are found in both upland and wetland habitats, while obligate species are confined to hydric soils. The following abbreviations are utilized within the classification system, with "+" or "-" used for intermediate species.

Wetland Classification as defined by U.S. Fish and Wildlife Service:

OBL	Obligate, always found in wetlands under natural conditions (frequency > 99%)
FACW	Facultative Wetland, usually found in wetlands (67% to 99% frequency)
FAC	Facultative, sometimes found in wetlands (34% to 66% frequency)
FACU	Facultative Upland, seldom found in wetlands (1% to 33% frequency)

As previously stated, two low-lying areas contained standing water exist within this drainage way. The first area is generally characterized by barren soil, and the surrounding vegetation is comprised of more "upland" species, such as ragweed, white oak, Norway maple, and other upland grasses and herbaceous species. The ponded area is restricted by topography to the west, east and south, and is expected to receive discharge from culverts located on the NYSDOT adjacent to the western property boundary farther north. The second ponded area is also restricted by topography, and is generally characterized by steep slopes dominated by upland species, particularly sweet fern. However, within the standing water, Canada rush is dominant, and is a species associated as a wetland indicator. Canada rush is considered an obligate "OBL" species, as assigned by the US Fish and Wildlife Service for wetland plants within the Northeast Region. An "OBL" classification means that the species is always found in wetlands under natural conditions (frequency > 99%).

As noted that these ponded areas are not mapped as regulated wetlands by the NYS Department of Environmental Conservation (NYSDEC) under Article 24 of the NYS Freshwater Wetland Act, and therefore the NYSDEC does not have any regulatory authority. Additionally, the Federal National Wetlands Inventory Map prepared by the U.S. Fish and Wildlife Service does not note any freshwater wetland features on site, although the Federal map does not necessarily confer any regulatory authority. As these ponded areas are not regulated by the State, they are considered "Waters of the United States" and thus regulated by the Army Corps of Engineers. Each of the ponded areas were determined to be wetlands using criteria set forth by the Army Corps of Engineers, which is discussed in **Section 2.4.3** below.

Federal regulation is under the authority of Section 404 of the Clean Water Act (33 U.S.C. 1344), which prohibits alteration or filling of the waters of the United States without a permit from the Army Corps of Engineers. The ACOE has issued a number of Nationwide permits that do not require formal processing but may require notification. As pertains to the project site, discharge of fill causing the loss of 1/10 an acre or less of wetlands does not require ACOE involvement, as it is pre-determined to not be significant on a Federal level. However, a report documenting the activity must be filed within 30 days of completion of the work. Even though the action does not require formal notification due to the limited amount of fill, the applicant has contacted the Corps, in order to make a final determination of jurisdiction. The limit of wetlands were identified by Nelson, Pope & Voorhis on July 7th, 2000, and a notification of action was submitted to the Army Corp of Engineers (ACOE) on July 13th, 2000 **(Appendix D-1)**. Correspondence received from the ACOE will be provided via addendum to this report.

Table 2-8 presents a list of vegetation observed or expected on site given the habitats present; it is based upon field investigations conducted by NP&V in the summer of 2000. This list is not meant to be all-inclusive but was prepared as part of several field inspections to provide a detailed representation of what is found on site. Where applicable, those species identified near the ponded areas also are identified as to the wetland indicator category discussed above. Care was taken to identify any species that might be unusual for the area.

TABLE 2-8
PLANT SPECIES LIST

Trees		
*	Norway maple	*Acer platanoides*
	red maple	*Acer rubrum*
	Japanese maple	*Acer palmatum*
	sugar maple	*Acer saccharum*
	tree-of-heaven	*Alianthus altissima*
	Hercules' club	*Aralia elata*
	devil's club	*Aralia spinosa*
*	gray birch	*Betula populifolia*
	white birch	*Betula papyrifolia*
	pignut hickory	*Carya ovalis*
	mockernut hickory	*Carya tomentosa*
*	northern catalpa	*Catalpa bignonioides*
	silky dogwood	*Cornus amomum*
	flowering dogwood	*Cornus florida [p]*
	red-osier dogwood	*Cornus stolonifera*
	hawthorne	*Craetagus sp.*
	American beech	*Fagus gradifolia*
*	honey locust	*Gleditsia triacanthus*
	black walnut	*Juglans nigra*
*	eastern red cedar	*Juniperus virginiana*
	magnolia	*Magnolia sp.*
	crab apple	*Malus coronaria[p]*
	common apple	*Malus pumila*
	mulberry	*Morus alba*
*	pitch pine	*Pinus rigida*
	white pine	*Pinus strobus*
	eastern cottonwood	*Populus deltoides.*

*	bigtooth aspen	*Populus grandidenta.*	
*	black cherry	*Prunus serotina*	
	choke cherry	*Prunus virginiana*	
*	white oak	*Quercus alba*	*FACU-*
*	scarlet oak	*Quercus coccinea*	
*	scrub (bear) oak	*Quercus ilicifolia*	
	mossycup (bur) oak	*Quercus macrocarpa*	
	blackjack oak	*Quercus marilandia*	
*	pin oak	*Quercus palustris*	
	chestnut oak	*Quercus prinus*	
*	northern red oak	*Quercus rubra*	
	post oak	*Quercus stellata*	
*	black oak	*Quercus velutina*	
*	black locust	*Robinia psuedo-acacia*	*FACU-*
	buckthorn	*Rhamnus spp.*	
*	sassafrass	*Sassafras albidum*	
	yew	*Taxus floridana*	
	hemlock	*Tsuga canadensis*	

Shrubs and Vines

	chokeberry	*Aronia sp.*	
	Japanese barberry	*Berberis thunbergii*	
	boxwood	*Bux sempervirens*	
	American bittersweet	*Celastrus scandens [p]*	
	oriental bittersweet	*Celastrus orbiculata*	
*	sweetfern	*Comptonia peregrina*	
	silverberry	*Elaeagnus commutata*	
	autumn olive	*Elaeagnus umbellata*	
	winged spindle tree	*Euonymus alata*	
	forsythia	*Forsythia sp.*	
*	black huckleberry	*Gaylussica baccata*	
	English ivy	*Hedera helix*	
*	golden heather	*Hudsonia ericoides*	
	beach heather	*Hudsonia tomentosa*	
	mountain laurel	*Kalmia latifolia [p]*	
	bush clover	*Lespedeza sp.*	
	privet	*Ligustrum vulgare*	
*	honeysuckle	*Lonicera spp.*	
	stagger-bush	*Lyonia mariana*	
*	bayberry	*Myrica pensylvanica* [p]	
*	Virginia creeper	*Parthenocissus quinquefolia*	
*	multiflora rose	*Rosa multiflora*	*FACU*
	pasture rose	*Rosa sp.*	
	buckthorn	*Rhamnus spp.*	
	pinkster bloom	*Rhododendron nudiflorum [p]*	
	azaelea	*Rhododendron sp. [p, native only]*	
*	winged sumac	*Rhus copallina*	
	smooth sumac	*Rhus glabra*	
	staghorn sumac	*Rhus typhina*	

currant	*Ribes lacustre*	
* brambles	*Rubus sps.*	*Various FAC*
common dewberry	*Rubus flagellaris*	
* greenbriar	*Smilax rotundifolia*	
carrion flower	*Smilax herbacea*	
nightshade	*Solanum dulcamara*	
common nightshade	*Solanum nigrum*	
meadowsweet	*Spiraea corymbosa*	
* poison-ivy	*Toxicodendron radicans*	
* low bush blueberry	*Vaccinium angustifolium*	
* high bush blueberry	*Vaccinium corymbosum*	
maple-leaved viburnum	*Viburnum acerifolium*	
* grape	*Vitis spp.*	
myrtle	*Vinca minor*	

Herbs and Groundcovers

yarrow	*Achillia millefolium*	
* redtop	*Agrostis gigantea*	
* garlic mustard	*Alliaria petiolata*	
* wild onion	*Allium stellatum*	
* big bluestem grass	*Andropogon gerardii*	
* little bluestem grass	*Andropogon scoparius.*	
pigweed	*Amaranthus sp.*	
* ragweed	*Ambrosia artemisiifolia*	*FACU*
dogbane	*Apocynum maculosa*	
* cress	*Arabis sp.*	
bearberry	*Arctostaphylos uva-ursi*	
* mugwort	*Artemisia vulgaris*	
* common milkweed	*Asclepias syrica*	
milkweed	*Asclepias sp.*	
* asters	*Aster sps.*	
eastern silvery aster	*Aster concolor [e]*	
wood aster	*Aster divaricatus*	
stiff-leaved aster	*Aster linariifolius*	
* wild indigo	*Baptisia tinctoria*	
* yellow rocket	*Barbarea vulgaris*	
* false nettle	*Boehmaria cylindrica*	
mustard	*Brassica sp.*	
sedge	*Carex sp.*	
* Pennsylvania sedge	*Carex pensylvania*	
spotted knapweed	*Centurea maculosa*	
common lamb’s quarters	*Chenopodium album*	
* spotted wintergreen	*Chimaphila maculata [p]*	
stripped pipsissewa	*Chimaphila umbellata [p]*	
chicory	*Cichorium intybus*	
enchanter’s nightshade	*Circacea quadrisulcata*	
thistle	*Cirsium sp.*	
* crown vetch	*Coronilla varia*	
ladyslipper	*Cypripedium sp.*	

	broom	*Cytisus scoparius*	
	orchard grass	*Dactylis glomerata*	
	poverty grass	*Danthonia spicata*	
*	Queen Anne's lace	*Daucus carota*	
*	deptford pink	*Dianthus armeria*	
	trailing arbutus	*Epigaea repens [p]*	
	cypress spurge	*Euphorbia cyparissias*	
*	common strawberry	*Fragaria virginiana*	*FACU*
	wintergreen	*Gaultheria procumbens [p]*	
	avens	*Geum sp.*	
	ground ivy	*Glechoma hederaceae*	
	woodland sunflower	*Helianthus divaricatus*	
*	hawkweed	*Hieracium sp.*	
	orange grass	*Hypericum gentianoides*	
*	common St. Johnswort	*Hypericum perforatum*	
*	Canada rush	*Juncus Canadensis*	*OBL*
*	path rush	*Juncus tenuis*	*FACW*
	pinweed	*Lechea villosa*	
*	peppergrass	*Lepidium virginicum*	
	round-headed bush clover	*Lespedeza capitata*	
	hairy bush clover	*Lespedeza hirta*	
	trailing bush clover	*Lespedeza procumbens*	
*	blue toadflax	*Linaria canadensis*	
	butter-n-eggs	*Linaria vulgaris*	
	rye grass	*Lolium sp.*	
	wild lupine	*Lupinnus perenis*	
	white campion	*Lychnis alba*	
	club moss	*Lycopodium spp. [p]*	
	whorled loosestrife	*Lysimachia quadrifolia*	
*	Indian pipe	*Monotropa uniflora*	
	evening primrose	*Oenethera biennis*	
*	sensitive fern	*Onoclea sensibilis*	*FACW*
	sweet cicely	*Osmorhiza claytoni*	
	cinnamon fern	*Osmunda cinnamomea [p]*	
*	panic grass	*Panicum sp*	
*	common reed	*Phramites australis*	*FACW*
	timothy	*Phleum pratense*	
	poke weed	*Phytolacca americana*	
*	plantain	*Plantago sp*	
*	bluegrass	*Poa sp.*	*Various FAC*
	jointweed	*Polygonella articulata*	
	Soloman’s seal	*Polygonatum biflorum*	
	milkwort	*Polygala nuttallii*	
	Christmas fern	*Polystichum acrostichoides [p]*	
	hair cap moss	*Polytrichium sp.*	
	gall-of-the-earth	*Prenathus sp.*	
*	cinquefoils	*Potentilla spp.*	
*	bracken fern	*Pteridium aquilinum*	
	common buttercup	*Ranunculus acris*	

	hooked buttercup	*Ranunculus recurvatus*	
	black-eyed Susan	*Rudbeckia hirta*	
*	sheep sorrel	*Rumex acetosella*	
	dock	*Rumex crispus*	
	bouncing bet	*Saponaria officinalis*	
	goldenrod	*Solidago spp.*	
*	Indian grass	*Sorghastrum nutans*	
	false Soloman's seal	*Smilacina racemosa*	
*	common dandelion	*Taraxacum officinale*	
	goat's-rue	*Tephrosia virginiana*	
*	clover	*Trifolium sp.*	*Various FACU (-)*
*	hop clover	*Trifolium agrarium*	
*	rabbit-foot clover	*Trifolium arvense*	
	common mullien	*Verbascum thapsus*	
	cow vetch	*Vicia cracca*	
	spring vetch	*Vicia satvia*	
	periwinkle	*Vinca minor*	
	sweet violet	*Viola blanda*	
	cocklebur	*Xanthium chinense*	

* Species identified on site during field visits by NPV Staff.
[e] NYS endangered species
[p] NYS exploitably vulnerable protected plant

<u>Rare and Endangered Species Potential</u>
No rare, threatened or endangered plants were observed on site. The NY Natural Heritage Program (ECL 9-1503) was contacted to determine if there is any record of rare plants or wildlife in the vicinity. The Program does not identify this area as a Significant Wildlife Habitat, and maintains no records of known occurrences of rare or state-listed animals or plants, significant natural communities, on or in the immediate vicinity of the site. Additional correspondence with the NY Natural Heritage Program requested information concerning the project site and land within a ½ mile radius. The ½ mile radius correspondence indicated one unprotected significant community type (coastal plain pond shore), four unprotected species and three rare species. Correspondence with the NY Natural Heritage Program is contained in **Appendix D-2**.

Coastal plain pond shore, a significant unprotected community type, was listed associated with the Kroemer Avenue ponds, located approximately 1,000 feet south of the project site. Coastal plain pond shore habitat forms at the edge of groundwater ponds on Long Island's coastal plain, and is a result of fluctuation of groundwater levels. As defined by **(Reschke, 1990)** this habitat is "*the gently sloping shore of a coastal plain pond with seasonally and annually fluctuating water levels. The substrate is gravely, sandy or mucky. Vegetative cover varies with the water levels. In dry years when water levels are low and the substrate is exposed, there is a dense growth of annual sedges and grasses. In wet years when the water level is high and the substrate is flooded, vegetation is sparse, and only a few emergents and floating-leaved aquatics are apparent. The vegetation of this pond shore community can change dramatically from one year to the next depending on fluctuations in groundwater levels*." This community type is listed as both apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery, and either rare and local throughout its range, or found locally in a restricted range, or vulnerable to extinction throughout its range because of other factors. Statewide, it is listed as having typically 6 to 20 occurrences, few remaining individuals, acres, or miles of stream or some factor of its biology making it especially vulnerable in New York State. However, the coastal plain pond shore community type is not found on the project site.

Following are discussions of the plant species listed in the NY Natural Heritage Program correspondence, along with discussions of the potential for their presence on the project site.

Flax-leaf white top, hop sedge, stargrass, and primrose-leaf violet are unprotected vascular plant species with historical records in the vicinity of the site. All four species are listed as having typically 6 to 20 occurrences, few remaining individuals acres, or miles of stream or factors demonstrably making it very vulnerable in New York State. Globally, however, they are all listed as demonstrably secure, though it may be quite rare in parts of its range, especially at the periphery. Flax-leaf white top prefers dry ground and was last observed in 1927, and hop sedge prefers dry sandy soil and was last observed in 1955. Primrose-leaf violet and stargrass prefer moist/wet areas and were last observed in 1927. Although preferred habitat may exist on site, the historical records make it unlikely that these species are present in the vicinity.

Long-beaked bald rush, Atlantic white cedar, and marsh straw sedge are listed as rare protected vascular plants. Atlantic white cedar and marsh straw sedge were last observed in 1923 and 1927 respectively, and long-beaked bald rush was last observed in 1988. All three species are listed as having typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State. Globally, these species are listed as apparently secure, although it may be rare in parts of its range, especially at the periphery. Additionally, marsh straw sedge is also listed as demonstrably secure on a global scale. Long-beaked bald rush prefers moist areas, and was documented in the vicinity of Kroemer pond, and marsh straw sedge also prefers moist woods. The moist woods habitat is not present on the project site.

In addition, bayberry and spotted wintergreen were the only “exploitably vulnerable” species identified on the property. "Exploitably vulnerable" plants are species which are not currently threatened or endangered, but which are commonly collected for flower arrangements or other uses. Regardless, under ECL 1503.3, no person may "*knowingly pick, pluck, sever, damage by the application of herbicides or defoliants or carry, without the consent of the owner thereof, protected plants"* **(NYSDEC, 1975).** As per this section of the ECL the project sponsor (i.e. owner) would not be restricted in utilizing the site for the intended purpose. Therefore, the presence of any protected plants would not restrict use of the site under the NYS Environmental Conservation Law.

2.4.2 Wildlife

The successional and woodland habitats found on-site provide habitat for a number of wildlife species. Most wildlife species found in woodland habitats adjust well to human activity, and the surrounding developments make it unlikely that an abundance of sensitive species are present.

The site is located north of CR 58 and east of and proximate to the Long Island Expressway, with a LIPA power line along the northern site boundary. In additional, several domestic cats were observed on the site. These factors would tend to reduce the number and diversity of wildlife on site. However, there are large contiguous blocks of undeveloped woodland and wetland habitats in the general area, increasing the likelihood that some sensitive species are common in the general vicinity. The species present on site are likely to be relatively common suburban, forest, and edge species, with limited potential for sensitive forest interior species. **Appendix D-3** presents a computer generated list of species expected on site given the habitat available. This list is provided as a supplement to site specific discussions included herein, and also includes information on the biological needs of each species. Nelson, Pope & Voorhis, LLC developed the model, as a tool to supplement site specific inventory and discussions, and is described more fully in the introductory statements contained in **Appendix D-3.**

The following text discusses the avian species that would be expected to breed on site, as well as those species that might be expected during migrations or as winter residents. In addition, data from the 1988 Breeding Bird Survey for the census block which contains the site was obtained from the New York State Department of Environmental Conservation (**Appendix D-4**). This study surveyed the Entire State by 25 km^2 census blocks over a five year period to determine the bird species which breed within the State. Most of the species listed by the DEC breeding bird survey are likely to be found on site, with the exception of species restricted to habitats not found on site. Birds that prefer a mix of woodland, edge and urban habitats may be present on the property.

<u>Birds</u>

Seed-eating birds, including grosbeaks, finches, towhees, juncos, and sparrows, are expected to be relatively common on site **(Bent, 1968, 1968).** The most common sparrow that breeds on Long Island is the song sparrow, and the introduced house sparrow is also abundant. Both species are found in forest openings, suburban areas and overgrown field habitats, and are expected on site. The house sparrow is an introduced old world species, which often nests on buildings, and is considered a pest. Both the house and song sparrow are listed as confirmed breeders within the census block and are likely to be present on site and in the surrounding developed areas, although only the house sparrow was observed. The related fox sparrow and white-throated sparrow are common winter visitors on Long Island, and are expected during the colder months.

Many sparrows also prefer the early successional habitats that are found on site. These species are generally not tolerant of human activity with the exception of the chipping sparrow, which is found to be abundant around man made structures, and the white crowned sparrow, which is often found in suburban areas and parks. The field sparrow and Savannah sparrow prefer grassland habitats, although may occasionally utilize the site and surrounding areas. The swamp sparrow may also be found in weedy fields, but prefers fresh water marshes and would likely utilize the wetland habitats in the vicinity. Of these species, the chipping sparrow is listed as a confirmed breeder, and the swamp sparrow, Savannah sparrow, and field sparrow are listed as probable breeders within the census block. The vesper sparrow and grasshopper sparrow are area-sensitive grassland species an are listed as probable and confirmed breeders, respectively.

The grasshopper sparrow prefers grain cropland and pastureland not found on site and is therefore not expected to utilize the property. The vesper sparrow prefers pastureland and cropland, either with row crops or field crops, but with sparse cover of weeds and grasses, and is also not generally expected. Suitable habitat exists north of the site. Of these species, only the chipping sparrow was found on site.

The American goldfinch, house finch and purple finch are the most likely finches to utilize the property. The house finch prefers suburban and edge habitats, and the purple finch is more likely to utilize coniferous forests. The American goldfinch prefers a diet of thistle and dandelions and may utilize the successional portions of the site. The northern cardinal, as well as the related rufous-sided towhee and rose-breasted grosbeak prefer woodlands with a dense understory and/or hedgerows, and are also expected to be present on site. The cardinal was observed on site, and the rufous-sided towhee was abundant. On Long Island, the American redstart is found in red maple-hardwood swamps and in upland deciduous woods **(Andrle and Carroll, 1988)** and may be expected on site although preferable habitat is located in the vicinity. The pine siskin is not common on Long Island and is described as "an irregular visitor, sometimes breeding in vast multitudes and during other seasons not seen at all" **(Andrle and Carroll, 1988).** The indigo bunting prefers open landscapes with dense cover for nesting and tall trees for song perches **(Andrle and Carroll, 1988)** and may utilize the site. The house finch, northern cardinal, American redstart, and rufous-sided towhee are listed as confirmed breeders in the census block, the indigo bunting is listed as a probable breeder, and the American goldfinch is listed as a possible breeder.

A variety of larger birds are commonly found in a suburban, successional habitats and woodlands, including the thrashers, the orioles and blackbirds **(Bent, 1964, 1965**). Corvids which are common on Long Island include the American crow and blue jay. Both are listed as confirmed breeders within the census block. The northern mockingbird, brown thrasher, and gray catbird are thrasher species that are also expected to utilize the site and surrounding areas, as this group generally prefers more open habitats **(Andrle and Carroll, 1988).** All three of these species were listed as confirmed breeders. Two additional confirmed breeders, the American robin and the European starling, both have similar habitat requirement as the thrashers. These species are common in fields and suburban areas feeding on insects and fruits, and are expected on site. The gray catbird was abundant on site, and the American robin, blue jay, American crow, northern mockingbird, brown thrasher and European starling were also observed.

Birds from the oriole and blackbird family also feed on a mix of insects, seeds, fruit and aquatic fauna. The grackle and brown-headed cowbird might be expected on site **(Andrle and Carroll, 1988).** These birds generally prefer open woodlands and field habitats, and are probably common throughout the area, as they are relatively tolerant of development. The cowbird is a nest parasite which lays eggs in the nests of other birds. Both are listed as confirmed breeders within the census block.

The northern oriole is expected to be present, as it generally prefers to nest in taller trees in open areas. The orchard oriole is listed as a possible breeder, although is rarely observed in New

York, which is the northern extent of its range. It is typically found in orchards, nurseries and thin trees near water, and thus is not expected on site. The Baltimore oriole is listed as a confirmed breeder and may occasionally utilize the site and surrounding areas.

The red-winged blackbird and eastern meadowlark generally prefer open woodlands and field habitats. The red-winged blackbird feeds primarily on insects, and is typically associated with wetland habitats. It nests on or near the ground in a variety of habitats including marshes, swamps, wet meadows, fields and thickets **(Bent, 1965),** and is listed as a confirmed breeder within the census block. The eastern meadowlark typically breeds in open areas with bare ground, and the site contains a small portion of suitable habitat. The horned lark and killdeer may also occasionally utilize the site, as they prefer open areas with short grass. The killdeer is listed as a confirmed breeder and the horned lark is listed as a probable breeder. Of these species, the red-winged blackbird was observed on site.

Two doves are found on Long Island, including the mourning dove and the introduced rock dove, also known as the domestic pigeon. Both are common in suburban areas, parks, cultivated fields and along roadsides. The mourning dove typically nests in overgrown areas and tangled vines, while the rock dove prefers to nest on buildings and other structures **(Andrle and Carroll, 1988).** The mourning dove was observed on the site and both species were observed in the surrounding areas. Both dove species are listed as confirmed breeders within the census block and are likely to breed on site and in the local area.

The ruby-throated hummingbird is the only hummingbird found on Long Island, and may occasionally utilize the site. Hummingbirds feed on flower nectar and small insects, and are typically found in gardens, wooded edge and along stream beds **(Andrle and Carroll, 1988).** This species is unlikely to be present on site, as it avoids heavily developed areas. It might be present in the area if local residents have feeders or plantings which would attract the species.

A few smaller insect feeding birds are found in overgrown areas, including the wrens, titmice, and nuthatches. The house wren and Carolina wren are the only wrens expected on site. The house wren is commonly found in suburban areas and edge habitats as well as forest understory, where it feeds on insects, while the Carolina wren breeds in woodlands, thickets, brushy hollows, swamps, and along stream beds **(Andrle and Carroll, 1988)**. Both of these wrens are listed as probable breeders within the census block. Titmice and nuthatches which might be found on site include the black-capped chickadee, tufted titmouse, and white-breasted nuthatch, all of which are year-round residents on Long Island **(Bent, 1964).** These three species were listed as confirmed breeders, with only the black-capped chickadee observed. The nuthatch and titmouse typically breed in woodlands, and are also expected to forage on site. Similar birds which may also utilize the site outside of the breeding season are the golden-crowned and ruby-crowned kinglets, both of which are winter visitors on Long Island and are found in both forested and open habitats.

Birds from the flycatcher family feed on flying insects in woodlands, edge habitats and open areas. The eastern kingbird, eastern wood-pewee and great-crested flycatcher are the most common flycatchers on Long Island **(Bent, 1963; Andrle and Carroll, 1988)**. These species are generally found in deciduous woodlands or edge habitats, although the great-crested flycatcher prefers larger blocks of woodland and is less tolerant of human activity **(Andrle and Carroll, 1988**). The Eastern phoebe often builds a nest near water and uses mud as a construction material **(Andrle and Carroll, 1988)**. The kingbird generally prefers more open areas, and is most likely to utilize the successional and edge habitat along the western portion of the site. The eastern wood-pewee is an "edge" species found mainly at forest margins and openings and is common to fragmented and open forest tracts **(Bent, 1963; Andrle and Carroll, 1988).** The eastern kingbird is the only confirmed breeder, with the eastern wood-pewee and great crested flycatcher listed as probable breeders, and the phoebe listed as a possible breeder. The willow flycatcher is a western flycatcher which appears to be expanding its range in the eastern U.S., including Long Island (**Andrle and Carroll, 1988**). The willow flycatcher is most common in overgrown pastures and shrub wetlands, and might be present on site in small numbers although more suitable habitat is available in the vicinity. The least flycatcher is a breeding bird of deciduous and mixed forests. It prefers semi-open areas: forest edges, open woodlands, stream and pond borders, and also orchards and parks **(Andrle and Carroll, 1988)**.

Most thrushes and creepers also feed on insects in wooded areas. The eastern bluebird is typically a rural bird of open country, found in cropland, gardens, roadsides, wetlands and edges of open woodlands **(Andrle and Carroll, 1988**). The eastern bluebird is a species of special concern and may utilize the open portion of the site. The wood thrush is expected to utilize the site, as it prefers open woods with a well developed understory of shrubs and small trees **(Andrle and Carroll, 1988**); suitable habitat is found over the portions of the property. The veery may also be present, although it generally prefers larger tracts of forest **(Bent, 1964)**. The hermit thrush might also be present, as it prefers pine barrens habitats **(Andrle and Carroll, 1988**). Long Island is at the southern limit of the species breeding range, although it is a relatively common winter visitor in the area. The brown creeper prefers moist woods near streams. Nesting has been recorded in dry uplands in both coniferous and deciduous forests and the brown creeper is generally found in areas with 50% or greater forest cover **(Andrle and Carroll, 1988).** This species requires the presence of dead or dying trees with loose shingles of bark, as it builds its nest behind the bark. The woodland habitat on site contains a few suitable trees for use by this species for nesting. The hermit thrush is listed as a confirmed breeder and the wood thrush is listed as a probable breeder within the census block.

The cedar waxwing also occasionally feeds on flying insects, but is more commonly associated with open woodlands, orchards, and suburban areas where its diet consists primarily of fruit. This species might be present on site during summer months **(Bull and Farrand, 1974)**. The scarlet tanager is extremely vulnerable to habitat fragmentation and, although listed as a probable breeder, is usually found in mature wooded areas of over 50 acres, and thus is not expected on the property **(Andrle and Carroll, 1988).**

Most vireos also prefer forested areas, although they will use edge and suburban habitats. The red-eyed and yellow throated vireos are vulnerable to forest fragmentation, but may be present within the wooded portions of the site in small numbers. Although they will utilize edge habitats, these vireos are particularly susceptible to nest parasitism by the cowbird in smaller woodlots (**Andrle and Carroll, 1988**), and thus populations are often low except within the forest interior. The white-eyed vireo may also be present on site, as it prefers shrubby swamp and overgrown field habitats rather than the forest interior. Long Island was originally at the northern extent of the species range, although it now appears to be extending its range to the north (**Andrle and Carroll, 1988**). The red-eyed vireo is listed as a confirmed breeder and was observed on site, and the white-eyed vireo is listed as probable breeders.

Common Long Island swallows include the barn and tree swallows, both of which adjust well to human activity. The barn swallow nests on barns and other buildings, but may use natural nest sites as well. The tree swallow and purple martin prefer wetland areas where insects are abundant, and may occasionally utilize the site although suitable habitat is located in the vicinity. Both swallows nest in cavities of trees, but are also common residents in nesting boxes and bird houses. The barn swallow is listed as a confirmed breeder, and was also observed on site. The northern rough winged swallow, purple martin and tree swallow are listed as confirmed breeders within the census block.

The woodland habitat and the open habitat on site and in the vicinity may provide habitat for game birds such as the ruffed grouse, ring-necked pheasant, and the northern bobwhite. The ring-necked pheasant and bobwhite may be present, as both prefer open areas with cover **(Bent, 1963; Andrle and Carroll, 1988)**. These birds are year-round residents on Long Island, with the bobwhite listed as a confirmed breeder. The ruffed grouse is most commonly found in second growth woodlands, and might be found on site, and is listed as a possible breeder within the census block. The American woodcock may also be present and is listed as a probable breeder. It is typically found in habitats with a mix of woodland and overgrown field, and prefers moist areas where earthworms are abundant.

The nocturnal whip-poor-will feeds on moths and other insects, and prefers dry woods with adjacent fields. This species is likely to breed on site, and may forage in the area. The chimney swift also feeds on flying insects, and is found in a variety of habitats. Although it originally nested in cliffs and tree cavities, the species now is most commonly found nesting on buildings and other structures **(Andrle and Carroll, 1988**). It may also forage on and in the vicinity of the site. On Long Island, the common nighthawk is known to breed in such places as sandy openings in mixed pine-scrub oak barrens, on bare ground in pastures and fields, on sand dunes, on gravel beaches, and on flat rocks and logs in the open **(Andrle and Carroll, 1988).** This species is also expected to utilize the site. Of these species, the chimney swift is listed as a possible breeder, and the whip-poor will is listed as probable breeders.

The yellow-billed cuckoo prefers to nest in open wooded areas or along edges, but tends to avoid developed areas. The black-billed cuckoo seems to prefer more wooded areas than the yellow-billed cuckoo and nests in habitats such as brushy pastures, shrubby hedgerows and dry open upland woods **(Andrle and Carroll, 1988)** and may occasionally utilize the parcel. Both species are listed as probable breeders, although suitable habitat is available in the vicinity.

Warblers also feed on a variety of insects, and most warbler species are found in woodlands. Warblers that prefer woodland habitats include the black-and-white warbler, black-throated blue warbler, pine warbler, prairie warbler, yellow warbler, American redstart and the yellow-rumped warbler. All of these warblers are expected to utilize the site, and most are relatively intolerant of human development. However, the black-throated blue warbler can adapt to suburbs and the yellow-rumped warbler may be found in yards. The blue-winged warbler primarily utilizes abandoned and overgrown fields, and may be expected. The chestnut-sided warbler prefers first growth woods, with some open brush area and is also generally expected on site. The ovenbird prefers an open forest with little underbrush and an abundance of fallen leaves, logs, and rocks **(Andrle and Carroll, 1988**) and was observed on site. The blue-winged, black-and-white warbler, pine, prairie and yellow warblers as well as the ovenbird and common yellowthroat, are listed as confirmed breeders within the census block. Prairie warblers were abundant in the western portion of the subject property.

The site and surrounding area is suitable for use by raptor and owl species, most of which nest or roost in the forested areas, preying primarily on small mammals in adjacent field and scrub habitats. The eastern screech owl and great horned owl are the most common owls on Long Island. The screech owl might nest on site, as it is relatively tolerant of humans **(Andrle and Carroll, 1988)**, and is listed as a probable breeder. The great horned owl is more vulnerable to development, and is not expected to breed on site as it prefers larger, more mature woodlands than are found on site, although this species is listed as a confirmed breeder within the census block. The long-eared owl may also be present on or in the vicinity of the site, as it prefers thick coniferous or mixed forests, often near water **(Andrle and Carroll, 1988)**. However, the long-eared owl is not known to be abundant in New York State. The barn owl is likely to be present in the area as it is almost exclusively found in the presence of humans and requires open areas in which to hunt as it almost never hunts in woods **(Andrle and Carroll, 1988)**. The barn owl is listed as a possible breeder.

Most raptors nest in high areas away from humans, and thus, while they may roost on the property, most are unlikely to breed on site. Raptors prey primarily on small mammals, which are likely to be abundant in the area. Although only the American kestrel was observed on site, the red-tailed hawk, sharp-shinned hawk, Cooper's hawk and the broad-winged hawk may also occasionally utilize the site. Additionally, two red-tailed hawks were observed off site on the LIPA towers. The most common raptors on Long Island are the red-tailed hawk and the American kestrel, as they are relatively tolerant of human activity **(Bent, 1961; Andrle and Carroll, 1988**). The red-tailed hawk might be present, as it is found in a variety of habitats, and is expected to be abundant in the area. The American kestrel may be found where suitable nest cavities in trees, buildings, or nest boxes exist and sufficient non-forested foraging areas are present **(Andrle and Carroll, 1988).** The broad-winged hawk and sharp shinned hawk are more susceptible to human disturbance and are unlikely to be abundant in the area **(Andrle and Carroll, 1988).** The Cooper's hawk needs extensive woodland and is a non-breeder on Long Island **(Andrle and Carroll, 1988),** although may occasionally hunt on site. Of these species, American kestrel is listed as a confirmed breeder, and the red tailed hawk is listed as a probable breeder. The broad-winged hawk is listed as a possible breeder.

Woodpecker species, including the common flicker, red-bellied woodpecker, hairy woodpecker and downy woodpecker, are common in the mature wooded portions of Long Island, and are likely to be found on site. Exclusive of the red-bellied woodpecker, these species are listed as confirmed breeders, although only the common flicker was observed on site. The hairy woodpecker is more secretive and avoids human activity, but is expected to be present. These species prefer mature woodlands where insects are abundant in both large mature trees and decaying trees. The red-headed woodpecker generally nests in bogs and swamps near fresh water **(CEQ, undated)** and is therefore not likely to be present. The red-bellied woodpecker prefers northern hardwoods, lowland hardwoods, oak and pine **(Andrle and Carroll, 1988)**. The yellow-bellied sapsucker is more numerous at higher elevations, and breeds in either deciduous or mixed deciduous and evergreen forests **(Andrle and Carroll, 1988)** and may utilize the site. Many suitable trees are present on site for nesting and feeding by woodpecker species.

There are duck several species listed as breeding within the census block which would not generally be expected on site given the habitats present. However, during a field inspection in June following heavy rains, two mallards were observed in the small ponded area located along the western property boundary.

Table 2-9 is a list of the bird species observed or expected on site given the habitats present; it is based upon field investigations conducted by NP&V during the summer of 2000. Additional information regarding these species and others can be found within **Appendix D-3.**

<u>Mammals</u>

Small rodents and insectivores such as mice, shrews and voles are the most abundant mammals expected on site, but a number of larger mammals may be present where suitable habitat is available.

The masked shrew may be the most common mammal on Long Island. Although it is rarely seen, this small insectivore has been captured and identified in almost every type of habitat on Long Island **(Connor, 1971).** It will utilize any site with sufficient ground cover, including woods, fields, bogs and both marine and freshwater marshes. The short-tailed shrew also uses a variety of habitats, but on Long Island appears to be most common in deciduous woodlands **(Connor, 1971; Godin, 1977)**. Both shrews feed on insects and other small invertebrates, and are probably numerous throughout the site.

TABLE 2-9
BIRD SPECIES LIST

*	gray catbird	*Dumetella carolinensis*
*	red-winged blackbird	*Agelaius phoeniceus*
	Eastern bluebird	*Sialia sialis [s]*
*	black-capped chickadee	*Parus atricapillus*
	northern bobwhite	*Colinus irginainuse*
	indigo bunting	*Passerina cyanea*
*	Northern cardinal	*Cardinalis cardinalis*
	brown-headed cowbird	*Molothrus ater*
	brown creeper	*Certhia familiaris*
*	American crow	*Corvus brachyrhynchos*

	yellow-billed cuckoo	*Coccyzus americanus*
	black –billed cuckoo	*Coccyzus americanus*
*	mourning dove	*Zenaida macroura*
	rock dove	*Columba livia*
	American goldfinch	*Carduelis tristis*
	house finch	*Carpodacus mexicanus*
	purple finch	*Carpodacus purpureus*
*	common flicker	*Colaptus auratus*
	least flycatcher	*Empidonax minimus*
	willow flycatcher	*Empidonax trailii*
	great-crested flycatcher	*Myiarchus crinitus*
	common grackle	*Quiscalus quiscula*
	ruffed grouse	*Bonasa umbellus*
	ring-necked pheasant	*Phasianus colchicus*
	American redstart	*Setophaga ruticilla*
	rose-breasted grosbeak	*Pheucticus ludovicianus*
	red-tailed hawk	*Buteo jamaicensis*
*	American kestrel	*Falco sparverius*
	ruby-throated hummingbird	*Archilochus colubris*
*	blue jay	*Cyanocitta cristatta*
	Northern (dark-eyed) junco	*Junco hyemalis*
	Eastern kingbird	*Tyrannus tyrannus*
	golden-crowned kinglet	*Regulus satrapa*
	Eastern meadowlark	*Sturnella magna*
	ruby-crowned kinglet	*Regulus calendula*
*	Northern mockingbird	*Mimus polyglottos*
	red-breasted nuthatch	*Sotta canadensis*
	white-breasted nuthatch	*Sitta carolinensis*
	northern oriole	*Icterus galbula*
*	ovenbird	*Seiurus aurocapillus*
	common nighthawk	*Chordeiles minor [s]*
	barn owl	*Tyto alba [s]*
	common screech owl	*Otus asio*
	great-horned owl	*Bubo virginianus*
	long-eared owl	*Asio otus*
*	American robin	*Turdus migratorius*
	pine siskin	*Carduelis pinus*
*	chipping sparrow	*Spizella passerina*
	field sparrow	*Spizella pusilla*
	Savanah sparrow	*Passerculus sandwichensis*
	swamp sparrow	*Melospiza georgiana*
	white-crowned sparrow	*Zonotrichia leucophrys*
	fox sparrow	*Passerella iliaca*
*	house sparrow	*Passer domesticus*
	song sparrow	*Melospiza melodia*
	white-throated sparrow	*Zonotrichia albicollis*
*	European starling	*Sturnus vulgaris*
	eastern phoebe	*Sayornis phoebe*
*	barn swallow	*Hirundo rustica*

	tree swallow	*Tachycineat bicolor*
	purple martin	*Progne subis*
	chimney swift	*Chaetura pelagica*
*	brown thrasher	*Toxostoma rufum*
*	rufous-sided towhee	*Pipilo erythrophathalmus*
	hermit thrush	*Catharus guttatus*
	wood thrush	*Hylocichla mustelina*
	tufted titmouse	*Parus bicolor*
	veery	*Catharus fuscescens*
*	red-eyed vireo	*Vireo olivaceus*
	yellow-throated vireo	*Vireo flavifrons*
	white-eyed vireo	*Vireo griseus*
	chestnut-sided warbler	*Dendroica pensylvanica*
	blue-winged warbler	*Vermivora pinus*
	black-and-white warbler	*Mniotilta varia*
	black-throated blue warbler	*Dendroica caerulescens*
	pine warbler	*Dendroica pinus*
*	prairie warbler	*Dendroica discolor*
	yellow-rumped warbler	*Dendroica coronata*
	yellow warbler	*Dendrocica petchia*
	horned lark	*Eremophila alpestris [s]*
	killdeer	*Charadrius vociferus*
	cedar waxwing	*Bombycilla cedrorum*
	whip-poor-will	*Caprimulgus vociferous [s]*
	American woodcock	*Philhela minor*
	Eastern wood-peewee	*Contopus virens*
	downy woodpecker	*Picoides pubescens*
	hairy woodpecker	*Picoides villosus*
	red-bellied woodpecker	*Melanerpes carolinus*
	yellow bellied sapsucker	*Sphyrapicus varius*
	Carolina wren	*Thryothorus ludovicianus*
	house wren	*Troglodytes aedon*
	common yellowthroat	*Geothlypis trichas*
*	mallard	*Anas platypterus*

[s] special concern species
*species observed by NP&V staff, summer of 2000

Two larger insectivores, the eastern and star-nosed moles, are also found on Long Island. The star-nosed mole prefers wetlands, but is rare and only locally present. The eastern mole is found in a variety of upland habitats, including woodlands, fields and suburban lawns throughout the island. Moles dig tunnels which are also used by mice and shrews. The species is probably most common in the rich soils of deciduous woodlands along the north shore. It is also found in pine barrens, dunes and salt marsh borders, but seems to avoid fresh water swamps and marshes **(Connor, 1971).**

Several rodents are found on Long Island. Mice are typically omnivorous, feeding on grasses, herbs, roots, tubers and, occasionally, small invertebrates. The white-footed mouse is abundant in a wide variety of habitats, including wetlands, dry fields, woods and, occasionally in buildings **(Connor, 1971).** It is one of the most common mammals on the Island, although local populations typically fluctuate greatly from year to year **(Connor, 1971)**. The meadow mouse prefers grasslands, dunes and marshes, but is not found in the dry woodlands found over most of Long Island **(Connor, 1971).** This species is generally restricted to open habitats. The pine mouse is less abundant than the shrews and other mice discussed above, but it is common in fields and woods with light sandy soils away from the shore. It prefers areas with a thick leaf mold or herbaceous groundcover (**Whitaker, 1996**). The house mouse, black rat, and Norway rat are introduced European species which prefer to be near human structures and are considered pests. These species are likely to be present in the vicinity of the site.

The meadow jumping mouse is rare and only locally present on Long Island, and is most abundant in eastern Suffolk County (**Connor, 1971**). The species prefers open sandy areas dominated by grasses or other low vegetation. They are often found near saltwater marshes and bays and in habitats behind the ocean dunes, but are rarely found within the salt marsh.

Of the larger rodents, the eastern gray squirrel and chipmunk are common on Long Island, and the woodchuck is present in some areas. Gray squirrels are quite tolerant of humans and will use both woodland and open habitats as long as large, nut bearing trees are present for foraging and nesting. On Long Island, they are most common in the oak woodlands of the north shore, but they are also present in pine barrens, where they feed on pine seeds. The species may become a pest, and individuals are often found in the attics of older buildings. **Connor (1971**) indicates that the southern flying squirrel is also present in heavily wooded areas away from developed areas, although its distribution does not appear to extend east of Riverhead. The chipmunk prefers forest and edge habitats with thick understory vegetation, where it feeds on a variety of plant material, but it will utilize suburban areas with sufficient cover **(Connor, 1971; Godin, 1977).** Their home range is relatively small, and the chipmunk will utilize narrow treed buffer areas. The eastern gray squirrel was observed, as well as several squirrel nest sites, and the chipmunk was abundant.

The woodchuck, or ground hog, has a scattered distribution throughout central Suffolk County. It is found in a variety of habitats, including fields, meadows, brushy areas and woods, but is only locally present **(Connor, 1971)**. Woodchucks were abundant on site, and approximately 12 den sites observed, with 4 known to be active.

Bats typically prefer areas near water where there are abundant insects for feeding, and thus should be found on or near site. Due to the absence of caves on Long Island, these species generally roost in colonies in the attics of buildings, although some species will occasionally roost in trees **(Connor, 1971).** The big brown bat is present throughout the year, and is the most common bat in many areas of Long Island **(Connor, 1971)**. The most common summer bats are the little brown myotis and Keen's bat, and the red bat and eastern pipistrelle are also present in small numbers **(Connor, 1971)**. The silver haired bat and hoary bat are found on the Island only during seasonal migrations. All of these species are tolerant of humans, and may be present on site at times.

The eastern cottontail is the most common rabbit on Long Island, although the similar New England cottontail is also locally present. The cottontails occupy a variety of habitats, including both dry and swampy woods, fields, bogs, dunes and shrublands **(Connor, 1971)**. The New England cottontail appears to prefer woody habitats, but is more secretive than the eastern cottontail **(Connor, 1971, Whitaker, 1996)**. The two species are difficult to distinguish based on field identification **(Connor, 1971).** The Eastern cottontail is tolerant of humans and utilizes suburban lawns and gardens extensively if food is available. This species was observed on site.

The opossum is the only marsupial on Long Island, and makes use of a variety of habitats including brushy areas, woods and farmland, as well as suburban areas with cover. It is abundant on Long Island, and is often killed on roadways where it feeds on carrion as well as fruits and small animals (**Whitaker, 1996**).

The white-tailed deer, the largest mammal on Long Island, is throughout Long Island where there is sufficient woodland habitat. Deer populations declined after European settlement of the northeastern United States, however, recent decline in the number of large predators, increase in edge habitat, and decline in hunting, allowed increases in deer populations during the twentieth century. Deer are abundant in much of eastern Long Island where suitable cover is present. They will use a variety of wooded habitats, including deciduous woods, pine barrens and swamp borders **(Connor, 1971),** but prefer thickets alternating with open glades and fields in which they "bed down" **(Godin, 1977).** Deer typically move in herds within a home range of 2 to 3 square miles **(Godin, 1983),** and there is ample undeveloped habitat on and in the vicinity of the site to support the species. Deer were observed on site and in the surrounding areas, and deer tracks and other sign indicators of the presence of deer were abundant.

Long Island carnivores include red fox and raccoon. The gray fox was formerly abundant, but is not known from recent collections. **Connor (1971)** indicates that it may be present within wilder habitats of eastern Long Island and within the central pine barrens. The raccoon is common throughout Long Island, but prefers brushy wooded habitats near water. The raccoon is tolerant of humans, and may become a pest, foraging in trash cans, gardens and agricultural fields. They will occasionally cause damage by denning in attics and other structures. Raccoon tracks were abundant near “bait stations”, which are discussed in the following section.

The red fox is found throughout Suffolk County in a variety of habitats with limited human development, and often hunts in freshwater and marine wetlands. Fox typically prefer diverse habitats consisting of "intermixed cropland, rolling farmland, brush, pastures, mixed hardwood stands and edges of open areas that provide suitable hunting grounds" **(Chapman and Feldhamer, 1982).** Much of this habitat has been either urbanized or allowed to revert to dense forest throughout the northeast U.S. The dense understory of the wooded areas on site should provide suitable cover, and fox are probably present. Prey species, including small mammals, particularly mice and rabbits, birds, and insects, should be abundant. Fox also feed on berries, carrion, and, occasionally, aquatic organisms.

Reports of the home range size of foxes vary, and home range appears to be influenced greatly by habitat availability. **Chapman and Feldhamer (1982)** report ranges from 140 to 400 acres depending on the habitat, though regardless of size, home ranges are generally twice as long as they are wide. Home range size is determined by "abundance of food, degree of intraspecific and interspecific competition, type and diversity of habitat and the presence of natural physical barriers such as rivers or lakes" **(Wade et al., 1990).** It appears as though with diminished amounts of open land, the range of the fox increases. A study of red foxes done in New York State during the 1970's by the NYSDEC at Delmar found larger home range sizes of approximately one and a half square miles. The study also found that populations shifted greatly from year to year **(personal communication, Ben Tullar, NYSDEC, December, 1989).**

Although not considered wildlife, several feral cats were observed on the property. The presence of feral cats on site would be expected to exclude the presence some wildlife species and/or reduce the population numbers of species currently utilizing the site. **Table 2-10** contains a list of the mammal species which are expected to occur on site because of existing conditions in the area or immediately surrounding it. This list is not meant to be all inclusive, but was prepared as part of several field inspections to provide a detailed representation of what was or may be found on site.

<u>Amphibians and Reptiles</u>
Although only the eastern box turtle was observed on the property, the site may support a limited number of terrestrial species. Two toads are common on Long Island in the upland habitats. The spadefoot toad occurs in woods, shrublands and fields with dry, sandy loam soils, and breeds in temporary pools **(Behler and King, 1979).** The Fowler's toad prefers sandy areas near marshes, irrigation ditches and temporary pools. These species are the most likely amphibians to be present on the site. Salamanders and frogs would not be expected on the property, as they typically require either moist woodland habitat or permanent pools.

Several species of reptiles might potentially be found on the property, including the eastern garter snake, eastern hognose snake, black racer and eastern milk snake **(Wright, 1957).** All of these species are terrestrial species found in a variety of habitats. The garter snake is relatively tolerant of human activity, but prefers moist soils and would be most likely to be present near the recharge basin to the north. The black racer and hognose snake prefer dryer soils while the milk snake is found in soils of varying moisture content. These snakes are all colubrid snakes, which feed on whole animals such as worms, insects or small amphibians **(Behler and King, 1979)**. The larger milk snake, black racer and hognose snakes will also take small rodents and birds **(Behler and King, 1979)**.

Most salamander species require both undisturbed moist woods for foraging and standing water for breeding. The red-backed salamander is the most common salamander on Long Island, and is highly terrestrial. It prefers a dry woodland habitat with plenty of leaf litter and fallen logs in which to forage for insects **(Bishop, 1943),** and generally lays its eggs in clumps on damp logs or moss (**Conant and Collins, 1991**).

TABLE 2-10
MAMMALIAN SPECIES LIST

*	eastern cottontail	*Sylvilagus floridanus*
	big-brown bat	*Eptesicus fuscus*
	hoary bat	*Lsiurus borealis*
	Keen's bat	*Myotis Keenii*
	little brown bat	*Myotis lucifugus*
	red bat	*Lasiurus borealis*
	eastern pipistrelle	*Pipistrellus subflavus*
	silver-haired bat	*Lasionycteris noctivagans*
*	eastern chipmunk	*Tamis Striatrus*
	eastern mole	*Scalopus aquaticus*
	house mouse	*Mus musculus*
	white-footed mouse	*Peromyscus leucopus*
	black rat	*Rattus rattus*
	Norway rat	*Rattus norvegicus*
	short-tailed shrew	*Blarina breuicauda*
	masked shrew	*Sorex cinereus*
	least shrew	*Cryptotis parva*
	meadow mouse	*Microtus pennsylvanicus*
	pine vole	*Microtus pinetorum*
*	raccoon	*Procyon lotor*
	Virginia opossum	*Didelphis virginiana*
*	eastern gray squirrel	*Sciurus carolinensis*
	red fox	*Vulpes vulpes*
*	white-tailed deer	*Odocoileus virginianus*
*	woodchuck	*Marmota monax*
*	domestic cat	*Felis domestica*

* Species observed on site by NP&V staff, summer of 2000

The only turtle species common to terrestrial habitats on Long Island is the eastern box turtle, which requires very little water **(Obst, undated).** The species is found in a variety of habitats, but prefers moist woodlands. The species feeds on primarily on slugs, earthworms, wild strawberries and mushrooms **(Behler and King, 1979)**. As previously stated, a young eastern box turtle was observed on site, and a larger shell was also found.

Table 2-11 is a list of amphibian and reptile species that might occur on site given the existing habitat. This list is not intended to be all-inclusive but provides a detailed representation of what is likely to be found on site.

TABLE 2-11
AMPHIBIAN AND REPTILE SPECIES LIST

	Amphibians	
	Fowler's Toad	*Bufo woodhousei fowleri*
	eastern spadefoot toad	*Scaphiopus holbrooki*
	red-backed salamander	*Plethodon cinereus cinereus*
	Reptiles	
	common garter snake	*Thamnophis sirtalis*
	eastern hognose snake	*Heterodon platyrhinos [s]*
	eastern milk snake	*Lampropeltis triangulum*
*	Eastern box turtle	*Terrepene carolina*

* Species observed on site by NP&V staff, summer of 2000
[s] NYSDEC special concern species

Rare Species/Habitat Potential

Of the species listed as being likely on the site, the common nighthawk, barn owl, eastern bluebird, horned lark, whip-poor will, and eastern hognose snake are listed as special concern species. Special concern species are native species which are not recognized as endangered or threatened, but for which there is documented concern about their welfare in New York State as a whole. Unlike threatened or endangered species, species of special concern receive no additional legal protection under New York Environmental Conservation Law Section 11- 0535. This category is intended to enhance public awareness of those species which deserve additional attention.

No rare, threatened or endangered species were observed on site. The NY Natural Heritage Program (ECL 9-1503) was contacted to determine if there is any record of rare plants or wildlife in the vicinity. The Program does not identify this area as a Significant Wildlife Habitat, and maintains no records of known occurrences of rare or state-listed animals or plants, significant natural communities, on or in the immediate vicinity of the site. An additional verbal request with the NY Natural Heritage Program requested information within a ½ mile radius of the subject site; correspondence from which identified the presence of one unprotected beetle and an endangered amphibian. Correspondence with the NY Natural Heritage Program is contained in **Appendix D-2**. Additionally, it should be noted that the site is not located within a designated Significant Coastal Fish and Wildlife Habitat.

The tiger beetle is listed as an unprotected species that is historically known from New York State, but not seen in the past 15 years. This species was last observed in 1946, making it unlikely that it is currently present in the area. Globally, the beetle is listed as either rare and local throughout its range, or found locally in a restricted range, or vulnerable to extinction throughout its range because of other factors.

The tiger salamander, an NYS endangered species, was identified in 1991 in a series of small ponds associated with the Kroemer Avenue ponds. This species is classified as having typically 21 to 100 occurrences, limited acreage, or miles of stream in New York. Globally, the tiger salamander is listed as demonstrably secure, although it may be rare in parts of its range, especially at the periphery. It should be noted that federally, the species has "partial status", meaning the species is listed in parts of its range and not in others, or one or more subspecies or varieties is listed, while the others are not listed.

The tiger salamander is a mole salamander which spends much of its adult life underground. The species breeds primarily in vernal ponds. The tiger salamander spends most of its adult life underground within moist woodlands, except during the breeding season in late winter and early spring. Migrations to the breeding pond are prompted by the first warm rains, and adults remain in the ponds for only a few weeks before returning underground (**Cryan, 1984**). The eggs hatch after three to four weeks, and the larvae remain in the pond until early summer before metamorphosis to the adult stage. Although most adults remain in close proximity to the breeding pond, some individuals may migrate a significant distance following metamorphosis from the larval stage. The NYSDEC typically requires that 50 percent of woodland vegetation be retained within 1000 feet of a tiger salamander breeding pond.

Although the site does not contain suitable breeding habitat for this species, tiger salamanders have been documented to migrate as much as 275 meters on Long Island, although the average distance traveled is typically a few hundred yards **(Mr. Kallagi, NYSDEC, 2000).** The site is roughly estimated at approximately 1,000 feet from the breeding pond. It is noted that CR 58 lies between the subject site and the tiger salamander breeding pond, thereby creating a physical barrier. The area surrounding the documented breeding pond is expected to contain suitable habitat for the species, primarily based on Town and State approvals of the surrounding developments located between the subject site and the breeding ponds. Additionally, it is expected that these developments and area roadways would provide sufficient migration barriers for the species in terms of utilizing the subject site, and/or it would be expected that the species would suffer direct losses during migration towards the site. The site does not contain suitable breeding habitat for the species.

2.4.3 Scientific Field Observation/Collection Studies

Several additional studies involving scientific field methodologies were completed to determine species presence on site, each of which explained in detail below. The site was visited on numerous occasions through the summer months, as well as at different times of day. The inventory was collected in this manner to avoid "missing" species, such as nocturnal species, migrant birds, flowering plants, etc. In addition to several systematic assessments of the property, the entire site was also randomly traversed which also accounted for a large number of inventoried species listed in the preceding vegetation and wildlife sections. **Figure 2-6** provides a location map documenting wildlife point observation stations and **Figure 2-7** indicates the location of the set wildlife traps. Discussion of these inventory methods is provided below. A copy of the appropriate NYSDEC collection license is contained in **Appendix D-6.**

FIGURE 2-6

POINT OBSERVATION STATION LOCATION MAP

Source: Aerial Photograph, 1999
Scale: 1" = 200'

NORTH

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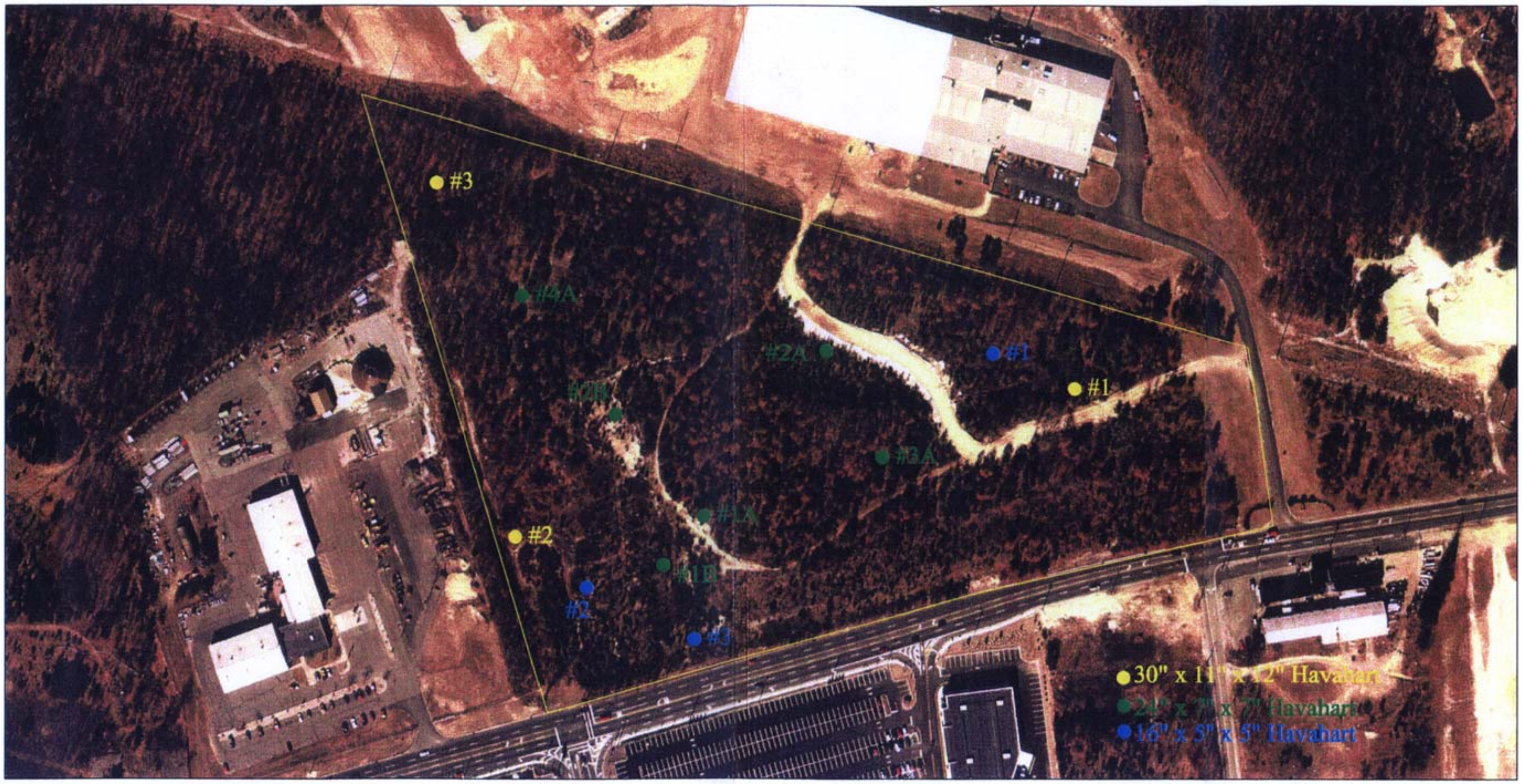
FIGURE 2-7

TRAP LOCATION MAP



Source: Aerial Photograph, 1999
Scale: 1" = 200'

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Wetland Delineation

On July 7th, 2000, a wetland delineation was conducted on the drainage areas using the wetland identification and delineation methodology described in the 1987 Federal Manual for Identifying and Delineating Jurisdictional Wetlands. As previously stated, these drainage areas are not mapped as regulated wetlands on the NYSDEC Freshwater Wetland Maps, and therefore not regulated by the State of New York. The ponded areas are considered "Water of the United States", and thus regulated by the US Army Corps of Engineers (Corps). The jurisdictional confirmation application and notice of action was submitted to the Army Corp of Engineers are included in **Appendix D-1.** Correspondence received from the ACOE will be provided via an addendum to this report.

Specific methods and steps were taken to review information about the site. Data sources included:

- US Fish and Wildlife Service National Wetlands Inventory Map;
- US Department of Agriculture, Soil Conservation Services Soil Survey for Suffolk County;
- New York State Freshwater Wetland Map; and
- US Geological Survey Topographical Map

The US Fish and Wildlife Service Wetland Map does not identify regulated wetlands on the subject site, and the US Geological Survey quadrangle does not reveal the presence of significant water features within the project area. As previously stated, the New York State maps did not reveal the presence of any freshwater wetlands within the project location. The USDA Soils map identified Carver and Plymouth Sands, 15 to 35% slopes (CpC) in the area of the ponded drainage retention areas. Carver and Plymouth sand is a non-hydric soil and, on site, generally extends the length of the intermittent stream located along the southern portion of the western property boundary. Based on surrounding developments and area topography, it is expected that the intermittent stream no longer functions on the property, although this portion of the natural drainage area remains.

An on-site investigation was performed to identify and delineate the limit of Federal jurisdiction using the methodology required in the Manual. Surface waters that are unvegetated and remain inundated for more than seven days of the growing season are considered "Waters of the United States". Also, under the Manual, areas containing the three basic environmental parameters are considered a wetland. These include: (1) hydrophytic vegetation; (2) hydric soils; and (3) wetland hydrology. All wetlands are classified as "Waters of the United States". Only two low lying areas within existing drainage gullies contained sufficient evidence to be considered a "Water of the United States".

The following generally outlines the method of delineation used to determine the freshwater wetlands boundaries on site, as followed by the Army Corps of Engineers wetland delineation manual **(1987)**:

Step 1- Identify the plant community types

Step 2- Determine whether normal environmental conditions are present
Step 3- Characterize each plant community type and determine dominance
Step 4- Record indicator status of dominant species
Step 5- Determine whether hydrophytic vegetation is present (50% of the dominant species have an indicator status of OBL, FAC &/or FACW)
Step 6- Determine hydric soils using soil auger or spade. Examine sample using Munsell Soil Chart to determine presence/absence of hydric soils
Step 7- Determine hydrology
Step 8- Make a wetland and/or non-wetland determination boundary

Using this method of determination, the necessary data was recorded for each individual wetland. The boundaries of the wetlands were then delineated. Federal jurisdiction on the property was limited to the low-lying areas containing standing water. No communities of wetlands were found adjacent to these areas due to the surrounding topography and non-hydric soils.

<u>Wildlife Point Observation Stations</u>
In addition to the species observed while randomly traversing the site, twelve point observation stations were utilized in order to collect more specified data on species presence, relative abundance and habitat use. The point observation stations were positioned at predetermined locations throughout the site by utilizing a 1999 aerial photograph and previous field inspection information. Each point chosen allowed a sufficient radius in which to observe wildlife species and to allow comparability among the different habitat types and degrees of succession found on site. The data collected will be utilized to determination an approximate relationship between species dominance and relative abundance across variation in habitat types found on site.

Surveys were conducted during dawn hours (roughly 6:30 AM – 8:30 AM) on June 22, 2000. Each point observation station was surveyed over a 10 minute duration, and data collected included wildlife species, sex (if possible), and an estimated number of individuals that were observed. Additional notations were added if necessary. It should be noted that many individuals identified within each station were heard and not observed; "heard" species were counted only as a single individual during the allotted time frame at each station, due to difficultly of making a determination on an actual count without direct observation. Additionally, as the majority of the species noted on the data sheets are highly mobile species, and individuals may have been counted in previous point observation stations. The data collected is included in **Table 2-12** below, and the locations of the point observation stations are depicted in **Figure 2-6.**

As can be seen above, avian species most commonly observed and most abundant were the gray catbird, rufous-sided towhee, prairie warbler, chipping sparrow and European starling. Generally, the greatest diversity observed throughout each point observation station was located near the corners of the subject parcel and not toward the interior. Conversely, however, the greatest number of individuals seen per station were observed toward the interior of the site, rather than near the property boundaries. Sight distance through forested vegetation limited the number of species that were counted, as only those that were directly observed were recorded and those that were heard were counted only once. Additionally, the majority of the species observed are typically common suburban species, which are expected to be more abundant on site than more sensitive species.

TABLE 2-12
POINT OBSERVATION STATION DATA

Station No.	Species	Sex (M/F/U)	Number Observed	Notes:
#1	Catbird	U	4*	Juvenile observed
	Red winged blackbird	M/F	2	
	American robin	U	2	
	Prairie warbler	U	3	
#2	European starling	U	6	
	Gray catbird	U	1	
	Blue jay	U	1	
#3	Chipping sparrow	U	5	
	Cottontail rabbit	U	1	
#4	Chipping sparrow	U	4	
	Prairie warbler	M/F/U	5	
	Gray catbird	U	4	
#5	Rufous-sided towhee	M/F	3*	
	European starling	U	3	
#6	Gray squirrel	U	1	
	European starling	U	2	
	Rufous-sided towhee	M/F	3	Juvenile observed
#7	Blue jay	U	1	
	Rufous-sided towhee	F	2	
	Chipmunk	U	1	
#8	Rufous-sided towhee	M/U	3*	Juvenile observed
	Black-capped chickadee	U	4	
	Red-eyed vireo	U	1	
	Gray catbird	U	1	
#9	Rufous-sided towhee	M	1	
	Gray catbird	U	3	Juvenile observed
#10	Gray catbird	U	1	
	Northern flicker	U	1	
	Blue jay	U	1	
	Northern cardinal	M	1	
	Mourning dove	U	2	
#11	Blue jay	U	1	
#12	American crow	U	2	
	Blue jay	U	1	
	Black-capped chickadee	U	1*	
	Prairie warbler	U	2*	
	Gray catbird	U	2	

*indicates "heard" individual

Upland Trapping Study

Live box traps, or cage traps (i.e., Havahart traps), were utilized to determine presence of mammalian wildlife on site. Three trap sizes were used and numbered during data collection. The dimensions are as follows:

- Trap “A” - 30”x11”x12”
- Trap “B”- 24”x7”x7”
- Trap “C”- 16”x5”x5” (two were utilized)

Traps were placed randomly throughout the property for a period of roughly 1 week and were monitored at least once every 24 hours. Traps were typically set in the evening and monitored the following morning, and subsequently relocated and rebaited. Initial traps were set in the evening between the hours of 4:00 PM - 5:00 PM, and checked by 6:00 AM - 8:00 AM the following morning. A variety of bait was used and consisted of canned cat food, sardines and/or peanut butter mixed with oats. Traps were baited to exclude some species, such as the eastern cottontail, gray squirrel, and woodchuck, as these species are known to utilize the site. Trapping data is located in **Table 2-13** below. Locations of the individual traps set are depicted in **Figure 2-7.**

As can be seen, no wild mammals were captured using this method, with only a feral cat captured. Bait was removed from traps on several occasions, and traps were often sprung without capturing an animal. This is not uncommon when trapping in the wild, especially when utilizing smaller traps. The smaller traps are very sensitive and easily sprung. Animals attempting to reach bait from the outside of the trap may spring the trap without capture, and species not large enough to spring the trap may quickly remove the set bait.

Additionally, several bait stations were set and monitored, particularly to target those species and/or individuals who are “trap shy” and will not enter box traps, or those species who are either too larger or too small for capture in the traps utilized. Bait stations consisted of smoothed earth with bait placed at the center, with determinations of species presence based on track identification. Stations were located at various points along the existing dirt trails. Bait was removed at every station by the following morning. Species identification consisted entirely of cat and raccoon tracks.

TABLE 2-13
TRAPPING DATA SHEETS

Trap #A (green)

Map Ref. #	Date	Time	Set/Rel.	Bait/Method	Species	Location/Notes
#1	6/15/00	4:30 pm	Set	PB/Oats	---	woodpile
	6/16/00	2:00 pm	Remove	---	---	bait remain
#2	06/21/00	4:00 pm	Set	PB/Oats	---	small grassy opening
#3	06/22/00	7:30 am	Set	Chicken	---	bait gone, not set
	06/23/00	6:30 am	Remove	---	---	partial bait remain

Trap #B (green)

Map Ref. #	Date	Time	Set/Rel.	Bait/Method	Species	Location/Notes
#1	6/15/00	4:30 pm	Set	PB/Oats	---	successional old field
	6/16/00	2:00 pm	Remove	---	---	bait remain
#2	06/21/00	4:00 pm	Set	PB/Oats	---	woodpile
#3	06/22/00	7:30 am	Set	Chicken	---	bait gone, not set
	06/23/00	6:30 am	Remove	---	---	bait remain

Trap #C (blue)

Map Ref. #	Date	Time	Set/Rel.	Bait/Method	Species	Location/Notes
#1	6/15/00	4:30 pm	Set	Sardines	---	den entrance
	6/16/00	2:00 pm	Remove	---	---	bait gone, trap sprung
#2	06/21/00	4:00 pm	Set	PB/oats	---	old field habitat
#3	06/22/00	7:30 am	Set	Chicken	---	rained over night- bait remain
	06/23/00	6:30 am	Remove	---	---	bait remain

Trap #D (yellow)

Map Ref. #	Date	Time	Set/Rel.	Bait/Method	Species	Location/Notes
#1	6/15/00	4:30 pm	Set	Sardines	---	den entrance by woodpile
	6/16/00	2:00 pm	Release	---	feral cat	---
#2	06/21/00	4:00 pm	Set	Tuna cat food	---	old field habitat
#3	06/22/00	7:30 am	Set	Chicken	---	rained over night- bait remain
	06/23/00	6:30 am	Remove	---	---	bait gone, no tracks

In conclusion, the site was monitored using scientific field methods. In addition to those species directly observed, the site was considered for potential species based on general habitat types. No forest interior or secretive species were identified on site, and no threatened, endangered or special concern species were observed. The site is subject to highway noise and local activity impacts, and is also subject to domestic impacts as identified by the presence of feral cats. The site does not support unique wildlife populations, but rather a number of common and adaptable species were found to be present.

2.5 Transportation

Volume 2 contains the Traffic Impact Study (TIS) prepared for the proposed project. The overall site analyzed in the TIS consists of two separate properties. These properties are adjacent to each other and are planned for development simultaneously by a single developer. For purposes of the TIS, the proposed lumberyard complex is one site with additional development potential which, though not proposed at this time, is considered in the TIS. Parcel A consists of 21.21 acres (the proposed project site) and Parcel B consists of 2.71 acres. Construction of an Applebee's restaurant has already begun on a portion of Parcel B, and potential development of four take-out restaurants is also analyzed. The Applebee's is considered an existing development in the TIS, with the four take-out restaurants considered as additional development. The following description/discussion of the current transportation resources is taken from the TIS.

2.5.1 Roadway Description and Major Intersections

The major facilities that provide direct assess to the proposed development are CR 58, NYS Route 25, and Kroemer Avenue.

CR 58 is a major east/west Suffolk County roadway. In the vicinity of the site, CR 58 has two eastbound lanes and one westbound lane. Separate turning lanes are provided at major intersections.

NYS Route 25 is a major east/west undivided roadway. In the vicinity of the site, NYS Route 25 has one eastbound and one westbound travel lane. Separate turning lanes are provided at major intersections.

Kroemer Avenue is a north/south Town of Riverhead roadway that extends from NYS Route 25 in the south to CR 58 in the north. In the vicinity of the site, Kroemer Avenue has one northbound and one southbound lane. An additional northbound turn lane is provided at Kroemer Avenue and CR 58.

The following signalized intersections exist within the vicinity of the site:

- CR 58 at the existing Tanger Factory Outlet Center II driveway
- CR 58 at Kroemer Avenue
- CR 58 at Mill Road

The lane configurations on the approaches of the intersection of CR 58 and the Tanger Factory Outlet Center II driveway are the following:

1. Eastbound Approach	Two thru lanes and one separate right-turn lane
2. Westbound Approach on CR 58	One exclusive left-turn and two thru lanes
3. Northbound Approach on Tanger Outlet Drive	Two left-turn lanes and a separate right-turn lane lane

The lane configurations on the approaches of the intersection of CR 58 and Kroemer Avenue are the following:

1. Eastbound Approach on CR 58:	One thru lane and one combined thru/right turn lane.
2. Westbound Approach on CR 58:	One exclusive left-turn lane and one thru lane.
3. Northbound Approach on Kroemer Avenue:	One exclusive left-turn lane and one exclusive right-turn lane.

The lane configurations on the approaches of the intersection of CR 58 and Mill Road are the following:

1. Eastbound Approach on CR 58:	One exclusive left-turn lane, one thru lane and one separate right-turn lane.
2. Westbound Approach on CR 58:	One exclusive left-turn lane, one thru lane and one separate right-turn lane.
3. Northbound Approach on Mill Road:	One combined left-turn/thru lane and one separate right-turn lane.
4. Southbound Approach on Mill Road:	One combined left-turn/thru lane and one separate right-turn lane.

The following unsignalized intersection exists within the vicinity of the site:

- NYS Route 25 at Kroemer Avenue/Forge Road.

The lane configurations on the approaches of the intersection of NYS Route 25 and Kroemer Avenue/Forge Road are the following:

1. Eastbound Approach on NYS Route 25:	One combined left-turn/thru/right-turn lane.
2. Westbound Approach on NYS Route 25:	One combined left-turn/thru lane and one exclusive right-turn lane.
3. Northbound Approach on Forge Road:	One combined left-turn/thru/right-turn lane
4. Southbound Approach on Kroemer Avenue	One exclusive left-turn lane and one separate right-turn lane.

2.5.2 Grades and Sight Distances

There are no sight distance problems along CR 58 in the vicinity of the site. The grades along CR 58 and Kroemer Avenue are generally flat. The vertical curves along Mill Road and the horizontal curves along CR 58, Kroemer Avenue, and Mill Road are also so slight that they do not create sight distance problems.

A crest vertical curve exists west of Kroemer Avenue on NYS Route 25 due to the LIRR bridge. However, this vertical curvature is not severe, and adequate sight distance is available for safe operation at the intersection.

2.5.3 Traffic Volumes and Accident Records

Available traffic flow information was obtained from the SCDPW and the NYSDOT. The available information, provided in the “Agency Counts” section of the **Volume 2** appendix, consisted of hourly volumes from machine counts for coverage count stations on CR 58 in the vicinity of the site of the proposed development. An examination of these data revealed that the weekday AM peak period is from 7:00 AM to 9:00 AM, while the weekday PM peak period is from 4:00 PM to 6:00 PM.

To supplement available traffic volume information, intersection turning movement counts were collected during the above weekday AM and PM peak periods and during the Saturday peak period from 12:00 Noon to 4:00 PM. Counts were taken between June 1999 and October 1999 at the following locations:

- CR 58 at the existing Tanger Factory Outlet Center II Driveway
- CR 58 at Kroemer Avenue
- CR 58 at Mill Road

Counts were taken in June 2000 at:

- NYS Route 25 at Kroemer Avenue/Forge Road

Turning movement count data is provided in the "Traffic Volume Counts" section of the **Volume 2** appendix.

On the east end of Long Island, traffic volumes are higher in August than in any other month. To provide a conservative, worst case examination of the traffic impact of the proposed development, some turning movement counts were adjusted to reflect August volumes. July and October volumes closely resembled August volumes, so these counts were left unchanged. However, June volumes were noticeably lower than August volumes, so these counts were increased by 7%.

An accident history on CR 58 for the period from April 1, 1996 to March 31, 1999 was obtained from the SCDPW. An accident history on NYS Route 25 was obtained for the same time period from the NYSDOT. The information provided by both the County and the State is provided in the "Accident Records" section of the **Volume 2** appendix. A summary of the accidents is shown in **Table 2-14**.

Most locations in the vicinity of the site have a history of minimal accident occurrence. Site-generated traffic added to the street network in conjunction with the roadway and traffic signal improvements described in this report are not anticipated to detrimentally impact current accident rates.

2.5.4 Capacity Analysis and Level of Service

Table 2-15 presents the results of the capacity analysis computations for the intersections studied. The results indicate that there are acceptable levels of service (LOS) at most of the intersections analyzed during the AM, PM and Saturday peak hours, except for the weekday PM peak hour at CR 58/Mill Road, and weekday PM peak hour at NYS Route 25/Kroemer Avenue.

TABLE 2-14
ACCIDENT SUMMARY

Location	NUMBER OF ACCIDENTS				
	4-1-1996 thru 12-31-1996	1-1-1997 thru 12-31-1997	1-1-1998 thru 12-31-1998	1-1-1999 thru 03-31-1999	Total
CR 58 at the E/B LIE Exit Ramp	0	0	0	1	1
CR 58 between the LIE Exit Ramp and the Tanger Factory Outlet Center II Driveway	2	4	1	0	7
CR 58 between the Tanger Factory Outlet Center II Driveway	0	4	4	0	8
CR 58 between the Tanger Factory Outlet Center II Driveway and Kroemer Ave.	0	0	2	1	3
CR 58 at Kroemer Avenue	4	6	5	1	16
NYS Route 25 at Kroemer Avenue/Forge Road	N/A	N/A	N/A	N/A	18

TABLE 2-15
SUMMARY OF INTERSECTION CAPACITY ANALYSES RESULTS
Existing Conditions

Location/ Time Period		2000 Existing	
		LOS	V/C
CR 58 at the Tanger	AM	B	0.38
Factory Outlet Center II	PM	B	0.51
Driveway	Sat	B	0.66
CR 58 at Kroemer	AM	A	0.42
Avenue	PM	A	0.76
	Sat	A	0.64
CR 58 at Mill Road	AM	A	0.67
	PM	F	0.88
	Sat	A	0.79
NYS Route 25 at	AM	C	N/A
Kroemer Ave/Forge Rd	PM	E	N/A

2.5.5 Availability of Emergency Services

The availability of police and fire protection services in the vicinity of the proposed development is excellent. The area is patrolled by the NYS Police and the Town of Riverhead Police Department, which headquarters is located on Howell Avenue less than four road-miles from the site.

The area is also protected by the Riverhead Fire Department. The firehouses nearest to the proposed site are Sub-Station No. 1, on Hamilton Avenue, and Sub-Station No. 3, at the intersection of Riley and Twomey Avenues. These facilities are approximately 2.1 and 3.0 road-miles southeast and northwest of the site, respectively. The Riverhead Fire Department headquarters is on the north side of Second Street east of Roanoke Avenue, approximately four road-miles from the site. Other facilities are Sub-Station No. 2, located on the south side of Hubbard Avenue west of CR 105, approximately 7.5 road-miles east of the site.

Ambulance services are also available in the area; the independent Riverhead Volunteer Ambulance Corps' principal house is located at Osborn Avenue at CR 58, approximately 1.5 road-miles to the east. Finally, Central Suffolk Hospital is approximately two road-miles from the site.

Due to the presence of police patrols, the proximity of the fire services, and the availability of ambulance and medical services, it should be recognized that excellent emergency services are available to the proposed development.

2.5.6 Public Transportation

The Suffolk County Transit S-62 bus route provides service in the vicinity of the proposed development. On weekdays, the S-62 runs between Hauppauge Industrial Center and Riverhead County Center and stops on CR 58 immediately adjacent to the site. Service is provided hourly in both directions. On weekends, the S-62 operates between Smithaven Mall and Riverhead County Center.

2.6 Land Use, Zoning and Plans

2.6.1 Land Use

The project site is located on the north side of CR 58, a major commercial corridor in Riverhead. North of CR 58, the land use pattern of development is dominated by agricultural and residential uses. South of CR 58, the development pattern is more varied, including residential, industrial and commercial uses. NYS Route 25 is located about ½ mile south of CR 58 in this area and follows the north side of the Peconic River.

Along CR 58, the land use development pattern is varied, with a concentration of commercial uses directly opposite the site and a mix of industrial, commercial and recreational uses to the east. **Figure 2-8** provides a 1999 aerial photograph showing the existing land use pattern in the vicinity.

The site is currently undeveloped and vegetated; there are also cleared trails throughout the site, which are plainly visible in **Figure 2-8**. The eastern portion of the site has been cleared and grading is underway for the construction of the approved Applebee's restaurant.

The project site is bounded on the south by CR 58, and on the north by a LIPA right-of-way. To the northwest, the property is bounded by the LIE right-of-way. To the east is the recently-relocated entrance road for Adchem, an industrial use located on the north side of the LIPA right-of-way. To the north of the Adchem facility is a senior citizen housing development.

Opposite the site, on the south side of CR 58, is a service station and truck yard, behind which is the Tanger Factory Outlet mall. To the east of the outlets are additional commercial uses, including a shopping mall and garden center. Farther east is the site of the Riverhead Raceway. West of the site on the north side of CR 58 is a NYSDOT storage and maintenance facility; to the east is a vacant parcel and car dealership. The land uses along the CR 58 corridor continue in a similar manner for several miles to the east before changing to a mix of small retail centers, restaurants, farms, and residential uses in the hamlet of Aquebogue.

2.6.2 Zoning

The project site is currently zoned Industrial A, as depicted on the *Town of Riverhead Zoning Use Districts* map (rev. May 5, 1998). Land contiguous to the east, west and north (the Adchem property) is also zoned Industrial A, as is land to the southeast, across CR 58. Land to the northwest of the site is zoned Agriculture A, while the Tanger property to the south, across CR 58, is zoned Business F. Finally, an Industrial B-zoned property lies to the northeast, discontinuous from the project site. **Figure 2-9** illustrates the existing zoning pattern in the vicinity.

The Industrial A district is designated for industrial use on minimum 40,000 SF lots. Buildings in this district are limited to a maximum height of 35 feet, with minimum front and rear yard setbacks of 50 and 25 feet, respectively. This district permits a broad range of uses, including, but not limited to, agriculture, marina, offices, vehicle repair and warehousing. In addition, the zone limits the outside storage and display of inventory, except in situations where a special use permit is granted by the Zoning Board of Appeals. As indicated in the Town Code, Chapter 108-45, the following uses are permitted in the Industrial A zone, with a Special Permit from the Town Board:

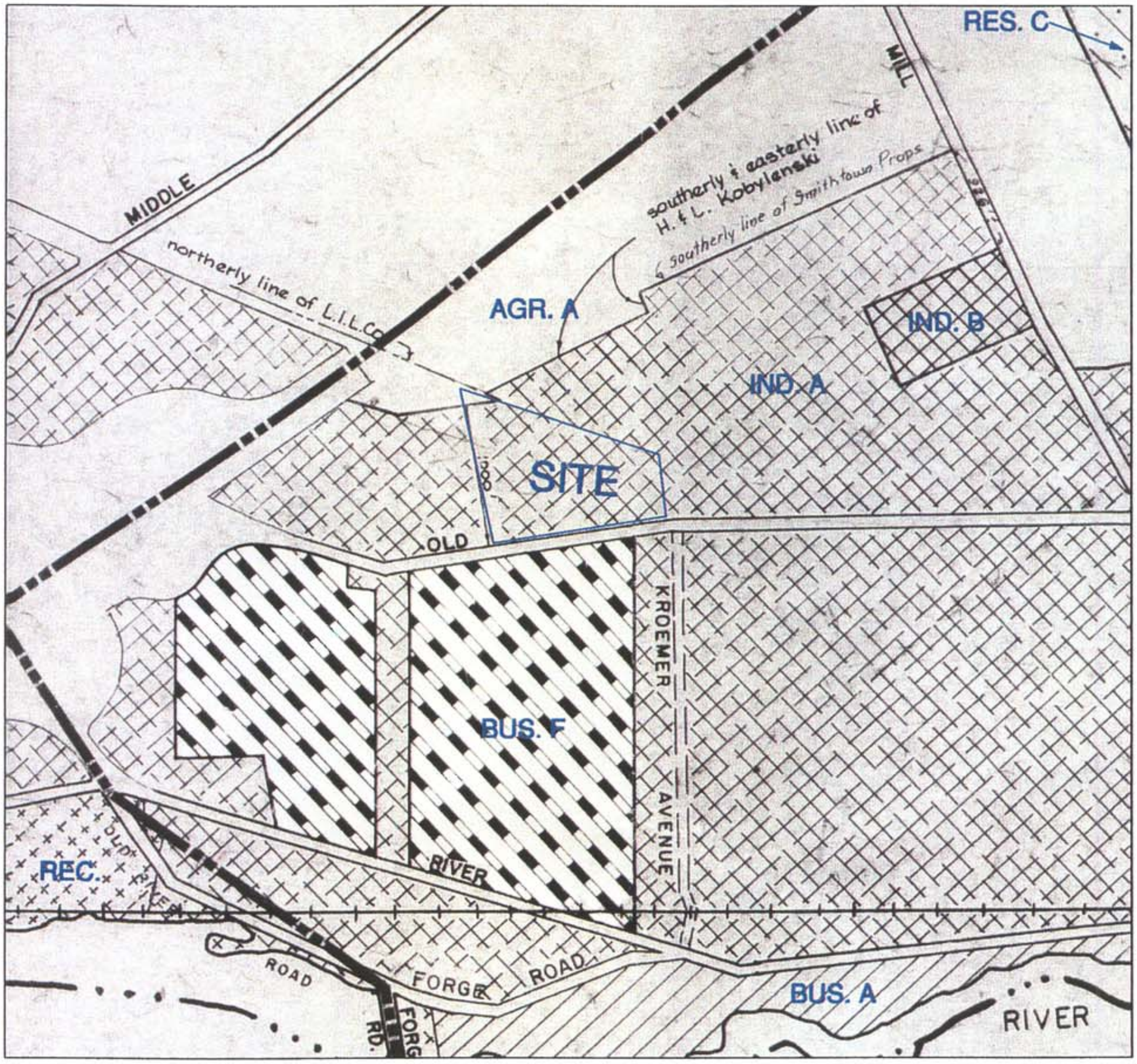
FIGURE 2-8

LAND USE MAP

Source: 1999 Aerial Photographs (GeoMaps, International)
Scale: 1" = 1000'

FIGURE 2-9

ZONING MAP



Source: Town of Riverhead Zoning Map
Scale: 1" = 1,200'

NORTH

- airport
- motels
- restaurants
- wholesale business
- lumberyard
- body and fender repair shop
- motor vehicle repair shop

The zoning pattern in the vicinity is dominated by the Industrial A district. This category is found on land fronting both sides of CR 58 corridor in the vicinity, extending from the western side of the LIE (on the west) to Osborn Avenue (on the east). Within this corridor, there are only two sites not zoned Industrial A: the Business F-zoned Tanger Outlet Mall (directly south of the subject site) and the Business B-zoned commercial area (to the east). The Industrial A zoning designation corresponds to the established mixed rural/industrial nature of the CR 58 corridor in the vicinity.

The land north of the project site, north of the Adchem property and the LIPA right-of-way, is zoned overwhelmingly Agriculture A, though a substantial Industrial B- zoned site is found to the northwest, along the west side of Mill Road, and a large Industrial A site is located to the north, along both sides of Youngs Avenue.

The areas to the south of the project site and extending to the Town boundary (the Peconic River) are zoned primarily Industrial A, with the exception of the Business F-zoned Tanger Outlet mall site mentioned above. This Industrial A zoning extends to Forge Road; between Forge Road and the Peconic River, land is zoned Business A.

In general, the project site lies in the midst of a large amount of Industrial A-zoned land at the western periphery of the hamlet of Riverhead. This area is oriented along both sides of CR 58, forming a wide corridor of land apparently intended by the Town for the mix of rural and industrial uses which have developed here.

In 1997, the Riverhead Town Board, on its own motion, amended the Zoning Ordinance to create a “Destination Commercial Planned Development Overlay District”, intended to *“…allow for multiple commercial and recreational uses (in conjunction with the uses provided for by the underlying zoning) on lands having direct access to major roadways”*. This new zoning category applied to land *“Generally along Old Country Road (CR 58) between Osborne Avenue and the terminus of the LIE”*. Within this area, seven discrete parcels of land were designated for inclusion in this overlay district; the project site was designated #4. However, this District was later successfully challenged in court, and no longer exists in the Town of Riverhead.

2.6.3 Land Use Plans

Town Comprehensive Master Plan (1973)

On December 11, 1974, the Town of Riverhead Planning Board adopted a Comprehensive Master Plan, which was

> …prepared as a means of guiding the Town of Riverhead in orderly growth from its present state to full development. Particular attention is given to the growth expected by 1985 and to the shorter proposed capital budget term ending in 1978.
>
> The general planning goal continues to project the Town of Riverhead as a community of residential neighborhoods with various housing densities supported by a substantial industrial and commercial base. It will emphasize a compatible relationship between community development and protection of the natural environment.

Among the basic planning goals of the Plan were specific discussions of environment and industrial parks, as follows:

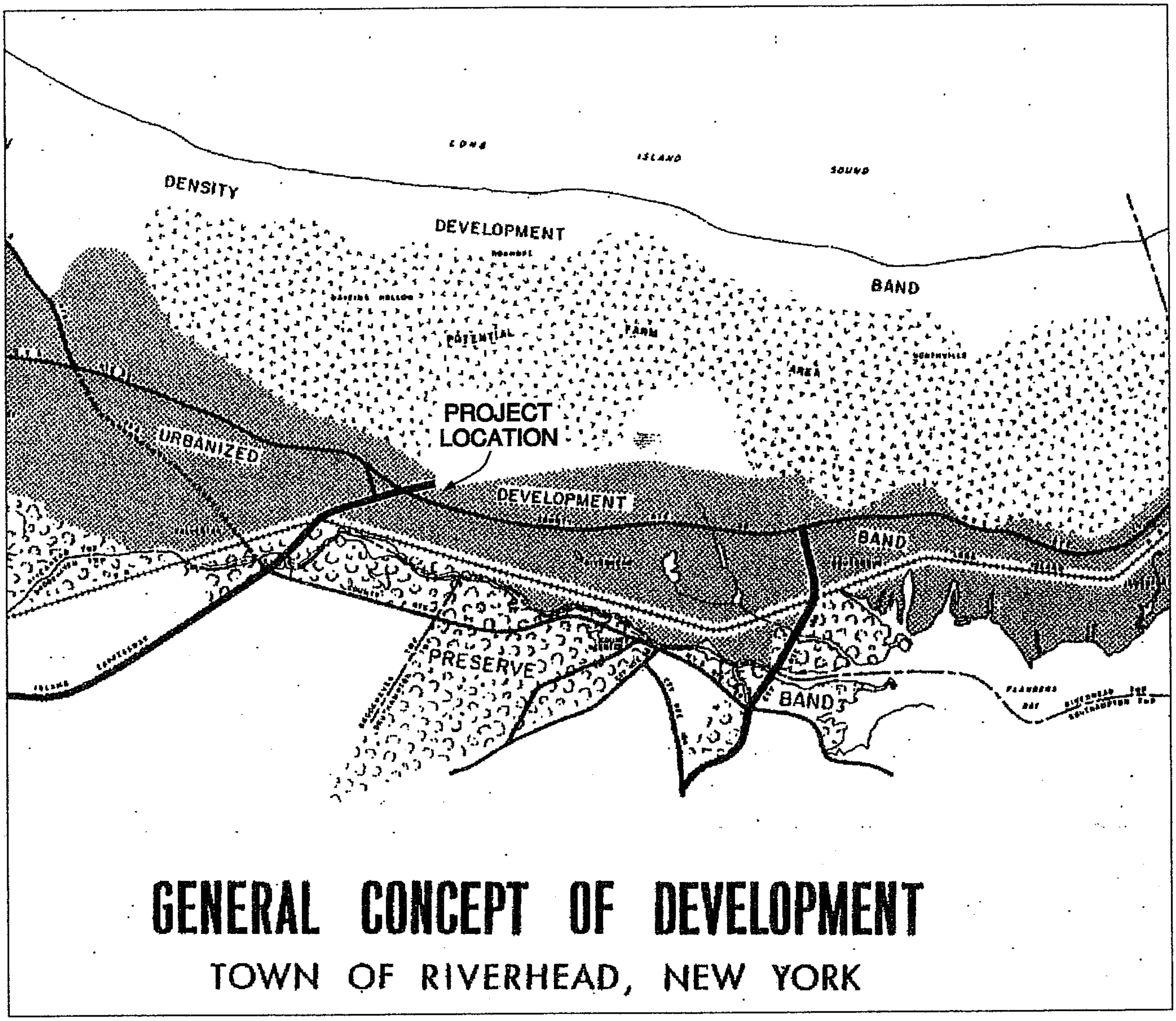
> Environment
>
> The fundamental character of the community should be established through the careful design and preservation of open space, including parklands and other public and semi-public lands, and private open space. The public policies and regulations to accomplish this will be particularly concerned with the wetlands, the Long Island Sound bluffs, wooded and other significant upland areas, natural drainage ways and the protection of the ground water table, and preservation of air quality. Further analysis of the water resource potential shall be called for in relation to compatible environmental and community requirements. Despite the general planning goal, farming is to be encouraged as a feature of the community as long as it proves feasible. As farming phases out, consideration shall be given to planting of trees so that the land may have attractive qualities for residential or other development.
>
> Industrial Parks
>
> There shall be an appropriate amount of land set aside for industrial park development of a higher standard in the vicinity of the Grumman Airport, along the railroad in the Hamlet of Riverhead, and at key points along the Long Island Expressway and County Route 105.

To accomplish these goals, the plan included a general "Urbanized Development Band" oriented along CR 25/CR 58, between the LIE Extension and the LIRR tracks in the vicinity of the project site (see **Figure 2-10**). It should be noted that the extension of the LIE eastward to the Southold town line anticipated at that time has not been implemented. The 1973 Plan designated the project site for use as a "Commercial Industrial Park" (see **Figure 2-11**). The plan stated the following in relation to this proposed land use:

> With the exception of the Special and Village Industry categories, all industrial lands are designated as Commercial-Industrial Park. This category includes both industrial and non-retail

FIGURE 2-10

TOWN COMPREHENSIVE MASTER PLAN - GENERAL CONCEPT



Source: Town of Riverhead Plan for the Route 58 Corridor, 1983
Scale: 1" = 9,500'

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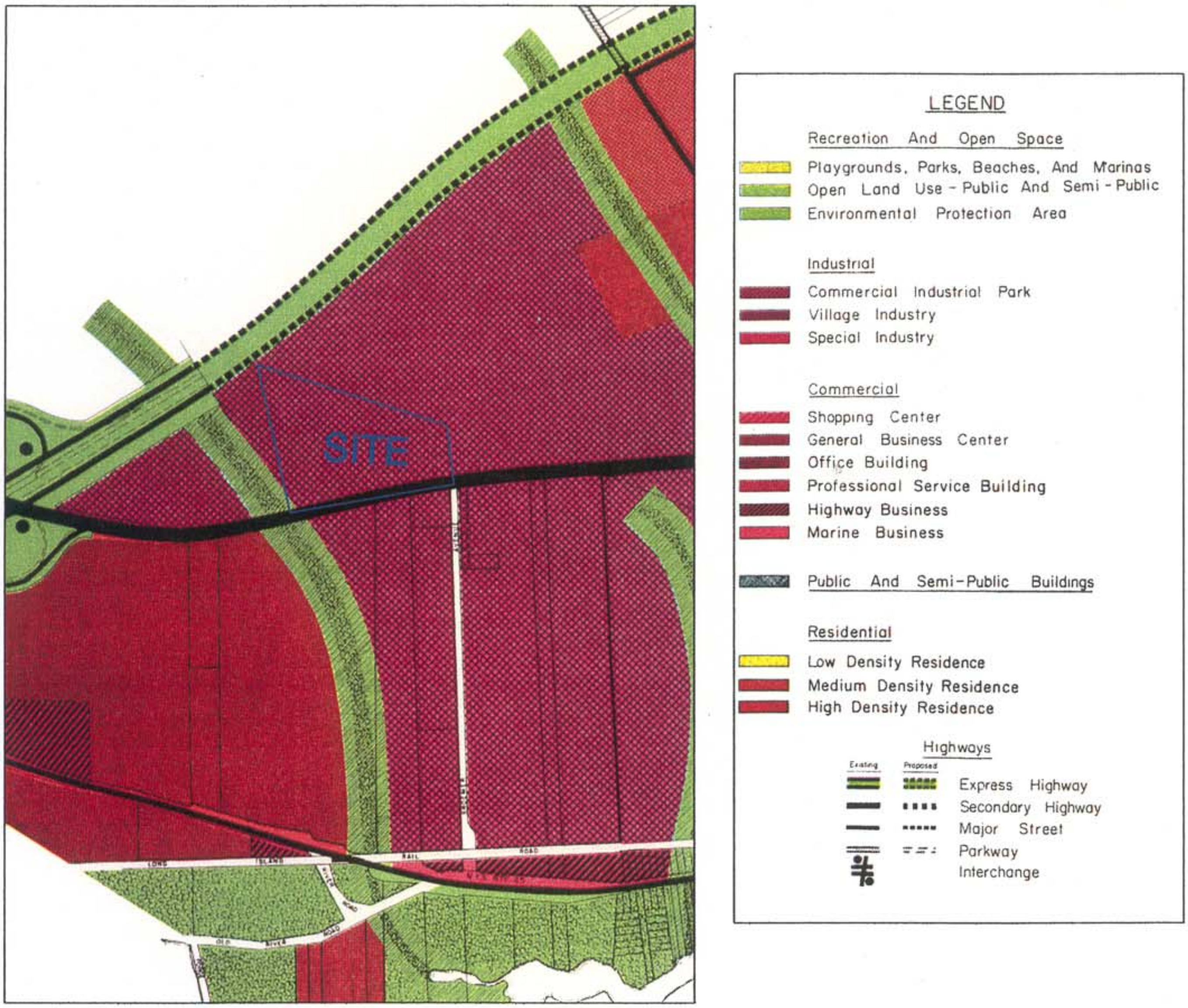
FIGURE 2-11

TOWN COMPREHENSIVE MASTER PLAN MAP



Source: Town of Riverhead Comprehensive Master Plan, 1973
Scale: 1" = 1,200'

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commercial uses. Limited personal services are also permitted. It is not intended that the Commercial-Industrial Park should be the same as, or compete with, retail shopping facilities through such things as warehouse sales outlets, wholesale-retail stores or factory sales outlets. The trend to gradual conversion of industrial parks to retail use in Suffolk and Nassau Counties has been particularly evident in recent years. At the same time it is intended to make the land in Commercial-Industrial Park available for office buildings, certain non-automotive repair facilities and specialized recreational facilities on a special exception basis. In this way the Commercial-Industrial Park does provide for additional land use frequently associated with commercial land uses as noted under discussion of that use group.

Comprehensive Plan Update: A Plan for the Route 58 Corridor (1983)

In February 1983, the Town of Riverhead Town Board adopted an Update to the 1973 Master Plan, which was intended to focus on the CR 58 Corridor. The purpose of the Update was two-fold:

1) To review planning and development policies applicable to this critical area of Riverhead in light of any changes in circumstances, development patterns, and Town objectives since the previous plan was adopted; and

2) to develop a more detailed Plan and establish the basis for short range programs to achieve the objectives and planning policies.

The Update stated the following, in regard to the general character of the Corridor:

> The Route 58 Corridor has become an area of increasing interest and concern in its multiple roles. It serves a second business area for the Town of Riverhead, in addition to the Central Business District in Riverhead hamlet, with about 400,000 square feet of retail, general business, and service uses. It also serves as an east-west corridor for Riverhead residents and visitors as well as year-round and seasonal travelers to and from the town of Southold to the east. It houses a number of large and small employers and service uses such as the Central Suffolk Hospital, State DOT and Town DPW facilities, Riverhead and Mercy High Schools, State Armory, and several industries and heavy commercial uses. There are also about 780 acres of vacant or underutilized land and several vacant structures among the 1,600 acres in the Corridor. It is currently planned and zoned to allow for a mix of commercial, industrial, residential and agricultural uses.

Following are the specific goals of the Update:

1. Promote the economic viability of all uses in the Corridor as a means of maintaining and expanding the tax base and employment opportunities.

2. Provide for a range of uses that will provide a variety of services.

3. Improve the appearance of the entire Corridor so that it is an attractive environment for employees, customers and clients, and travelers that experience the corridor as a route to another destination.

4. Improve the complementary relationship between Route 58 Business Corridor and the Riverhead Central Business District.

5. Assure the protection and maintenance of adjoining residential neighborhoods.

6. Protect environmentally-sensitive areas, particularly wetlands.

7. Implement site development criteria that will contribute to protection of the groundwater supply and mitigation of drainage problems.

8. Promote the efficient and safe flow of traffic.

The Update specified the project site as part of *"An industrial park and heavy commercial development area from the LIE to Mill Road; this area would also include large land consuming non-industrial non-retail uses such as contractors yards, warehouses, equipment leasing type businesses."*

2.7 Community Services

Appendix E contains correspondence to and from the below-discussed community service providers.

2.7.1 Fiscal Considerations and Tax Revenue

The subject property is comprised of a 21.21-acre site of a proposed lumberyard use. The extended site includes an additional 2.71 acres to the east. The overall tax parcel is identified on the Suffolk County Tax Map (SCTM) as District 0600, Section 119, Block 01, Lot 01. Communications with representatives of the Riverhead Tax Assessor indicated that the subject parcel was subdivided in July of 1999 into Lot 1.1 (2.71 ac) and Lot 1.2 (21.21 ac). The total assessed value for the entire 23.92-acre parcel is $212,000 resulting in the total taxes of $22,046.29. Since the action involves construction on the 21.21 acre (i.e., 85% of the combined lots), **Table 2-16** below is based on this prorated analysis.

Approximately 59% of the total tax revenue generated by the subject property ($11,255) is allocated to the Riverhead Central School District and Library. The remaining balance is distributed to all other community services and governmental agencies that the subject property is located within.

2.7.2 Educational Facilities

The site presently generates no school children. According to information received from the Riverhead School District, the current 1999-2000 year enrollment within the District is 4,519 students, and the District has a budget of $55,339,482 equating to an approximate expenditure

TABLE 2-16
TAXES
Existing Conditions*

Jurisdiction	**Tax Rate** ($/$1,000 assessed)	**Taxes Paid** ($/year)
Riverhead Central School District	59.087	$10,756.46
Riverhead Free Library	2.744	$499.53
County	1.858	$338.24
Town	21.994	$4,003.88
Highway	3.922	$713.98
NYS Real Property Tax Law	3.522	$641.16
Riverhead Ambulance District	0.551	$100.31
Riverhead Fire District, Zone I	3.336	$607.30
Lighting District	0.941	$171.30
Riverhead Commercial Sewer District	4.717	$858.70
Water Ext. 14	1.320	$240.30
TOTAL	**103.992**	**$18,931.16**

*Based on prorated analysis

per child of $12,246. Projected enrollment for the 2000-2001 school year is 4,610 children with a $59,609,031 budget resulting in $12,932 per student.

The following are schools and current enrollments within the District: Riverhead High School (1,205 students), Riverhead Middle School (986 students); Roanoke Avenue Elementary School (394 students), Philips Avenue School (433 students), Riley Avenue School (465 students), Aquebogue Elementary School (310 students), and Pulaski Street School (726 students).

2.7.3 Police Protection

The subject site lies within sector 603 of the Riverhead Police Department with the station house at 210 Howell Avenue, Riverhead, New York. The Commanding Officer and Chief of Police is Chief Joseph Gratten.

The security and public safety duties for the Riverhead Police Department are presently limited to normal patrol responsibilities since the project site is currently vacant woodland. Funding for police protection is received through property taxes placed on lands within the Town of Riverhead.

2.7.4 Fire Protection

According to a telephone interview with Mr. Joseph Gadzinski, Chairman of the Board of Fire Commissioners, the subject property is located in Zone 3 of the Riverhead Fire District. The District is funded through property taxes from the Town of Riverhead. The District is manned by 180 volunteers. Including District Headquarters, located at 24 East 2nd Street, the Riverhead Fire District supports four (4) station houses. District Headquarters maintains one pumper, one light truck, one heavy rescue unit and one traffic control vehicle. Sub-Station No. 1, located on Hamilton Avenue, maintains two pumpers and one tanker. Sub-Station No. 2, located on Hubbard Avenue, maintains one 102-foot aerial ladder and one pumper. Sub-Station No. 3, located on Riley Avenue, maintains one "Quint", which has a 75-foot ladder, and one pumper. In the event of a fire, all available personnel and equipment respond. It was also indicated that the independent Riverhead Volunteer Ambulance Corps receives all ambulance related calls.

2.7.5 Solid Waste Disposal

The site is currently unused, and therefore does not generate solid waste. Waste disposal services and recycling in the vicinity of the subject property are provided by private companies licensed and permitted through the New York State Department of Environmental Conservation. The recycling and transfer facility servicing the project site is located on Youngs Avenue, and has an operating capacity of 1,000 tons per day. This facility is currently operating well below its capacity.

2.7.6 Water Supply and Wastewater Treatment

As the subject property is vacant and wooded no utility services are currently provided, however the following is a brief discussion of the utility services located in the vicinity of the subject property.

The subject property is located within the boundaries of the Riverhead Water District. The District currently meets all Federal and New York State Drinking Water Standards. There are existing water mains located along Old Middle Country Road as well as a 12-inch water main extending northward through the adjoining eastern property. The nearest well to this site, Well #2, is located approximately 2.5 miles southeast of the subject property along Pulaski Street.

According to the Town of Riverhead Commercial Sewer District Extension Map and Plan prepared by Malcolm Pirnie, Inc., the overall subject property is allocated a total sanitary flow of 17,214 gpd. According to Resolution #123 adopted on February 1, 2000 by the Town Board, multiple use connection to the Adchem sanitary sewer main shall be permitted. A pump station and sanitary main are located along Old Country Road in the vicinity of the subject property. All sanitary flow is processed at the Riverhead Sewer District STP located on River Avenue off Riverside Drive approximately 4 miles east of the subject property.

The Long Island Power Authority (LIPA) and Brooklyn Union Gas (BUG) are the local providers of electricity and natural gas, respectively, in the vicinity of the site.

2.8 Socio-Economic Conditions

The following information on the existing population and expenditure patterns within the market area of the proposed project is taken from the **Socio-Economic Impact Analysis**. As the proposed project is commercial (retail) in nature, the appropriate study area (divided into 3 sub-market areas) was determined based upon the distribution of consumers anticipated to utilize the project, while the economic characteristics analyzed here were based upon those consumers' expenditure patterns. The Analysis includes the anticipated impact from the proposed Home Depot, which is proposed for a site on CR 58 to the east.

> The market area is the geographical area from which a business or commercial development draws its customers. This is the area from which the majority of the customers or the total volume of business comes. The concept of the market area is based on the assumption that, all things being equal, people will travel to the nearest facility among competitors offering the same goods. Distance is therefore the first criteria for determining the market area. Other factors that influence the size of the market area are physical barriers such as parks, railroads, water bodies and expressways; perceived regional or neighborhood boundaries; and the comparative nature of the competitive facilities in terms of location, accessibility, price, quality, service and variety of merchandise. Figure 1 depicts the primary, secondary and tertiary market areas for the proposed Headriver lumberyard project.

The current (1999) and projected future (2004) populations within the market area was determined as follows:

> In order to estimate the number of potential consumers in each sub-market area, NP&V [Nelson, Pope and Voorhis, LLC] obtained a Marketview Report from Claritas, Ithaca, New York (see Attachments A-C). The Marketview Report provides data for retail sales by Standard Industrial Code (SIC), and various demographic information by zip code. The population projections will be utilized to determine future demand for additional building supply/hardware establishments in the subject market area.

Next, current total expenditures for the pertinent product lines within Suffolk County was determined:

> In order to determine the total expenditures or retail demand of consumers residing in the three (3) defined market sub-areas, data was utilized from the 1997 U.S. Census - Retail Trade. The retail trade census is undertaken by the U.S. Department of Commerce at five (5) year intervals, with the most recent prepared in 1997. The census contains the total expenditures for various types of merchandise lines by municipality, and can therefore be utilized to compute per capita expenditures for a particular area of the United States. Table 2 exhibits the 1997 total sales in Suffolk County for the merchandise lines that will be available at the proposed project. These sales figures were divided by the County's estimated 1997 population of 1,360,075 (Suffolk County Planning Department) to arrive at the per capita expenditure for each merchandise line in Suffolk County. The per capita expenditures were further adjusted by the Consumer Price Index

(CPI) from 1997 through 1999 to project sales activity in the year 2000. It is assumed for the purposes of this study that the Suffolk County expenditure patterns are representative of consumers within the subject market areas.

Utilizing this information, the Analysis determined that a total of approximately $133.39 million are spent annually by market area residents for goods represented by those available at the proposed project ("retail demand", Table 3). However, this money is not necessarily spent within the project's market area; to determine that quantity, additional analysis is required.

Utilizing the Claritas data, it was determined that an estimated $29.81 million are spent annually for the products available at the proposed project within the project's market area (Table 5). This means that, at present, there are about $103.58 million spent annually by market area residents outside the market area for the products which will be available at the proposed project (Table 6). This "unsatisfied retail demand" reflects a significant potential customer base and significant amount of money which business development can address, and simultaneously retain in the area for the benefit of both the business community and market area consumers.

The Analysis further indicates that, in the absence of additional development of the type represented by the proposed project, it is anticipated that this unsatisfied retail demand will increase to $112.85 million annually by the year 2004.

2.9 Community Character

2.9.1 Visual Resources

The site is visible from ground level from the east and west on CR 58. As can be seen from the photographs of the site presented in **Appendix F**, the site is presently a wooded property, with some clearing along the CR 58 frontage. Clearing along CR 58 for the Applebee's restaurant (now under construction) increases the view into the site for observers along CR 58, and simultaneously widens the vista along this roadway. In general, the density and height of the site's vegetation precludes views across the site toward the Adchem property to the north, though the LIPA transmission line towers are plainly visible above this vegetation.

2.9.2 Cultural Resources

Appendix E contains correspondence to and from the NYS Office of Parks, Recreation and Historic Preservation (OPRHP), which indicates that the site has no historic or prehistoric resources.

2.9.3 Noise

The environmental impact of noise can have various effects on human beings ranging from annoyance to hearing loss. A noise problem is said to exist when noise interferes with human activities **(Rau and Wooten, 1980)**. Ambient noise levels are a function of location (urban, suburban, rural), physical site characteristics, and existing surroundings. The proposed development site is located on the north side of CR 58, east of the eastern end of the Long Island Expressway. A high volume of both passenger vehicles and trucks were noted during a Friday afternoon site inspection. The ambient noise environment is characterized by its proximity to a main road. The road provides one of the only east-west travel corridors for the area and thus the road is busy throughout the day.

Various noise scales have been developed to describe the response of an average human ear to sound. The most common unit utilized to characterize noise levels is the A-weighted decibel (dBA), which weighs the various components of noise according to the response of the human ear. Because the human ear perceives the middle range of frequencies better than the high or low frequencies, the dBA scale assigns the middle range a much larger "loudness" value than higher and lower frequencies. **Table 2-17** provides a comparison of noise levels of common sources, ranging from the threshold of hearing for a person without hearing damage (0 dBA), to the threshold of pain (120 dBA).

TABLE 2-17
NOISE LEVELS OF COMMON SOURCES

Sound Source	**Sound Pressure Level (dBA)**
Air raid siren at 50 feet (threshold of pain	120
Maximum levels in audience at rock concerts	110
On platform by passing subway train	100
On sidewalk by passing heavy truck or bus	90
On sidewalk by typical highway	80
On sidewalk by passing automobiles	70
Typical urban area background/busy office	60
Typical suburban area background	50
Quiet suburban area at night	40
Typical rural area at night	30
Isolated broadcast studio	20
Audiometric (hearing testing) booth	10
Threshold of hearing without hearing damage	0

Source: Cowan, 1994

Physical measurements of noise may be measured in dBA using a sound meter. The meter collects frequency values that are automatically interpreted as a function of human hearing frequency response (according to the A-weighted decibel scale). Noise measurements were collected at several locations on the subject property. The levels were typical of a property located on a busy roadway. No other continuous major sources of noise were found in the vicinity of the project site, although the industrial facility to the north (Adchem) apparently conducts some activities out of doors which may have potential for noise generation, and the Riverhead Raceway is a significant noise generator on race days. Towards the southern property line, the noise levels were generally in the range of 65 - 70 dBA. In the event of a passing truck or bus, the levels increased by approximately 10 dBA. Towards the interior of the site, the sound levels decreased to levels in the range of 52 - 57 dBA. It is noted that the measurements are consistent with the levels presented in **Table 2-16**.

Section 3.9.3 will analyze the compatibility of the proposed land use with the ambient noise environment.

2.10 Cumulative Development

Additional potential development on the adjacent 2.71-acre "OC Riverhead 58" site, also under the development control of the applicant, includes four (4) attached take-out restaurants (1,837 SF each, total of 144 seats). A 198-seat, 5,363 SF Applebee's restaurant is also presently under construction on the OC Riverhead 58 site. **Section 3.11** presents the pertinent water consumption/wastewater generation rates and trip generation characteristics for the attached restaurant project, and, in combination with those for the proposed project, discusses the anticipated cumulative impacts on these resources.

SECTION 3.0

SIGNIFICANT ENVIRONMENTAL IMPACTS

3.0 SIGNIFICANT ENVIRONMENTAL IMPACTS

3.1 Geological Resources

3.1.1 Subsurface Geology

Cut/fill operations (to provide proper grades for construction, as well as excavations for the subsurface leaching pools, utility trenches and building foundation) are anticipated to disturb approximately 16.39 acres. No estimates of cut/fill volumes are available at present; these values will be determined during the preparation of the Site Plan. However, it is anticipated that the maximum amount of cut material will be retained on-site to be used as fill, particularly in the lower southwestern corner of the property. The applicant's goal is to result in a "balanced site" in terms of cut and fill volumes. If sufficient fill is not available from within the site, fill will be obtained from off-site, possibly from the adjacent property to the north. In this way, impact to area roadways is eliminated, as no trucks will traverse public roads. It is not anticipated that there will be excess material to be exported from the site. However, if such material occurs, it will be sold as fill (if it displays acceptable properties for this use). If the exported material is not acceptable as fill, it will be disposed of in an approved construction & demolition landfill, and acceptable fill will be imported to the site.

Grading for the project is not anticipated to significantly extend into the subsurface soils beneath the subject site. Therefore, there should be no impacts related to or from subsurface geological features. However, the characteristics and lithology of subsurface geology at the project site influence the movement of groundwater and transport of recharged runoff through the subterranean environment. The impacts as they relate to these properties will be discussed in **Section 3.2.**

3.1.2 Surface Soils

The surface soils found on the subject site are not expected to pose a significant constraint on the proposed development based on review of soil constraints provided in the Suffolk County Soil Survey **(Warner et al, 1975).** Topsoil will be stockpiled and re-utilized in landscaped areas in order to minimize adverse affects associated with long term exposed soils. The site is comprised of Montauk-Haven-Riverhead Association soils which are deep, nearly level to strongly sloping, well drained to moderately well drained with moderately coarse textured and medium-textured soils. The constraints associated with the soils were identified in **Table 2-1** and are predominantly minor. Constraints on the construction of sewage systems, homesites, streets and parking lots are slight. The Soil Survey notes that due to the rapid permeability of the soil types existing at the site, under certain conditions development may present potential pollution problems to lakes, springs or shallow wells. However, for the project site, the depth to groundwater is more than adequate for leaching of sanitary waste and there are no lakes, springs or shallow wells on or in the immediate vicinity of the subject site. Thus, the permeability of the soils should not constrain development. Additional information concerning sanitary waste disposal and potential groundwater impacts is presented in **Section 3.2**. Severe constraints exist for landscaping and lawns due to the sandy surface layer in the Plymouth loamy sands present at the site. Soil can be enriched for landscape installation and therefore this should not adversely impact development of the site. The establishment of homesites, streets, lawns and commercial development is typical for the area where the subject site is located.

3.1.3 Topography

As described in **Section 2.1.3,** the project site is generally flat with a slight slope to the west; the topography of the site does not impose any constraints on development. An estimated 16.39 acres of grading (of which 14.13 acres will be cleared vegetation, and 2.26 acres are presently bare soil) will be necessary for construction of the lumberyard facility, parking areas and landscaping. Creation of steep slopes will not be necessary to provide the proposed facilities, and none will be present following construction of the project.

Filling operations will be required in the southwestern portion of the site, to raise this area to that of the adjacent NYSDOT property. The small amount of steep slopes in this area which will be eliminated are the result of a lower elevation area, grading for the NYSDOT facility, and the effects of the NYSDOT facility's drainage system emptying onto the subject site.

3.2 Water Resources

The primary water resource impacts expected as a result of development of the project site involve changes in groundwater quality. There is no surface water on the site (with the exception of several small drainage areas along the western portion of the site), and thus no significant impacts to surface water are expected. Reduction of groundwater quality is typically the result of sanitary discharge and degradation of recharge on the site. An increase in the amount of water that is recharged is also expected as a result of the increase in impervious surfaces on site, although this will not result in a significant change in the regional hydrogeologic regime. The following analyzes changes in water quality and quantity, which may result from implementation of the proposed project.

3.2.1 Hydrology

Using the site coverage quantities established in **Table 1-1,** the SONIR model was run to determine the existing and proposed water budget resulting from recharge.. The results of the model for existing on-site conditions were discussed in **Section 2.0**. Under the proposed development the project site will recharge a total of 19.03 MGY resulting in an increase of 7.21 MGY. Analysis of the computer model results indicate that 99.6% of total site recharge under proposed conditions would result from precipitation, with the final 0.4% resulting from irrigation. The results of this analysis are presented in **Appendix C-3.** Increases in recharge are primarily the result of reduction of natural area which are replaced with impervious surfaces.

This results in a reduction of evapotranspiration by vegetation and the concentration of surface water available for recharge. This increase is not expected to cause a significant adverse impact since the depth to groundwater beneath the site is a minimum of approximately 11 feet below ground surface (bgs) and will not result in flooding-related concerns.

3.2.2 Groundwater Quality

Wastewater will be generated as a result of the proposed project; however, all sanitary effluent will be disposed of off-site via public sanitary sewers of the Riverhead Sewer District. This form of disposal is allowed provided the projected wastewater design flow does not exceed standards established by the SCDHS, which were developed to protect groundwater resources within the County. The proposed project will conform to SCDHS standards in order to limit the impact to groundwater quality, as is discussed below.

Using the site coverage quantities established in **Table 1-1,** the SONIR model was run to determine the concentration of nitrogen in recharge which would be expected following residential and commercial development under the proposed density. The model accounts for the following primary nitrogen sources: precipitation, sanitary waste, fertilizer and water supply. In addition, the model accounts for recharge from the following sources: lawn and landscaped area recharge, natural area recharge, irrigation recharge, impervious area recharge, unvegetated area recharge and wastewater recharge.

The results of the SONIR model for the proposed project are presented in **Appendix C-3.** The printout indicates that the concentration of nitrogen in recharge resulting from precipitation and fertilization (since sanitary wastewater will be conveyed to the Riverhead STP) will be 0.02 mg/l. The anticipated concentration of nitrogen contributed by the site following the proposed development is less than the NYSDEC drinking water standard of 10 mg/l. Therefore, the proposed project is not expected to result in significant adverse effects to groundwater quality with regard to nitrogen loading.

3.2.3 Groundwater Management

The project will generate a total of 5,408 gpd of sanitary wastewater. As the site is within Hydrogeologic Zone III, the maximum of 300 gpd/acre of wastewater allowance specified in that plan, or 6,363 gpd for the site, will not be exceeded. Therefore, an on-site STP or connection to a public STP is not required. However, because of the presence of the Riverhead Sewer District, the proposed project will extend the sewer lines of that district to service the site. In this way, management of site-generated wastewater will provide protection of groundwater quality.

Use of an on-site drainage system will ensure that the potential for impact to groundwater quality from runoff is minimized. Finally, while the 1.82 acres of landscaping are anticipated to be irrigated and fertilized, the SONIR computer model indicates that the overall nitrate/nitrogen concentration in recharge originating on the site will be unchanged from its pre-development level of 0.02 mg/l. This concentration is well within the NYS standard.

The proposed project does not include any use or manufacture of potentially hazardous chemicals such as VOC's, so that the potential for impact to groundwater quality from accidental release or spillage is eliminated.

3.2.4 Surface Water and Drainage

The proposed actions at the project site may result in alteration of drainage flow or surface water patterns through the creation of impervious surfaces. However, it should be noted that the site has low slopes with few swales which could concentrate runoff into pools, and is underlain by soils having good percolation characteristics. In accordance with Town requirements all surface run-off generated on-site must be contained on-site, therefore all run-off will be directed to stormwater leaching pools designed to accommodate a minimum 2-inch storm.

The western boundary of the site includes the remnants of an intermittent stream with several low-lying areas that accumulate site run-off and some run-off from the adjacent NYSDOT site. Low-lying areas on-site will be filled, and any existing site run-off and additional run-off from the proposed development will be collected and recharged in the stormwater system on the subject site. Run-off from the NYSDOT site will need to be contained on that site.

It is noted that a wetland system, which includes a tiger salamander breeding pond, is located approximately 600 feet south of (downgradient from) the project site. There is no direct connection between the subject site and this system by culvert or overland flow, as CR 58, a county highway, separates the two sites. The proposed site use will not alter drainage in the area, and will in fact reduce that low component of overland flow that may travel off the site by containing and recharging run-off within the proposed site drainage systems. Water recharged on-site will not adversely impact groundwater quality. As noted in **Section 2.2.4**, according to the NURP Study, water recharged in drainage systems of commercial developments will not cause significant elevated concentrations of metals, hydrocarbons, bacteria or viruses as the potential contaminants are either volatilized or attenuated in the soil. The 11-foot depth to groundwater is more than enough to permit this soil attenuation to occur in connection with the proposed project. There is no sanitary discharge on-site, as all such wastewater will be conveyed to the Riverhead STP. As a result, the SONIR model predicts no significant change in the nitrogen in recharge concentration of 0.02 mg/l. The wetlands downgradient of the project site are sustained by regional groundwater proximate to the land surface. Since the proposed project will not change regional groundwater levels, due to the permeability of the soils and the distribution of stormwater leaching pools throughout the site, no impact on the hydrology of downgradient wetlands is expected. As a result, it is concluded that the proposed project will not in any way adversely affect the water quality or hydrology of the downgradient wetlands.

3.3 Air Resources

Carbon monoxide is a colorless, odorless gas, produced by incomplete combustion of fuels. CO is the most prevalent air contaminant, particularly in urban areas, and is primarily associated with motor vehicle exhaust (**NYSDEC, 1996**). The nature of commercial uses and the Long Island consumer shopping patterns promotes use of vehicles to gain access to various destinations, particularly outside of a downtown area. The proposed project will produce additional vehicle trips on area roadways, and the increase in traffic and potential increase in congestion could locally degrade air quality. This is particularly true near intersections where project generated traffic may idle due to traffic delays, thereby increasing local carbon monoxide (CO) emissions. The degree to which this may occur is based on the increase of vehicles at intersections affected by the proposed project.

Increased CO emissions could affect those vulnerable to poor air quality, particularly individuals who suffer from angina, lung disease, anemia or cerebral-vascular problems (**NYSDEC, 1996**), in those instances where individuals with such conditions come in contact with site generated increased CO levels. Other impacts may be to sensitive receptors including hospitals, nursing homes, and schools (**Rau and Wooten, 1989**). A field inspection of the site and surrounding area found that there are no sensitive receptors in the vicinity of the project site. Specifically, there are no homes, hospitals, nursing homes or schools within a 1,000' radius of the site. The nearest sensitive receptors are the residential homes located approximately 1,050' northeast of the property boundary.

The proposed use will not generate emissions as a result of the operations on site. The sole potential source of increased air pollutants is thus related to increases in traffic generated by the project. The project site is located in an area with relatively level topography and is not in a basin or between large rows of buildings which would tend to accumulate air pollutants. This combined with the prevailing winds and atmospheric instability described in the Setting Section, allows for good air movement to disperse carbon monoxide resulting from vehicle trips generated by the redevelopment of this site.

A full analysis of potential traffic impacts has revealed that the proposed project will not result in a dramatic increase in vehicular traffic. The mitigation proposed will prevent significant changes in delays at area intersections thereby minimizing congestion related to the project. Thus, the increase in traffic resulting from the development of the proposed project will not generate significant additional volume or delays at intersections in proximity to the subject site; and no further air quality analysis is warranted.

3.4 Ecological Resources

A total of 14.13 acres of natural vegetation will be removed from the site to allow for the development. This represents a loss of approximately 67% of the existing natural vegetation on the site. Thus, the impacts of the proposed project should be assessed in relation to a direct change in habitat, fragmentation and an increase in human activity. The proposed development plan would require clearing the majority of the site, with two small portions of woodland remaining in the eastern portion of the site which are intersected by the proposed site access. A small portion of the natural vegetation will be replanted with landscaping species. Although the majority of the will be re-established in building coverage, parking areas and access roads. Additionally, both small ponded areas located within the existing drainage gully on the west part of the site will be filled as a result of development. It should be noted that the existing drainage gully does not remain functional off-site, and is currently isolated by area roadways and developments and existing topography.

The subject property is generally fragmented under existing conditions, and as discussed throughout the **Section 2.4**, been subject to several man-made disturbances throughout the past. There are several larger tracts of woodland in the immediate area, and thus relatively slight impacts are expected as a result of the proposed clearing and development. However, these effects are cumulative and need to be considered in light of regional planning. The following sections examine in detail the impact of the proposed site use and development with regard to both vegetation and wildlife.

3.4.1 Vegetation

The project site is approximately 21.21 acres in size, of which approximately 77% will be developed following the construction of the proposed project. The existing coverages will be increased to 14.57 acres of building and pavement area, 1.82 acres of landscaping/turf, with the remaining 4.82 acres left in its natural state. Although the natural vegetation removed adjacent to the proposed parking areas and structure will be replaced by some landscaping species, the development of the site will have localized impacts on vegetation. Regional impacts will be negligible, as the site is small in size and represents only a small portion of the natural vegetation in the area. Additionally, the site has been subject to several past man-made disturbance events, and does not represent a mature natural community.

In order to assess the impacts of the project, the proposed site quantities are summarized in **Table 1-1.** The proposed development will require clearing the majority of the site, although approximately 4.82 acres (or 23%) of the existing woodland will remain. The remaining woodland habitat would be present within the eastern portion of the property, and would consist of two areas transected by the proposed access drive. The vegetation located along the site perimeter will be replaced by landscaping species. This will create a large proportion of edge habitat, which would typically favor growth of understory species which require greater light penetration. The remaining forested area would further be fragmented, and the existing woodland on site would no longer provide suitable corridors required by some wildlife species.

Additionally, the project would require the drainage depressions to be filled, which would require the loss of approximately 0.02 acres of ACOE classified wetlands. The wetlands on site are small in size, and are expected to have been created as a result of past human disturbance on site and runoff from the NYSDOT property. The depressions are not hydrologically or topographically connected, and do not provide viable wetland habitat utilized by numerous wildlife species. Several natural freshwater wetlands exist in the vicinity, and significant impacts would not be expected as a result of the removal of these site drainage features.

The loss of woodland habitat on the property will be partially mitigated by site landscaping. Landscaping and turf will be the dominant vegetation surrounding the structure and associated drives and parking areas, with native or near native species used. Planting of native tree species such as oaks, maples, beech, and tulip trees would help accelerate the process of succession, while minimizing the potential for colonization by introduced species. Evergreens, including white pine and Douglas fir, may be used to provide screening on site, and could be planted as a supplement to the proposed wooded buffers where necessary. A variety of evergreen and deciduous shrubs could be utilized as foundation plantings, with flowers and mixed turf where needed.

The existing woodland habitat in the area is somewhat fragmented due to the surrounding developed areas. Similar wooded forest habitat is found throughout the general area, and there are several large contiguous blocks of woodland and wetland habitat, particularly farther south of the site. The property is not be expected to act as a refuge for rare native flora, and impacts to plant species should be minimal. Bayberry and spotted wintergreen are the only exploitably vulnerable, protected species expected on the property. Exploitable vulnerable species are protected primarily because they are indiscriminately collected, rather than due to rarity within the State. The presence of these plants would not preclude development of the site, as a property owner is permitted to remove exploitably vulnerable plant species from a site.

In conclusion, approximately 23% of the existing woodland will be retained in the eastern portion of the site under the proposed plan. Approximately 1.82 acres of landscaping/turf will replace this vegetation, and will incorporate native as well as ornamental species. The majority of the vegetation on the property is currently dominated by successional and somewhat mature woodland. Regional impacts will be negligible, as the project site has experienced several events of prior disturbance, is small in size and represents only a small portion of the natural vegetation in the area.

3.4.2 Wildlife

The vegetation on the project site provides habitat for a wide variety of wildlife, although the surrounding developments and adjacent roadways are expected to exclude some species found in larger tracts of open space, such as those to the northeast and those farther to the south. Most of the species expected on the property are at least somewhat tolerant of human activity, but others will be impacted by the proposed clearing and increase in human activity. The proposed project will remove some of the existing woodland habitat on the property. As was discussed in the preceding section, the woodland found on site is somewhat fragmented, although there are large contiguous tracts of similar woodland habitat found throughout the general area. The proposed project will favor those species that prefer edge and isolated woodland habitats and those that are tolerant of human activity.

In determining impacts upon the existing wildlife populations, it can be assumed that an equilibrium population size is established for each species as determined by availability of resources in the habitat. Thus, the removal of habitat resulting from the proposed project will cause a direct impact on the abundance and diversity of wildlife using the site. Although the assumption that species are at equilibrium is an oversimplification, and population sizes of many species are controlled below the carrying capacity by other factors, it does provide a worst-case scenario in determining the impact of habitat loss. In addition to this direct impact, the increased intensity of human activity on the site will cause an indirect impact on the abundance of wildlife that will remain on the site and in the area, under post-development conditions.

In the short term, lands adjacent to the subject property will experience an increase in the abundance of some wildlife populations due to displacement of individuals by the construction phase of the proposed project. Ultimately, competition with both conspecifics and other species already utilizing the resources of the surrounding lands should result in a net decrease in population size for most species. The effect on the density and diversity of both local and regional populations should be minimal, as the area represents only a small portion of the forested habitat available in the vicinity. The impacts of habitat losses are cumulative, however, and impacts need to be considered in light of regional planning.

Section 2.4 provides a discussion of the wildlife populations associated with the subject site. In addition, **Appendix D-3** includes the results of a microcomputer model developed for use by NP&V. The model is used to establish baseline information of species associated with various habitats, as well as relevant information concerning abundance, habits, and seasonal fluctuations.

Appendix D-5 contains a computer-generated table labeled "Species Adaptability". This list is another component of the program developed for NP&V used for the preparation of the Wildlife Habitat computer model; however, in this application the "Adaptability" of the observed and expected species is shown. The "Adaptability" as indicated in the table, refers to whether an individual species may potentially benefit from (+) a habitat change from natural to a developed setting; or be adversely impacted (-), or remain constant (=), as a result of this change. This Appendix is included to provide the reader with the benefit of the literature which was consulted in connection with the Wildlife-Habitat model in terms of generalized species dynamics resulting from land use. These values are general indicators of the response of each species to alteration of its natural habitat by a mixture of residential, commercial and industrial development. The following text considers the site-specific aspects of the proposed development in regard to individual species, and supplements the predictions of the more general model. In some cases the predicted response of a species at the site may differ from the general prediction of the model because of site-specific information.

<u>Birds</u>
Literature suggests that many avian species are able to utilize both urban and suburban environments. Birds such as crows, doves, blue jays, American robin, northern mockingbird, brown thrasher, gray catbird, cedar waxwing, grackle, northern oriole, and the brown-headed cowbird may be temporarily affected by development of the property. However, these birds are mobile and usually adjust well to human activity, and as a result may return to parts of the site

(Andrle and Carroll, 1988; Bent, 1963, 1964, 1968). Populations of those species which are more abundant in open and edge habitats should relocated and return in limited numbers following the construction phase of the project, including the starling, robin, rock dove, cedar waxwing, catbird, brown headed cowbird, and mockingbird. In addition, the rock dove may increase in numbers on site, as it typically nests on buildings and other structures.

Some smaller birds that also typically adjust well to development include the finches, towhees, juncos and sparrows. These seed-eating species are generally found in wooded edge habitats and buffer zones, and thus populations are likely to be somewhat high under existing conditions. Species from these groups expected on site include the house sparrow, song sparrow, house finch, cardinal, and rose-breasted grosbeak. The purple finch would likely decline in numbers on site following construction, but may continue to temporarily utilize the remaining woodland habitat and buffer areas. The northern junco is expected on site and the fox sparrow, white-throated sparrow and white-crowned sparrow may be present as winter visitors. Site populations of the majority of these species are likely to remain stable or decrease. Species which should not be impacted include the introduced house finch, a pest which prefers to nest on buildings **(Bent, 1968)**, as well as the chipping sparrow, goldfinch, and cardinal, which prefer open edge habitats. The Savannah sparrow, a special concern species, vesper sparrow and field sparrow would also be expected to abandon the site following development, as they are less tolerant of human development and interaction. No significant regional impacts are expected to these species due to the presence of suitable habitat elsewhere in the vicinity and the low quality of existing site habitat for these species.

Other smaller, insect feeding birds such as the black-capped chickadee, tufted titmouse, and white-breasted nuthatch are also fairly tolerant of development as long as large trees with plenty of food sources remain **(Andrle and Carroll, 1988; Bent, 1964).** Numbers of these species are expected to decline, but individuals may remain on parts of the site and regional impacts are expected to be minimal. The ruby-crowed kinglet and golden-crowned kinglet, which are winter visitors, are less tolerant of human activity and are more likely to be impacted by the proposed development. The house wren is very tolerant of development, and no significant impacts to this species is expected. The Carolina wren is also expected to remain on parts of the site if present, as the site will contain suitable habitat following construction. In addition, the chimney swift nests in chimneys and is likely to remain stable in the area.

Some birds cannot adjust well to development, including forest interior species such as most varieties of warblers. These species are not expected on the site in significant numbers at present due to the compromised habitat. Many of these birds are fairly secretive and prefer woodlands with dense understory vegetation **(Andrle and Carroll, 1988; Bent, 1964, 1968).** These species include the black and white warbler, pine warbler, prairie warbler, chestnut-sided warbler, blue-winged warbler, yellow warbler, and the yellow-rumped warbler may also be present on site during winter. These species (if present), as well as the ovenbird, are likely to decline in numbers on site following construction, but may continue to utilize the remaining woodland habitat. The black-throated blue warbler is more tolerant of human disturbance and is not expected to leave the area, if present. Local impacts to these species are expected, but regional impacts should not be significant given the small area of the site and similar habitat in the vicinity.

The common nighthawk, a special concern species, is typically a ground nester, although it will nest on roofs, and therefore may utilize the parcel if present. The barn swallow may increase in numbers following development, as suitable nesting habitat for the species would increase. The tree swallow and purple martin prefer wetland areas where insects are abundant, and therefore would not be expected to utilize the site. These species are also known to utilize man-made nest boxes which may increase the suitability of the habitat for nesting. The indigo bunting prefers areas with thick cover and will likely abandon the site if present.

The vireos are also relatively sensitive to development, and may suffer local impacts from the proposed project. The red-eyed vireo and yellow-throated vireo should remain in small numbers, as it can be found in parks and suburban areas. The white-eyed vireo would be expected to abandon the site, if present. Of the woodland thrushes and creepers, the wood thrush, hermit thrush, and the veery are expected to utilize the site, as well as the brown creeper. The wood thrush, hermit thrush and brown creeper are relatively tolerant of human activity; however, the lack of habitat is likely to result in off-site relocation of these species. If present, the veery would not be expected to continue to use the site following development as it typically avoids human activity. The whip-poor-will is nocturnal and prefers open woods with adjacent fields, thus if present, numbers are expected to decline. The eastern bluebird is a species of special concern and is likely to cease using the site if present.

Of the flycatchers, the kingbird prefers open edge habitats, and may remain on parts of the site following development. The eastern wood pewee is more vulnerable to development, but is occasionally found in suburban habitats. Numbers of this species may decline on site, although regional populations should not be significantly impacted. The great-crested flycatcher might also be present, although they prefer larger areas of open space, although is expected to abandon the site following construction. The least flycatcher and willow flycatcher may be present, although the least flycatcher is relatively uncommon on Long Island and the willow flycatcher is found mainly on the south shore and western north shore areas of Long Island. The least flycatcher and eastern wood pewee would not generally be expected to continue to utilize the site following construction if they are currently present. However, regional impacts to these species should be minimal given the habitat available in the local area.

Although woodpeckers can adjust well to some types of development as long as wooded buffers remain, it is critical that both large, mature trees and smaller trees are present for feeding and nesting **(Andrle and Carroll, 1988; Bent, 1964).** Populations of these species would be expected to decline following clearing and the increase of human activity. The site and surrounding woodlands contain suitable habitat for many woodpecker species. Included in this group are common flickers, downy woodpeckers, hairy woodpeckers, red-bellied woodpeckers, red headed woodpecker and the yellow-bellied sapsucker, all of which are residents on Long Island. If present, the hairy woodpecker would abandon the site, as it prefers more isolated areas than the other woodpeckers. No significant regional impacts to these species are expected, however, as there is adequate habitat elsewhere in the vicinity.

Several species of birds associated with old field and/or agricultural habitats are also likely to decline following development. The bobwhite and eastern meadowlark are generally intolerant of human development and activity and are unlikely to utilize the site following development. The killdeer and horned lark would be expected to utilize the site under existing conditions, although would likely abandon the area as nesting habitat due to an increase in human activity.; however, similar habitat is available in the immediate vicinity. The American woodcock is also less tolerant of development and would likely abandon the area. The red-winged blackbird prefers areas near water, although may continue to utilize parts of the site and surrounding areas following development. Additionally, the ruby-throated hummingbird would be expected to abandon the site following development due to the loss of habitat and increase in human activity.

Both the yellow-billed cuckoo and black-billed cuckoo are also vulnerable to development, and, if present, would be expected to abandon the site following construction. The black-billed cuckoo tends to avoid human activity, and the yellow-billed cuckoo prefers edges, but also tends to avoid heavily urbanized areas. Despite these local impacts, regional impacts are minimal due to the marginal suitability of the existing habitats on site and the availability of habitat elsewhere in the vicinity. The pine siskin was listed as potentially utilizing the site. As this species is thought to be rare on Long Island, it is generally not expected, however the suitability of this site for the species would decrease as a result of development. In addition, if present, the ruffed grouse and the ring-necked pheasant are expected to abandon the site as they prefer dense cover and avoid humans.

Other species of birds which prefer a mix of woodland and field habitat include owls and raptors. These species generally roost or nest in forested areas, hunting for rodents and other prey in adjacent open areas. The red-tailed hawk and American kestrel are the most likely species to be present. Both are fairly tolerant of human activity and would likely continue to utilize parts of the site on a limited basis. The broad winged hawk, sharp-shinned hawk and Cooper's hawk (a special concern species) may also occasionally utilize the area, and would likely be displaced following development. Any raptors nesting on site would be expected to be displaced, with the exception of the American kestrel. As long as suitable nest sites remain in nearby areas, impacts to these species should not be significant.

The eastern screech owl, barn owl, great horned owl and long eared owl are listed as likely to be present. Both the screech owl and barn owl are relatively tolerant of development and human activity, and may continue to use the site, if present. However, the great horned owl and long-eared owl would be expected to be displaced following development.

The site contains two small areas of surface water, with minimal associated freshwater wetland habitat. Although two mallards were observed in one of the ponded areas, it is not expected that these areas provide suitable wetland habitat for wildlife species. Due to the level of human disturbance on site under existing conditions, this habitat is expected to be only marginally suitable for nesting. As more suitable habitat exists within the immediate vicinity, significant impacts are generally not expected.

Mammals

The mammalian fauna found on the site will also be impacted by the proposed clearing and resulting habitat loss. As with the avian species, intolerant species are expected to be directly impacted or relocate to other areas, and local populations are expected to reach a slightly lower equilibrium population density.

The short-tailed shrew is commonly found in open woodlands and field habitats, but can live in a variety of habitats and will use several different food sources. Although limited numbers will probably utilize the landscaped areas, the number of individuals is likely to decrease at the site **(Godin, 1983).** The masked shrew spends most of its time underground in tunnels and runways **(Godin, 1983).** It also likes to burrow beneath leaf litter, fallen branches, logs, and stumps. It is present in most habitats, but prefers mixed deciduous woods and red maple swamps **(Connor, 1971).** It is likely that site populations of these two shrews will be impacted, but regional population change should not be significant.

The eastern mole is commonly found in woodlands and field habitats with sandy or light loamy soils. They are also common in lawns and landscaped areas when their preferred habitat is destroyed or not available **(Godin, 1983).** The species would most likely utilize the landscaped, revegetated and buffer areas, however local impacts are expected. The meadow vole and pine vole both tunnel underground and populations are likely to be locally reduced following development.

The white-footed mouse prefers forest edge habitat and does not adjust well to development. Unlike other small mammals, it does not usually move into nearby residential areas when pushed out of its preferred habitat **(Godin, 1983).** The population within the proposed development area will be directly impacted, but suitable habitat will temporarily remain in the remaining woodland. Thus, local declines are expected, but regional populations should remain stable. The house mouse and Norway rat are introduced pests found in or near humans in field habitats, with the Norway rat and black rat also found in urban settings near moist areas. They will eat almost anything and usually cause problems for homeowners **(Godin, 1983).** Populations may increase slightly subsequent to development.

The eastern gray squirrel prefers hardwood forests with large, nut-producing trees. Squirrels usually adjust quite easily to urban areas where larger trees remain for feeding and nesting, and limited numbers may use the landscaped areas and remaining buffers. Relocated squirrels have been known to cause extensive damage to houses by gnawing holes in roofs and eaves to gain access to shelter. Maintaining the buffer areas will help to reduce the impacts to this species, and local populations will not be significantly impacted. The eastern chipmunk prefers forest edge habitat with thick understory vegetation. They have a small home range of about 1/3-acre. Chipmunks feed on nuts, seeds, fruits, vegetables, and some small insects and animals. Edge habitat exists on site at present, and as long as small sections of habitat are left for these mammals, chipmunks can adjust fairly well to fragmentation of the natural areas **(Connor, 1971),** and local populations will be reduced; however, regional populations are likely to remain stable.

Several bats were listed as potentially present, including the big brown bat, little brown myotis, Keen's bat, red bat and eastern pipistrelle, which breed on Long Island and the silver-haired bat and hoary bat, which are present during migrations. Due to the absence of caves on Long Island, these species generally roost in colonies in the attics of buildings, although some species will occasionally roost in trees **(Connor, 1971).** Development of the site may have a significant impact on these species, if present, however bat species may continue to utilize similar habitats available in the general area.

The eastern cottontail seems to do well in both suburban and natural habitat **(Connor, 1971),** which may be due in part to its variable home range, which varies from 1/2 acre up to 40 acres depending on conditions. It also has a large number of food sources that are available in almost any setting **(Godin, 1983).** If present, it is likely that cottontails will re-locate or remain in limited numbers on site along the buffer and shrub areas.

Development of the existing forest habitat will also have impacts on site raccoon and opossum populations. Both species prefer wooded areas with brush and hollow logs to den in. The opossum has a home range of about 1/2 mile **(Godin, 1983).** The raccoon has a variable home range of about one to two miles **(Burt and Grossenheider, 1976).** These species are some of the most common nuisance animals to homeowners. If all of the natural habitat is removed, these species may invade under buildings, attics and chimneys in search of places to den. Suitable habitat will continue to remain on site under post-development conditions. Raccoon and opossum also forage for food in neighborhood garbage cans. Neither is social, and the two species are often involved in fights with family pets (NYS DEC Wildlife Hotline, 1988). Clearing the site will push some individuals into the surrounding natural area, but no significant regional impact is expected given their tolerance of humans.

As is suggested by the discussion contained in the ecological setting section, the red fox may inhabit suburban areas, "*particularly parks, golf courses, cemeteries and large gardens*" **(Chapman and Feldhamer, 1982).** According to Ben Tullar, a biologist with the New York State Department of Environmental Conservation **(NYSDEC)** in Delmar, all of the requirements of red foxes can be met in suburban areas. He indicates that development does not impact red fox populations, provided that large open areas with edge habitat for hunting remain. Development of the site will eliminate the available habitat; however, if present, foxes will continue to use the surrounding area.

The woodchuck would be expected to abandon the site due to the increase of human activity and direct loss of habitat. Suitable habitat exists in the vicinity, although development of the subject property would be expected to displace the individuals on site into less suitable habitat. The site is also utilized by the white-tailed deer. Deer are generally not expected on site following construction, although they should remain in the local area, as suitable habitat will remain to the north, northwest, northeast and further south. The white-tailed deer has home range sizes of up to 3 square miles. Local impacts on deer populations are not expected to be significant.

Amphibians and Reptiles
As was discussed in the setting section of this document, the incidence of reptile and amphibians on the site is expected to be low in both density and diversity. Although most of the herptile species which are found in dry woodlands adjust well to suburban areas, they are often less mobile than avian and mammal species, and may suffer direct elimination during construction. Any individuals that are destroyed are likely to be replaced from populations in natural areas remaining in the vicinity of the site. Species found primarily in wetland habitats are not likely to be impacted by the proposed project, as they are not expected on site.

Terrestrial amphibians which may be present include only the toads. Frogs and salamanders are not likely to be present due to the absence of any significant areas of standing water. The eastern spadefoot toad and the Fowler's toad are also found in dry forested areas with sandy or loose soils **(Wright, 1949).** These species would not be expected to utilize the landscaped areas after development, as only limited perimeter landscaping would be present. However, as the area to be cleared represents only a small portion of the available habitat in the vicinity, this impact should not be significant. These species are aquatic breeders, but travel long distances from the breeding site during the year.

Several species of reptiles were identified as potentially present on site. The eastern garter snake, eastern hognose snake, eastern milk snake, and the black racer may be present **(Wright, 1957).** Of these species, the eastern garter snake is the most tolerant of urbanization; however, even this species would be expected to suffer temporary impacts due to direct loss during construction. Populations will partially recover after completion of the project, but local impacts to snake species would be expected.

The only terrestrial turtle species possibly on site is the eastern box turtle. It is essentially a terrestrial species and requires very little water to ensure its survival **(Obst, undated).** Like the snakes, this species is likely to suffer some direct losses during construction, and local impacts are expected. Regional impacts should be minimal, as habitat will remain in the surrounding area.

Rare Species/Habitat Potential
Of the species listed as being likely on the site, the common nighthawk, barn owl, eastern bluebird, horned lark, whip-poor will, Savannah sparrow, and eastern hognose snake are listed as special concern species. These species will be impacted by habitat loss, with no substantial mitigation available under the current project plans. The eastern hognose is expected throughout the site in small numbers, and will suffer direct loss. Although there is documented concern about their welfare in New York State, these special concern species receive no additional legal protection under Environmental Conservation Law Section 11- 0535. Discussions above indicate the anticipated change in habitat needs and potential impacts to these species.

No threatened or endangered species were observed on site. The New York Natural Heritage Program documented the presence of the eastern tiger salamander, an endangered species, and one unprotected species, the eastern tiger beetle, in the vicinity of the site. The tiger beetle is listed as an unprotected species that is historically known from New York State, but not seen in the past 15 years. This species was last observed in 1946, making it unlikely that it is currently present in the area.

The tiger salamander was identified in 1991 in a series of small ponds located approximately 1,000 feet south of the site. As noted in the environmental setting section, tiger salamanders have been documented to migrate as much as 275 meters on Long Island, although the average distance traveled is typically a few hundred yards **(Mr. Kallagi, NYSDEC, 2000).** There is suitable habitat remaining adjacent to these breeding ponds, and it is expected that the surrounding developments and associated roadways and paved areas would limit successful migration from the documented breeding ponds to the subject parcel. The site does not contain suitable breeding habitat for the species.

The NYSDEC typically requires that 50 percent of woodland vegetation be retained within 1,000 feet of a tiger salamander breeding pond. As it is estimated that the project site lies approximately 1,000 feet from the breeding ponds, a vegetation clearing restriction would not apply to the subject site.

3.5 Transportation

The discussion of the anticipated cumulative traffic impacts from the proposed project, the Applebee's restaurant and the four take-out restaurants is provided in **Section 3.11.2**. This section presents a discussion and analysis of the anticipated traffic conditions in the year 2001 (the "Build Year") if the lumberyard is not built, but includes the effects of the Applebee's restaurant. This is referred to as the "No-Build Condition".

3.5.1 Other Planned Developments

There are four other developments in the vicinity of the proposed development whose traffic were considered in analyses for the proposed development.

The Applebee's restaurant on Parcel B of the proposed development and the Ralph Lauren Polo Store at Tanger Factory Outlet Center are currently under construction. The traffic expected to be generated by these approved developments is shown in **Table 3-1**. The impacts of these volumes on each intersection examined for the proposed development are provided in the "Intersection Traffic Volume Summaries" section of the **Volume 2** Appendix. Since these developments are expected to be complete before construction of the proposed development is complete, Applebee's and the Polo store are included in the No Build phase of analysis.

Riverhead Centre shopping center on the north side of CR 58 east of Mill Road and two restaurants in Tanger Factory Outlet Center are the other proposed developments to be considered in analyses for the proposed lumberyard complex.

TABLE 3-1
SITE-GENERATED TRAFFIC
Approved Developments

Development/Size	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Applebee's Restaurant	0	0	48	35	101	73
Ralph Lauren Polo Store	6	2	13	15	23	22
Total	**6**	**2**	**61**	**50**	**124**	**95**

The traffic expected to be generated by these proposed developments is shown in **Table 3-2**. The impacts of these volumes on each intersection examined for the proposed lumberyard complex are provided in the "Intersection Traffic Volume Summaries" section of the **Volume 2** Appendix. It was estimated that minimal additional traffic would be generated by the restaurants within the Tanger Factory Outlet Center because they will be completely contained by the outlet center and their patrons will most likely be shoppers already at the outlet center. Since neither of these projects have yet been approved, Riverhead Centre and the Tanger restaurants are included at the end of the analyses in the Build with Other Development conditions.

TABLE 3-2
SITE-GENERATED TRAFFIC
Other Proposed Developments

Development/Size	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Riverhead Centre	149	103	426	426	690	650
Two Restaurants in Tanger Factory Outlet Center	0	0	0	0	39	38
Total	**149**	**103**	**426**	**426**	**729**	**688**

3.5.2 Capacity Analysis

To examine the impact of site-generated traffic on adjacent roadways in the vicinity of the site, signalized intersection capacity analyses were performed at the following locations:

- CR 58 at the existing Tanger Factory Outlet Center II driveway
- CR 58 at Kroemer Avenue
- CR 58 at Mill Road

Unsignalized and signalized intersection capacity analyses were performed at:

- NYS Route 25 at Kroemer Avenue/Forge Road.

Intersection capacity analyses were first conducted for 2000 Existing conditions. The existing conditions were based on 1999 or 2000 traffic counts taken during the peak summer months or on 1999 or 2000 traffic counts adjusted to reflect traffic during the peak summer months.

The 2000 existing traffic counts were then projected to the 2001 build year using a 3% per year growth factor. Traffic volumes expected to be generated by the approved Applebee's and by the Ralph Lauren Polo Store being constructed at Tanger Factory Outlet Center II were added to projected 2001 traffic volumes. The 2001 No Build analyses were then performed. Roadway improvements associated with the Applebee's restaurant were included as part of the No Build conditions.

It should be noted that all capacity analyses were performed in accordance with the methodology set forth in the latest edition of the "Highway Capacity Manual". A summary of the results of these analyses is provided in **Table 3-3**.

The results of these analyses indicate that some degradation of LOS will occur in the future, even with the roadway improvements associated with the other development project.

TABLE 3-3
SUMMARY OF INTERSECTION CAPACITY ANALYSES RESULTS
No-Build Condition

Location/ Time Period		2000 Existing		2001 No Build (Note 1)	
		LOS	V/C	LOS	V/C
CR 58 at the Tanger	AM	B	0.38	B	0.40
Factory Outlet Center II	PM	B	0.51	B	0.54
Driveway	Sat	B	0.66	C	0.71
CR 58 at Kroemer	AM	A	0.42	B	0.37
Avenue	PM	A	0.76	B	0.49
	Sat	A	0.64	B	0.58
CR 58 at Mill Road	AM	A	0.67	A	0.69
	PM	F	0.88	F	0.92
	Sat	A	0.79	B	0.83
NYS Route 25 at	AM	C	N/A	C	N/A
Kroemer Ave/Forge Rd	PM	E	N/A	F	N/A

Note 1: Includes the traffic expected to be generated by the approved Applebee's restaurant on Parcel B and by he Ralph Lauren Polo Store to be added to Tanger Factory Outlet Center II. Also includes the roadway improvements associated with these developments.

Unsignalized intersection capacity analyses were performed at the intersection of NYS Route 25 at Kroemer Avenue. The results of these analyses indicate that marginal operating conditions exist at the intersection during the PM peak hour, and that these conditions will deteriorate to unacceptable levels in the future No-Build condition.

It is recommended that the Town of Riverhead contact the NYSDOT to discuss this condition. Although the deterioration in levels of service is due, not to the addition of traffic from the proposed development, but to the projected normal traffic growth combined with the traffic from other area developments, the applicant is willing to participate in reasonable improvements at this location as might be requested by NYSDOT.

3.5.3 Public Transportation

It should be noted that, with certain modifications, existing bus routes provide bus service that can be utilized by both the customers and employees of the proposed development. This bus service permits residents of the surrounding areas to obtain transportation to the LIRR station as well as downtown Riverhead. The use of this bus service by both customers and employees of the proposed development will also reduce the traffic impact of the proposed development on the surrounding street network.

3.6 Land Use, Zoning and Plans

3.6.1 Land Use

The proposed project will change the land use of the site from vacant land to a lumberyard use. However, as the existing land use pattern in the vicinity, particularly across the CR 58 corridor to the south, is predominantly vacant, industrial, commercial and retail in nature, no significant impact to this land use pattern is anticipated. In addition, as the Adchem site to the north will remain in place, the proposed project will act as an appropriate transitional use between the commercial/retail uses of the CR 58 corridor and this industrial site.

3.6.2 Zoning

As the proposed project does not require a zone change, no impact to the existing zoning of the site or the zoning pattern in the area is anticipated. A Special Permit will be required for the lumberyard operation, from the Town Board. However, as adjacent and nearby sites are already developed, or are presently being developed, it is not anticipated that the issuance of a special permit for the proposed project will significantly impact the existing potential for redevelopment of other sites by use of special permits.

While the Town's Destination Commercial Planned Development District classification no longer exists, the proposed project would nevertheless have been in conformance with such a designation. The Overlay District was based on yields and uses of the underlying zoning; since the proposed project conforms with the existing zoning of the site, the proposed project would also conform to the Overlay District.

3.6.3 Land Use Plans

Town Comprehensive Master Plan (1973)

The proposed project conforms with the general intent of the Town as depicted for the "Urbanized Development Band" of the 1973 Plan, but does not conform with specific use of "Commercial Industrial Park", as this use is defined to exclude the retail use characteristic of the proposed project. However, it should be noted that this recommendation has not been followed elsewhere in the vicinity, as attested by the presence of the Tanger Shopping Center immediately across CR 58, and other nonconforming uses in the vicinity.

Comprehensive Plan Update: A Plan for the Route 58 Corridor (1983)

The proposed project conforms to all applicable goals of the Update, as follows:

1. The proposed project will promote the economic viability of all uses in the Corridor, by expanding the tax base of the Town, the employment base of the Town, and by attracting customers to the area.

2. The proposed project will add to the established need for this type of retail enterprise in the Town.

3. The project will utilize an extensive, professionally-designed landscaping plan to increase the visual attractiveness of the site.

4. The proposed project will add to the existing complementary relationship between Route 58 Business Corridor and the Riverhead Central Business District.

5. As there are no residential neighborhoods adjacent to the site or accessed via residential roadways along the project site, this goal does not apply.

6. As there are no environmentally-sensitive lands on the site or adjacent (other than the wetlands to the south, across CR 58 on the Tanger Shopping Center property), this goal does not apply. The recharge generated on the project site will not impact the existing groundwater regime of this wetland.

7. Adherence to Town and County design standards and requirements will assure the protection of the groundwater supply and mitigation of drainage problems.

8. As established by the TIS, the proposed project will provide for the efficient and safe flow of traffic.

The proposed project is not representative of a "...*large land consuming non-industrial non-retail use*" planned for the area in the Update; however, it is a similar, though less-intensive use than would be provided in accordance with the Update.

3.7 Community Services

As stated previously, the proposed 135,200 SF lumberyard will not utilize all development potential of the property. The following will discuss only those impacts resulting from that construction. **Section 3.11** includes a discussion of additional cumulative impacts associated with future development of the subject property and the adjacent 2.71-acre parcel to the east.

3.7.1 Fiscal Considerations and Tax Revenue

The total value of the subject property is anticipated to increase with the construction of the proposed facilities and thus increase tax revenue generated by the site. This increase will be disbursed to the individual taxing districts offsetting some of the additional expenses incurred by these services due to the proposed action.

Based on client provided information, the market value is anticipated to be $7,436,000. Adjusting the estimated value by the current equalization rate yields an assessed value of $2,295,493.20 ($7,436,000 x 0.3087 = $2,295,493.20). **Table 3-4** reflects the projected increase in taxes based on the estimated assessed value.

As can be seen above the proposed facility will result in an approximate increase of $219,781.77 for a total tax revenue generation of $238,712.94.

3.7.2 Educational Facilities

As all proposed development at the subject property will be commercial; no school-aged children will be generated. Therefore, the projected increase in tax revenue generated by the proposed project ($124,877.35) will benefit the School District with no increase in burden to the district.

3.7.3 Police Protection

As indicated previously, the project site is located within the Riverhead Police Department specifically within the boundaries of Sector 603. The proposed development of the site will increase the potential for emergencies to which the Riverhead Police Department will have to respond. According to Chief of Police, Joseph Grattan:

TABLE 3-4
TAXES
Proposed Conditions

Taxing Jurisdiction	Existing Conditions	Projected Taxes	Difference
Riverhead CSD #2	$10,756.46	$135,633.81	$124,877.35
Riverhead Free Library	$499.53	$6,298.83	$5,799.30
Suffolk County Tax	$338.24	$4,265.03	$3,926.79
Riverhead Town Tax	$4,003.88	$50,487.08	$46,483.19
Highway	$713.98	$9,002.92	$8,288.95
NYS Real Prop Tax Law	$641.16	$8,084.73	$7,443.57
Riverhead Ambulance Dist.	$100.31	$1,264.82	$1,164.51
Riverhead Fire Zone 1	$607.30	$7,657.77	$7,050.47
Light District	$171.30	$2,160.06	$1,988.76
Riverhead Commercial Sewer District	$858.70	$10,827.84	$9,969.14
Water Ext. 14	$240.30	$3,030.05	$2,789.75
TOTAL	**$18,931.16**	**$238,712.94**	**$219,781.77**

It is impossible to accurately place a number of the additional calls that will come to our department; however based on previous experience, it may well be noted that calls for services will increase somewhat.

However, the additional tax revenue generated by the project will assist in offsetting any additional service that may be incurred by the Department as a result of this project.

3.7.4 Fire Protection

The Riverhead Fire District has the capacity to provide fire protection services to the proposed project from stations throughout the District. The completion of the proposed project will generate approximately $7,657.77, in tax revenue thereby partially offsetting any increase in District expenditures associated with the project.

3.7.5 Solid Waste Disposal

The proposed project is estimated to generate approximately 400 lbs of solid waste per day with an expected 300 lbs eligible for recycling purposes.

It is anticipated that the existing solid waste facility on Youngs Avenue has sufficient capacity to handle the additional solid waste generated by the proposed project with no adverse impacts to the Town of Riverhead.

3.7.6 Water Supply and Wastewater Treatment

Gary Pendzick, Superintendent of the Riverhead Water District, indicated that the District is able to provide water service to the project site. The proposed building will be served via an extension of the existing 12-inch main which traverses the adjacent OC Riverhead 58 site to the east. This extension will run in a northwest-southeast direction along the site's northern boundary, beneath the proposed northerly truck access road. The Applicant will grant an easement to the Riverhead Water District for this extension.

Based on SCDHS design criteria for wastewater system sizing, the proposed 135,200 SF building will generate 5,408 gallons of wastewater daily (135,200 SF X 0.04 gpd/acre). This volume will be conveyed via an 8-inch sewer connection to the existing force main beneath the eastern access road. From this point, wastewater will be conveyed into an existing 10-inch gravity sewer beneath CR 58, then to the Riverhead Sewer District STP.

The Malcolm Pirnie Inc. Commercial Sewer District Extension Map and Plan (1996) allocated 17,214 gpd to this parcel of the District inclusive of the adjoining 2.71-acre subject property currently being developed with an Applebee's restaurant. Based on this allotment, it is anticipated that the Riverhead Sewer District STP has adequate capacity to handle the site generated wastewater of 5,408 gpd plus the 5,940 gpd generated by the Applebee's Restaurant for a total of 11,348 gpd.

The District further indicated that this additional flow would not drastically increase the nitrogen load currently processed at the STP. The existing SPDES permit allows the STP to discharge to the Peconic River Estuary system. It is not anticipated that the proposed project will elevate the current nitrogen levels of effluent discharged to the Peconic River. In addition, as indicated by correspondence received from the Riverhead Sewer District, a letter of sewer availability will be issued only after the plans have been approved. **Section 3.11.1** will discuss cumulative impacts regarding sanitary wastewater flow resulting from the completion of Applebee's and four take-out restaurants having a total of 144 seats.

Electrical and gas services are anticipated to be provided in the project area by LIPA and BUG. Design engineer Michael Randazzo indicated that LIPA will provide gas and electric service to the site.

3.8 Socio-Economic Conditions

The **Socio-Economic Impact Analysis** indicates that the proposed project is anticipated to generate, based on the applicant's experience, \$45 million in annual sales, of which \$36 million would be residential purchases and \$9 million would be commercial sales.

The Analysis provides a "market capture analysis", which includes the market effect of the Home Depot currently under application in the vicinity. In the capture analysis, a "market capture rate", or percentage of the "unsatisfied retail demand" (discussed in **Section 2.8**) which the proposed project is anticipated to address. The sales attributable to only the proposed project would address a portion of the existing and future unsatisfied retail demand in the market area ($103.58 million and $112.85 million annually, respectively). The capture analysis indicates that the proposed project, as well as the proposed Home Depot, will satisfy the majority of the existing and anticipated future levels of unsatisfied retail demand. There is sufficient unsatisfied retail demand in the market area to accommodate not only the anticipated sales from the proposed project, but the sales from the other similar project in the area. This analysis suggests that the proposed project, even in consideration of the Home Depot, will not over saturate the lumberyard market in the area.

As a result, no significant impact to the socio-economic character of the lumberyard market in the market area is anticipated.

Construction of the project will create a number of job opportunities. Short-term construction jobs and long-term employment opportunities will be created, with consequent direct positive economic impacts from the income, property and sales taxes generated by the new employees. In addition, indirect positive economic impacts will be realized, arising from:

- the potential for an increase in the number of jobs at the local material suppliers patronized during the construction process,
- the increased monetary flow into these suppliers from material purchases during this phase, and
- the increased potential for these suppliers to experience long-term increased sales from customers attracted to the area due to the proposed project.

In sum, the above indirect impacts are known as the "multiplier effect", which refers to the increased economic activity resulting from development. In this concept, for every dollar spent in constructing and or generated by the operation of a project, several dollars are generated at businesses in the area as a result of their services to the project, or as benefits from the increased customer base generated by that project.

3.9 Community Character

3.9.1 Visual Resources

The proposed project will significantly change the visual appearance and character of the site for observers along CR 58. The property will become a developed lumberyard site, with paved parking areas fronting CR 58 and a single, 1-story structure located in the rear, northwestern portion of the site. A large amount of existing natural vegetation will be retained in the eastern part of the property, pending future development in this area. A professionally-designed landscaping plan will be developed which will visually buffer the parking areas from observers along CR 58.

3.9.2 Cultural Resources

The response letter from the OPRHP indicates that, as the site has no prehistoric or historic cultural resources, no impact to such resources is anticipated from construction of the propose project.

3.9.3 Noise

The existing noise environment for the project site and surrounding area is characteristic of the surrounding land use and proximity to major roadways. Under existing conditions, the project site and surrounding uses are subject to significant noise levels generated by traffic on CR 58.

The American National Standards Institute provides land use compatibility guidelines which are generally accepted for analyzing impact based on annoyance levels. For the proposed use, noise levels <65 dBA are considered to be compatible, 65-75 dBA are considered marginally compatible and areas with levels exceeding 70 dBA are considered incompatible **(ANSI S12.40-1990, Cowan, 1994)**. The area of proposed development is located towards the northern property line, where the noise levels are currently in the range of 52 - 57 dBA. The removal of attenuating vegetation to the south will invariably result in an increase in the ambient noise environment on site, however, this increase is expected to be approximately 5 dBA. Thus, the proposed use is compatible with the ambient noise environment.

3.10 Construction Period

The construction process will begin with establishment of flagged clearing limits, followed by installation of staked hay bales and silt fencing in critical areas for erosion control purposes. Then, site clearing and grading operations can begin; initially, construction equipment and vehicles will be parked and loaded/unloaded along CR 58, but this will be moved within the site as soon as clearing/grading operations allow. It is estimated that approximately 16.39 acres, or 77.3% of the site, will be cleared. This includes areas for the new building, parking areas and landscaping. "Rumble strips" will be placed at the site construction entrance, to prevent soil on truck tires from being tracked onto CR 58.

In order to minimize the time span that denuded soil is exposed to erosive elements, excavations for the curbs, parking areas, building foundation, utility trenches and drainage system will take place immediately after grading operations have been completed. Construction of the single structure can then begin, concurrent with the utility connections and paving of the parking areas. Once heavy construction is complete, finish grading will occur, followed by soil preparation using topsoil and installation of the landscaping, which will be performed while the structure is completed.

CR 58 will only be used for site access. As a result, no significant or long-term construction impacts to the adjacent properties are anticipated. Construction activities will not occur outside weekday daytime hours (approximately 7 AM to 6 PM).

It is anticipated that the construction period (clearing, grading, construction and finishing) will take approximately 10-12 months.

3.11 Cumulative Development

This section is provided to determine cumulative impacts regarding sanitary wastewater allotment and traffic impacts associated with the proposed development and approved 198-seat Applebee's restaurant (5,363 SF) and future development of four take-out restaurants having 144 seats and totaling 7,200 SF.

3.11.1 Water Use/Wastewater Generation

As mentioned previously, the 21.21-acre subject property is, together with the 2.71-acre site adjacent to the east, allotted 17,214 gpd of sanitary wastewater by the Riverhead Sewer District. The proposed development of the lumberyard facility is estimated to generate 5,408 gpd of wastewater. The development of a 198-seat Applebee's and 144-seat take-out restaurant are estimated to generate 5,940 gpd and 4,320 gpd, respectively (see **Table 3-5**). This results in a total wastewater flow of 15,668 gpd, leaving 1,526 gpd below the allotment.

TABLE 3-5
CUMULATIVE SITE DEVELOPMENT CHARACTERISTICS

Parameter	Existing Conditions	Proposed Lumberyard	Applebee's	(4) Takeout Restaurants	Total
Lot Size	23.92 ac	21.21 ac	2.71 ac		23.92 ac
Yield	N/A	135,200 SF (174,000 SF total floor area)	5,363 SF (198 seats)	7,200 SF (144 seat)	N/A
Water Use/Wastewater Generation	0 gpd	5,408 gpd	5,940 gpd	4,320 gpd	15,668 gpd

Therefore, pursuant to the development of the Applebee's restaurant and four take-out restaurants, the total sanitary flow will increase to 15,668 gpd. The existing allocation is sufficient to permit the connection of these proposed sites to the Riverhead Sewer District in accordance with the Malcolm Pirnie, Inc. plan. It is further noted that the addition of full development of the site including a 45,500 SF office use and a 6,500 SF (225 seat) restaurant would cause wastewater flow to exceed the allocation. Therefore, full development would not be

Directional Distribution
To determine the origins and destinations of vehicles entering and exiting the proposed development and the routes of their approaches and departures, a directional distribution analysis was performed.

Directional distributions were developed based on the areas from which various land uses on the site were expected to draw traffic. The lumberyard and office land uses were expected to generate traffic from inside the Town of Riverhead and from nearby communities outside the Town of Riverhead. The approach and departure routes to the lumberyard and office uses were, therefore, developed based on the populations of census tracts within the drawing area. The restaurant land use was expected to generate traffic from local areas. The directional distribution of the restaurant land use was, therefore, developed based on traffic patterns near the site.

Other Planned Developments
There are four other developments in the vicinity of the proposed development whose traffic were considered in analyses for the proposed development.

The Applebee's restaurant on Parcel B and the Ralph Lauren Polo Store at Tanger Factory Outlet Center are currently under construction. The traffic expected to be generated by these approved developments is shown in **Table 3-7**. The impacts of these volumes on each intersection are provided in the "Intersection Traffic Volume Summaries" section of the **Volume 2** Appendix. Since these developments are expected to be complete before construction of the proposed lumberyard development is complete, Applebee's and the Polo store are included in the No Build phase of analysis.

TABLE 3-7
CUMULATIVE SITE-GENERATED TRAFFIC
Approved Developments

Development/Size	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Applebee's Restaurant	0	0	48	35	101	73
Ralph Lauren Polo Store	6	2	13	15	23	22
Total	**6**	**2**	**61**	**50**	**124**	**95**

Riverhead Centre shopping center on the north side of CR 58 east of Mill Road and two restaurants in Tanger Factory Outlet Center are the other proposed developments to be considered in analyses for the proposed lumberyard complex.

The traffic expected to be generated by these proposed developments is shown in **Table 3-8**. The impacts of these volumes on each intersection examined for the proposed lumberyard complex are provided in the "Intersection Traffic Volume Summaries" section of the **Volume 2**

Appendix. It was estimated that minimal additional traffic would be generated by the restaurants within the Tanger Factory Outlet Center because they will be completely contained by the outlet center and their patrons will most likely be shoppers already at the outlet center. Since neither of these projects have yet been approved, Riverhead Centre and the Tanger restaurants are included at the end of the analyses in the Build with Other Development conditions.

TABLE 3-8
CUMULATIVE SITE-GENERATED TRAFFIC
Other Proposed Developments

Development/Size	Weekday AM Peak Hour		Weekday PM Peak Hour		Saturday Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Riverhead Centre	149	103	426	426	690	650
Two Restaurants in Tanger Factory Outlet Center	0	0	0	0	39	38
Total	**149**	**103**	**426**	**426**	**729**	**688**

Access

As shown in **Figure 1-3**, access to the proposed development is to be provided at two locations along CR 58; one is to the west of the site directly north of the existing signalized driveway to Tanger Factory Outlet Center II, the other is to the east of the site directly north of Kroemer Avenue.

The westerly site driveway will be aligned opposite the existing traffic signal at the Tanger Factory Outlet Center II driveway. The driveway will provide direct access to the proposed development and will also allow the NYSDOT maintenance facility an internal connection to the signalized intersection. At the intersection of the proposed driveway with CR 58, the driveway will have three lanes, one for entering traffic and two for exiting traffic. The traffic signal will be modified to accommodate revised operation at the location.

The easterly access driveway will be aligned opposite Kroemer Avenue. Application has already been made to the SCDPW to modify the existing signalized intersection of CR 58 at Kroemer Avenue. The modifications are being requested as part of the approved development of the Applebee's restaurant. The requested modifications will provide a new north/south roadway aligned with Kroemer Avenue. Accesses from both Parcel A and Parcel B will be provided to the new north/south roadway. The new roadway will then extend into the existing Adchem industrial parcel. At the intersection of the proposed roadway with CR 58, the shared access road will have five lanes, two for entering traffic and three for exiting traffic.

The above access plan will provide well-separated access points to the proposed development. Both access points will operate under the protection of traffic signals and, consistent with good access management practices, will provide internal access to adjacent uses thus reducing the number of curb cuts along CR 58.

Capacity Analysis

To examine the impact of site-generated traffic on adjacent roadways in the vicinity of the site, signalized intersection capacity analyses were performed at the following locations:

- CR 58 at the existing Tanger Factory Outlet Center II driveway
- CR 58 at Kroemer Avenue
- CR 58 at Mill Road

Unsignalized and signalized intersection capacity analyses were performed at:

- NYS Route 25 at Kroemer Avenue/Forge Road.

Intersection capacity analyses were first conducted for 2000 Existing conditions. The existing conditions were based on 1999 or 2000 traffic counts taken during the peak summer months or on 1999 or 2000 traffic counts adjusted to reflect traffic during the peak summer months.

The 2000 existing traffic counts were then projected to the 2001 build year using a 3% per year growth factor. Traffic volumes expected to be generated by the approved Applebee's and by the Ralph Lauren Polo Store being constructed at Tanger Factory Outlet Center II were added to projected 2001 traffic volumes.

It should be noted that all capacity analyses were performed in accordance with the methodology set forth in the latest edition of the "Highway Capacity Manual". A summary of the results of these analyses is provided in **Table 3-9**.

The results of these analyses indicate that excellent levels of service will be achieved for the proposed cumulative development once the proposed geometric and signalization changes are made.

Unsignalized intersection capacity analyses were performed at the intersection of NYS Route 25 at Kroemer Avenue. The results of these analyses indicate that marginal operating conditions exist at the intersection during the PM peak hour, and that these conditions will deteriorate to unacceptable levels in the future No-Build condition.

It is recommended that the Town of Riverhead contact the NYSDOT to discuss this condition. Although the deterioration in levels of service is due, not to the addition of traffic from the proposed development, but to the projected normal traffic growth combined with the traffic from other area developments, the applicant is willing to participate in reasonable improvements at this location as might be requested by NYSDOT.

Public Transportation

It should be noted that, with certain modifications, existing bus routes provide bus service that can be utilized by both the customers and employees of the proposed development. This bus service permits residents of the surrounding areas to obtain transportation to the LIRR station as well as downtown Riverhead. The use of this bus service by both customers and employees of the proposed development will also reduce the traffic impact of the proposed development on the surrounding street network.

TABLE 3-9
SUMMARY OF INTERSECTION CAPACITY ANALYSES RESULTS
Cumulative Impacts

Location/ Time Period		2001 Build Phase I (Note 2)		2001 Build w/ Modifications Phase I (Note 3)	
		LOS	V/C	LOS	V/C
CR 58 at the Tanger	AM	B	0.47	A	0.46
Factory Outlet Center II	PM	C	0.74	B	0.59
Driveway	Sat	F	0.99	C	0.89
CR 58 at Kroemer	AM	B	0.51	B	0.45
Avenue	PM	B	0.65	B	0.67
	Sat	C	0.92	B	0.77
CR 58 at Mill Road	AM	A	0.77	A	0.60
	PM	F	1.04	C	0.94
	Sat	F	1.04	B	0.95
NYS Route 25 at	AM	C	N/A	A	0.36
Kroemer Ave/Forge Rd	PM	F	N/A	A	0.54

Note 1: Includes the traffic expected to be generated by the approved Applebee's restaurant on Parcel B and by he Ralph Lauren Polo Store to be added to Tanger Factory Outlet Center II. Also includes the roadway improvements associated with these developments.

Note 2: Includes Note 1 and the traffic expected to be generated by the lumberyard on Parcel A of the proposed development and by the four take-out restaurants on Parcel B of the proposed development.

Note 3: Includes Note 2 and the roadway improvements needed in conjunction with Alternative A.

SECTION 4.0

MITIGATION MEASURES

4.0 MITIGATION MEASURES

4.1 Geological Resources

- The Site Plan will be designed so that, to the greatest degree practicable (commensurate with site elevation requirements to provide for proper drainage and wastewater flow), excavated material will be reused within the site as fill, reducing the need for importation of fill. However, if fill material from off-site is required, the adjacent property to the north will be investigated to supply this material, thereby minimizing the use of CR 58 by construction vehicles.

- Erosion preventive measures to be taken during the construction period may include: use of groundcovers (vegetative or artificial), drainage diversions, soil traps, minimizing the area of soil exposed to erosive elements at one time, and minimizing the time span that soil is exposed to erosive elements.

- Dust raised during grading operations may be minimized and controlled by the use of water sprays, a truck cleaning station at the construction exit, and implementation of any dust suppression systems specified by the appropriate Town agencies.

- Truck movements and construction activities will be undertaken on the site during the hours of approximately 8 AM-5 PM or as specified by the Town Code.

4.2 Water Resources

- The proposed project will consist of a lumberyard use; therefore no toxic or hazardous chemicals are anticipated to be present or utilized on the site. Consequently, no impact to groundwater quality is anticipated from this source.

- The lumberyard will utilize the public sewer system for disposal of sanitary wastes. The overall nitrogen concentration in recharge of 0.02 mg/l will result from irrigation and stormwater runoff. The anticipated concentration is less than the NYSDEC drinking water standard of 10 mg/l and therefore, the proposed project is not expected to result in significant adverse effects to groundwater quality with regard to nitrogen loading.

- SONIR computer model results for the proposed project indicate that a total of 19.03 MG/yr of water will be recharged on the site. Of this anticipated recharge volume, stormwater will account for 99.6% of the total recharge with irrigation contributing 0.4%. In conformance with the Town requirements, all stormwater runoff generated on developed surfaces will be retained on-site, to be recharged to groundwater in proposed stormwater catchbasins and leaching pools.

- The project site will utilize public water, to be supplied by the Riverhead Water District via an existing main beneath CR 58. The potable water requirement of the project, 5,408 gpd, is not anticipated to impact the ability of the RWD to serve the public in the vicinity.

- Where applicable, construction will utilize water-saving plumbing fixtures and systems.

- An on-site irrigation system will be utilized for the 1.82 acres of landscaping proposed; it may be equipped with moisture sensors to further reduce the volume of water required for irrigation.

4.3 Air Resources

- As no impacts to air quality are anticipated from the proposed project or the increase in vehicle traffic, no mitigation is necessary or proposed.

4.4 Ecological Resources

- Regional impacts to vegetation and habitat will be negligible, as the project site has experienced several events of prior disturbance, is small in size and represents only a small portion of the natural vegetation in the area.

- The majority of the 18.95 acres of natural vegetation on the property are dominated by successional and somewhat mature woodland. Approximately 23% of this woodland will be retained, in the eastern portion of the property. Approximately 1.82 acres of landscaping/turf will replace a portion of this removed vegetation, and will incorporate native as well as ornamental species.

4.5 Transportation

Based on analyses in the TIS, it has been concluded that the construction of the proposed lumberyard complex will not adversely affect traffic conditions on the street network in the vicinity of the site. Although the proposed development will add traffic to the surrounding street system, the impact of additional traffic will be minimized and accommodated by roadway and signalization modifications. The following points should be recognized.

1. Access points to the site are located and designed such that site-generated traffic will be serviced without adversely affecting CR 58. In keeping with good access management practices, both access driveways will provide combined access to adjacent properties on CR 58.
2. Access points to the site will be clearly visible to traffic on CR 58, and no sight distance problems will exist in the vicinity of the driveways.
3. Most locations in the vicinity of the site have a history of minimal accident occurrence. In combination with recommended roadway modifications, traffic volumes generated by the proposed development will not have an adverse impact on current accident experience.
4. Capacity analyses indicate that intersections in the vicinity of the proposed development will operate well once the following roadway modifications are made:

<u>CR. 58 at the Tanger Factory Outlet Center II Driveway</u>

a. A southbound approach will be added to this intersection to act as access to the site. The southbound approach should have one twelve-foot left-turn lane, one twelve-foot thru thru/right-turn lane, and one sixteen-foot lane for traffic moving away from the intersection.

b. The two-way left-turn lane on CR 58 west of the Tanger driveway should be re-striped as an exclusive left-turn bay for eastbound traffic into the site.
c. The right-most of the two existing northbound left-turn lanes should be changed to a northbound combination left/thru lane.
d. One twelve-foot right-turn lane should be added to the westbound approach.
e. The traffic signal should be modified to provide split-phased operation for the northbound and southbound approaches.
f. The traffic signal timing and cycle length should be adjusted to provide optimal intersection performance and progression.

CR 58 at Kroemer Avenue

a. The improvements currently proposed in connection with the Applebee's application will be constructed. These include:
b. Mill Road will be re-striped and any raised medians removed or re-shaped to add ten-foot or wider northbound and southbound exclusive left-turn lanes.
c. The traffic signal will be modified to provide a leading northbound phase.
d. The traffic signal timing and cycle length will be adjusted to provide optimal intersection performance and progression.

It should be noted that the geometric changes at this intersection have also been recommended in conjunction with the development of the proposed Riverhead Centre. Since Riverhead Centre will have a more direct impact on this intersection than the proposed lumberyard complex, it is suggested that changes be made by Riverhead Centre if approval of Riverhead Centre is imminent.

NYS Route 25 at Kroemer Avenue

Capacity analyses results indicate that poor levels of service can be expected to prevail at this intersection whether or not this development is approved. It is recommended that the Town of Riverhead contact the NYSDOT to discuss this condition. Although the deterioration in levels of service is due to the projected normal traffic growth combined with the traffic from other area developments, rather than to the addition of traffic from the proposed development, the applicant is willing to participate in reasonable improvements at this location as might be requested by NYSDOT.

5. The existing S-62 bus route provides service that can be utilized by both the customers and employees of the proposed development. The use of this bus service will reduce the traffic impact of the proposed development on the surrounding street network.

4.6 Land Use, Zoning and Plans

- As no significant impact to the land use pattern in the vicinity is anticipated, no mitigation measures are necessary or proposed. The proposed structure has been sited in the portion of the site farthest from CR 58, minimizing the effect of the anticipated land use change of the site relative to adjacent and nearby land uses. The proposed project will act as an appropriate transitional use between the commercial/retail uses of the CR 58 corridor and the Adchem industrial site.

- As no impact to the existing zoning of the site or the zoning pattern in the area is anticipated, no mitigation measures are necessary or proposed. The proposed project has been designed to conform with all applicable zoning regulations and requirements, including setbacks, yards and building height. It is not anticipated that the issuance of the required special permit for the proposed project will significantly impact the existing potential for redevelopment of other sites by use of special permits.

- While the Town Board-approved "Destination Commercial Planned Development District" classification no longer exists in the town, the prior designation of the project site for this zoning category suggests that the proposed project can be considered appropriate for this site. In addition, the Overlay District was based on yields and uses of the underlying zoning; since the proposed project conforms with the existing zoning of the site, the proposed project would also conform to the Overlay District.

- While the proposed project conforms with the general intent of the "Urbanized Development Band" of the 1973 Town Comprehensive Master Plan, it does not conform with the specific use of "Commercial Industrial Park" (this use is defined to exclude the retail use characteristic of the proposed project). However, it should be noted that this recommendation has not been followed elsewhere in the vicinity, as attested by the presence of the Tanger Shopping Center immediately across CR 58, and other nonconforming uses in the vicinity.

- The proposed project conforms to all applicable goals of the 1983 Comprehensive Plan Update, though the proposed project is not representative of a "*...large land consuming non-industrial non-retail use*" planned for the area. However, the proposed project is a similar, though less-intensive use than would be provided in accordance with the Update.

4.7 Community Services

- The significant increase in property taxes paid by the project (as well as the increase in sales taxes provided by the lumberyard) will offset at least a portion of the increased costs to police, fire/ambulance and other public services caused by the project.

- The proposed project will provide a significant positive benefit in terms of tax revenues to the Riverhead School District, particularly as the site presently and will in the future generate no school-age children. The proposal will provide a large increase (of approximately $219,800/year) in property taxes generated by the site.

- Provision of security alarms for the lumberyard will increase the level of security on the entire property.

- Use of fire resistant building materials, as well as adherence to the NYS Fire Code will increase the level of safety from fires and minimize the potential for use of ambulance services.

- Use of water-saving plumbing fixtures and equipment will minimize the increase in water use on the property.

- The volume of wastewater generated by the project (5,408 gpd) is anticipated to be well below the volume anticipated for the site by the Malcolm Pirnie Engineering Study prepared for the overall property (17,214 gpd). Design and installation of such systems will be subject to the review and approval of the SCDHS.

- The solid waste generated on the site is not anticipated to contain any toxic or hazardous substances, as such materials are not expected to be used, stored or sold by the project.

- Use of energy-conserving equipment and building materials will minimize the increase in the use of electrical and natural gas resources.

4.8 Socio-Economic Conditions

- The capture analysis prepared as part of the **Socio-Economic Impact Analysis** indicates that the proposed project, as well as the proposed Home Depot, will satisfy the majority of the existing and anticipated future levels of unsatisfied retail demand. There is sufficient unsatisfied retail demand in the market area to accommodate not only the anticipated sales from the proposed project, but the sales from the other similar project in the area. This analysis suggests that the proposed project, even in consideration of the Home Depot, will not over saturate the lumberyard market in the area. As the proposed project is not anticipated to result in any significant impacts to the existing socio-economic character of the lumberyard market in the vicinity, no mitigation measures are necessary or proposed.

4.9 Community Character

- The potential visual impact of the proposed development will be mitigated due to the design and layout of the project, the use of a professionally-designed landscaping plan, and by the limited view of the site from most points to the east, west and north. In addition, the project will include an attractive lighting design that will heighten the attractiveness of the site for individuals viewing it from CR 58.

- The visual character of the site will be changed as a result of the proposed project; however, this change will be in keeping with the existing visual character of the adjacent and nearby commercial and utility areas.

4.10 Construction Period

- Impacts anticipated the construction period will be mitigated by use of water sprays and a truck cleaning station (to reduce dust), limiting construction operations to the hours of 7 AM to 6 PM, and the relatively short length of the construction process (approximately 10-12 months).

4.11 Cumulative Development

- Pursuant to the development of the Applebee's restaurant and four take-out restaurants on the adjacent property, the total sanitary flow (with the proposed project) will increase to 15,668 gpd. The existing allocation for sanitary wastewater (17,214 gpd) is sufficient to permit the connection of these proposed sites to the Riverhead Sewer District in accordance with the Malcolm Pirnie, Inc. plan. It is further noted that the addition of full development of the project site (a 45,500 SF office building and a 6,500 SF, 225-seat restaurant) would cause wastewater flow to exceed the allocation. Therefore, full development would not be permitted to connect to the District until such time as re-allocation or increased allocation is available or it is demonstrated that the proposed uses meet the allocated flow.

- The results of the cumulative traffic analyses indicate that excellent levels of service will be achieved for the proposed cumulative development once the proposed geometric and signalization changes are made.

- Unsignalized intersection capacity analyses were performed at the intersection of NYS Route 25 at Kroemer Avenue. The results of these analyses indicate that marginal operating conditions exist at the intersection during the PM peak hour, and that these conditions will deteriorate to unacceptable levels in the future No-Build condition. It is recommended that the Town of Riverhead contact the NYSDOT to discuss this condition. Although the deterioration in levels of service is due, not to the addition of traffic from the proposed development, but to the projected normal traffic growth combined with the traffic from other area developments, the applicant is willing to participate in reasonable improvements at this location as might be requested by NYSDOT.

- It should be noted that, with certain modifications, existing bus routes provide bus service that can be utilized by both the customers and employees of the proposed development. This bus service permits residents of the surrounding areas to obtain transportation to the LIRR station as well as downtown Riverhead. The use of this bus service by both customers and employees of the proposed development will also reduce the traffic impact of the proposed development on the surrounding street network.

5.0 ADVERSE IMPACTS THAT CANNOT BE AVOIDED

The site has been characterized, and the potential impacts to the existing site have been assessed. Some impacts may still exist for which no mitigation is available. The impacts themselves have been quantitatively and qualitatively discussed in previous sections of this document. The impacts of the proposed project will be minimized where possible, but this section acknowledges those impacts which may still occur:

- Temporary increases in the potential for fugitive dust and construction traffic and noise during the construction period.

- Removal of vegetation in the interior of the site, although perimeter buffers of vegetation will remain around the west, north and east boundaries, and in substantial parts of the south.

- Displacement and/or loss of limited wildlife species and those species unable to adapt to human influences.

- Increase in vehicle trips generated on the site and on area roadways.

6.0 GROWTH-INDUCING ASPECTS

Growth-inducing aspects include those direct and indirect effects of a project which promote development in an area. Direct effects are those aspects of a project which increase growth in and of themselves, and may include:

- a significant influx of new residents/consumers into an area (for a residential project),
- creation/revitalization of a major retail center or other type of employment center (for a commercial or industrial project) in an area where such development is not present, or
- development of a significant facility of a type not previously represented in the area.

Indirect effects are those aspects of a project which enable growth on other sites, or increase the potential for other development in an area. Indirect effects may include:

- installation of new or expanded infrastructure improvements,
- increased sales receipts from material suppliers to the project, or
- increased number of businesses attracted to the area because of the increased number of potential customers.

Examples of infrastructure improvements include: extension of public sewer lines, construction of a sewage treatment plant with significant excess capacity, extension of public water distribution lines or installation of new wellfields, or extension of public transit services to an area previously unserved. However, the proposed project will utilize the existing public sewer and water supply lines in the immediate vicinity, and public transit (bus) services already exist along CR 58. As a result, impacts to these existing infrastructure services are not anticipated.

In general, significant growth-inducing aspects of the proposed project are not anticipated. Major development in the immediate vicinity is already present (Tanger, etc.), and the proposed project will only incrementally increase development in the area. The existing roadways serving the site are already in place, and improvements to these roads are in place or in process as a result of prior and continuing development. The area, and project site in particular, have long been planned by the Town of Riverhead for development of the type represented by the proposed project. The proposed use is contemplated as well by the existing zoning (with a Special Permit) for the site, and the proposed use is complementary to the existing pattern of development in the area and this portion of the CR 58 Corridor. Finally, the proposed project will provide a permanent use on-site, with attendant positive economic effects for the Town and both short-term and long-term project employees.

7.0 ALTERNATIVES

The State Environmental Quality Review Act requires the investigation of alternatives to a proposed project in order to determine the merits of the project as compared to other possible uses, site locations and technologies. The discussion and analysis of each alternative should be conducted at a level of detail sufficient to allow for the comparison of various impact categories by the decision-making agencies. For this document, the alternatives include the following:

- **Alternative 1: No Action-**the site remains in its present use and condition
- **Alternative 2: Full Site Development-**the site is developed with an additional 6,500 SF, 225-seat restaurant and 45,500 SF of office use
- **Alternative 3: Alternative Site Use-**the site is developed with 369,000 SF of office space

Table 7-1 presents a point-by-point comparison of each alternative against those of the proposed project.

7.1 No Action

This alternative is intended to provide a baseline of existing conditions on the site, in order to have a basis for comparison with impacts from the other alternatives and the proposed project.

If the site is not developed and remains in its existing condition and use, the site would remain a vacant, wooded property available for future development. The financial goals of the owner would not be realized and the site would continue to provide no economic or developmental gain for the community.

If left undisturbed, the site will generate no traffic, solid wastes or wastewater; it would not use potable water, and would not generate employees. There would continue to be no enrollment impact to the Riverhead School District, as no schoolchildren would be generated. The site would continue to generate 11.82 MGY of recharge, at a nitrate/nitrogen concentration of 0.02 mg/l.

TABLE 7-1
COMPARISON OF ALTERNATIVES

Parameter	Proposed Project	Alternative 1	Alternative 2	Alternative 3
Use/Yield	135,200 SF lumberyard (174,000 SF floor area)	Vacant, wooded	135,200 SF lumberyard (174,000 SF floor area), 6,500 SF restaurant (225 seats), 45,500 SF office	369,000 SF office
Coverages:	---	---	---	---
Building (ac)	3.10	0	4.29	2.82
Impervious/Paved (ac)	11.47	0	14.30	18.35
Unpaved/Pervious (ac)	0	2.26	0	0
Landscaped (ac)	1.82	0	2.62	0.04
Natural Vegetation (ac)	4.82	18.95	0	0
Total (ac)	21.21	21.21	21.21	21.21
Water Resources:	---	---	---	---
Water Use/Wstwtr. Gnrtd. (gpd)	5,408	0	14,888	22,140
Recharge Volume (MGY)	19.03	11.82	21.49	22.61
Nitrogen Conc. (mg/l)	0.02	0.02	0.02	0.02
Trip Generation:	---	---	---	---
AM Peak Hour (vph)	257	0	357	528
PM Peak Hour (vph)	500	0	699	493
Saturday Peak Hour (vph)	940	0	1,036	109
Miscellaneous:	---	---	---	---
Parking Required (spaces)	482	0	861	2,460
Solid Waste (lbs/day)	400	0	1,050	3,690
Employees (capita)	100	0	250	1,054

7.2 Full Site Development

This alternative assumes that the site is developed with the proposed lumberyard (135,200 SF of interior floor space and 38,800 SF of exterior floor space), a 6,500 SF/225-seat restaurant and a one-story, 45,500 SF office building. This represents full site development, which would be built in conformance with the Industrial A zoning district. Total building coverage would be 4.29 acres, with 14.30 acres of impervious parking area surfaces. The remaining 2.62 acres are irrigated landscaping, to be distributed along the property's perimeters. There would be no retained natural vegetation, as was the case for the proposed project; the 4.82 acres in that scenario are the areas where the restaurant and office building are located.

The site access points are the same as those for the proposed project; access to these two new structures would be available off the site's internal roadways. Based on the applicable Town Code requirement for this type of land use, a minimum of 861 parking spaces would be required.

This alternative would generate a number of peak hour vehicle trips in excess of the proposed project, for all three peak hours. Based on the SCDHS design criteria for wastewater system sizing, the site would require an estimated 14,888 gpd of potable water. However, the total volume of wastewater in the engineering projections for this site and the adjacent 2.92-acre property is 17,214 gpd.

If sufficient treatment capacity were available, the site would be sewered, and all wastewater would be conveyed to the off-site STP via the public sewer system. The SONIR computer model (see **Appendix C-4**) indicates that overall site-generated recharge would total 21.49 MGY, with a nitrate/nitrogen concentration of 0.02 mg/l. A total of 250 employees are anticipated, and approximately 1,050 lbs/day of solid waste would be generated.

It is anticipated that, as the assessed value of the site would be substantially increased in this alternative, there would be a corresponding substantial increase in the amount of property taxes paid. This would enable substantial offsetting of the cost to public agencies in providing public services to the property.

In this alternative, the property owner would realize a substantial economic return on his property, which would offset the cost of the increased taxes paid by the property owner.

7.3 Alternative Site Use

This alternative assumes that the site is developed with a single, 3-story 369,000 SF office building. This represents full site development, which would be built in conformance with the Industrial A zoning district. Total building coverage would be 2.82 acres, with 18.35 acres of impervious parking area surfaces. The remaining 0.04 acres are irrigated landscaping, to be distributed along the property's perimeters. There would be no retained natural vegetation.

The site access points would be the same as those for the proposed project. Based on the applicable Town Code requirement for this type of land use, a minimum of 2,460 parking spaces would be required. Because of this requirement, a substantial amount of paved parking area would result, which would leave little land available for landscaping. In order to increase the amount of landscaping, the number of parking spaces could be reduced, which would require a special permit from the Town, or some of the required number of spaces could be located on a deck. In that case, approval from the Town would be required.

This alternative would generate a number of peak hour vehicle trips in excess of the proposed project for only the AM peak hour; trips generated would be nearly the same as the proposed project for the PM peak hour, and would be substantially less for the Saturday peak hour. Based on the SCDHS design criteria for wastewater system sizing, the site would require an estimated 22,140 gpd of potable water. However, the total volume of wastewater in the engineering projections for this site and the adjacent 2.92-acre property is 17,214 gpd.

If sufficient treatment capacity were available, the site would be sewered, and all wastewater would be conveyed to the off-site STP via the public sewer system. The SONIR computer model (see **Appendix C-4**) indicates that overall site-generated recharge would total 22.61 MGY, with a nitrate/nitrogen concentration of 0.02 mg/l. A total of 1,054 employees are anticipated, and approximately 3,690 lbs/day of solid waste would be generated.

It is anticipated that, as the assessed value of the site would be substantially increased in this alternative, there would be a corresponding substantial increase in the amount of property taxes paid. This would enable substantial offsetting of the cost to public agencies in providing public services to the property.

In this alternative, the property owner would realize a substantial economic return on his property, which would offset the cost of the increased taxes paid by the property owner.

Draft
Environmental Impact Statement

HEADRIVER, LLC LUMBERYARD COMPLEX
Special Permit Application

North side of Suffolk County Route 58
opposite Kroemer Road

RIVERHEAD, TOWN OF RIVERHEAD
SUFFOLK COUNTY, NEW YORK

Volume 2 of 2
Traffic Impact Study

NP&V Project No. 98043

August, 2000

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ENVIRONMENTAL • PLANNING • CONSULTING

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SUFFOLK COUNTY, NEW YORK

Volume 2 of 2
Traffic Impact Study

NP&V Project No. 98043

August, 2000

Draft
Environmental Impact Statement

Headriver, LLC Lumberyard Complex

Special Permit Application
Riverhead, New York

Prepared for:	Lerner-Heidenberg Properties 234 Closter Dock Road Closter, New Jersey 07624 (201) 768-1300 Contact: Stephen Lerner
For Submission to:	Town of Riverhead Town Board, Town Hall 200 Howell Avenue Riverhead, New York 11901 (631) 727-3200 Contact: Robert Kozakiewicz, Supervisor
Prepared by:	Nelson, Pope & Voorhis, LLC 572 Walt Whitman Road Melville, NY 11747 (631) 427-5665 Contact: Charles J. Voorhis, CEP, AICP

TRAFFIC IMPACT STUDY FOR PROPOSED HEADRIVER, LLC LUMBERYARD COMPLEX

RIVERHEAD, NEW YORK

Prepared By:

DUNN ENGINEERING ASSOCIATES, P.C.

JULY 2000

Table of Contents

INTRODUCTION

Purpose of Report

This Traffic Impact Study contains the results of a professional traffic engineering examination of the proposed Headriver, LLC Lumberyard Complex which is to be located on the north side of Old Country Road (C.R. 58) opposite Kroemer Avenue in the Town of Riverhead, Suffolk County, New York. The 23.92-acre site of the proposed lumberyard complex consists of two separate properties. These properties are adjacent to one another and are planned to be developed simultaneously by a single developer. For purposes of this report then, the proposed lumberyard complex is one site with two parcels which will be developed in phases. Parcel A consists of 21.21 acres located on the north side of C.R. 58 between the Tanger Factory Outlet Center driveway and Kroemer Avenue. Parcel B consists of 2.71 acres and is located on the north side of C.R. 58 between Kroemer Avenue and Riverhead Raceway. The parcels will be developed in two phases.

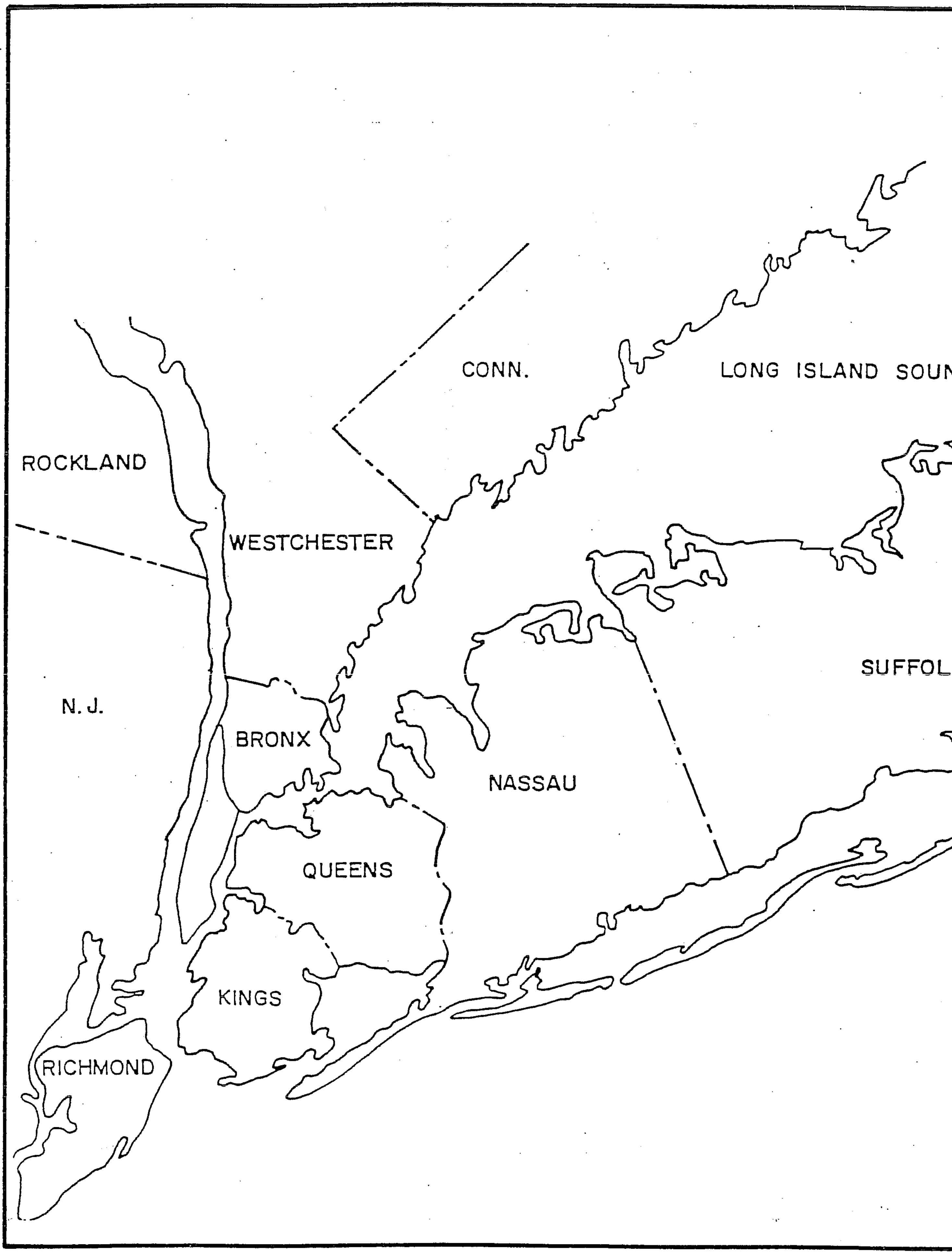
The Riverhead Town Board required that the Draft Environmental Impact Statement (DEIS) for the proposed Headriver, LLC Lumberyard Complex, compare the impact of the proposed lumberyard complex to the impact of a reasonable "allowable alternative" use of the site. Therefore, this report examines the potential traffic impact of two development alternatives allowable under the existing zoning; Alternative A, the full build-out of the proposed lumberyard complex, and Alternative B, the full build-out of the site with 369,000+ square feet of office space.

Location

The 23.92-acre site of the proposed development is located on the north side of Old Country Road (C.R. 58) in the Town of Riverhead, Suffolk County, New York. Parcel A is 21.21 acres and extends from the Tanger Factory Outlet Center II driveway to Kroemer Avenue. Parcel B is 2.72 acres and extends from Kroemer Avenue to west of the Riverhead Raceway. Construction of an Applebee's restaurant has already begun on a portion of Parcel B. The Applebee's is considered an existing development in this Study.

Figure 1 is an Area Map which indicates the location of the Town of Riverhead within the New York metropolitan area. Figure 2 is a Location Map which indicates the location of the site within the Town. Figure 3 is a Site Map which shows the surrounding roadway network, the boundaries of the site, and the areas of the site associated with Phase I and Phase II of development.

SCAN 2



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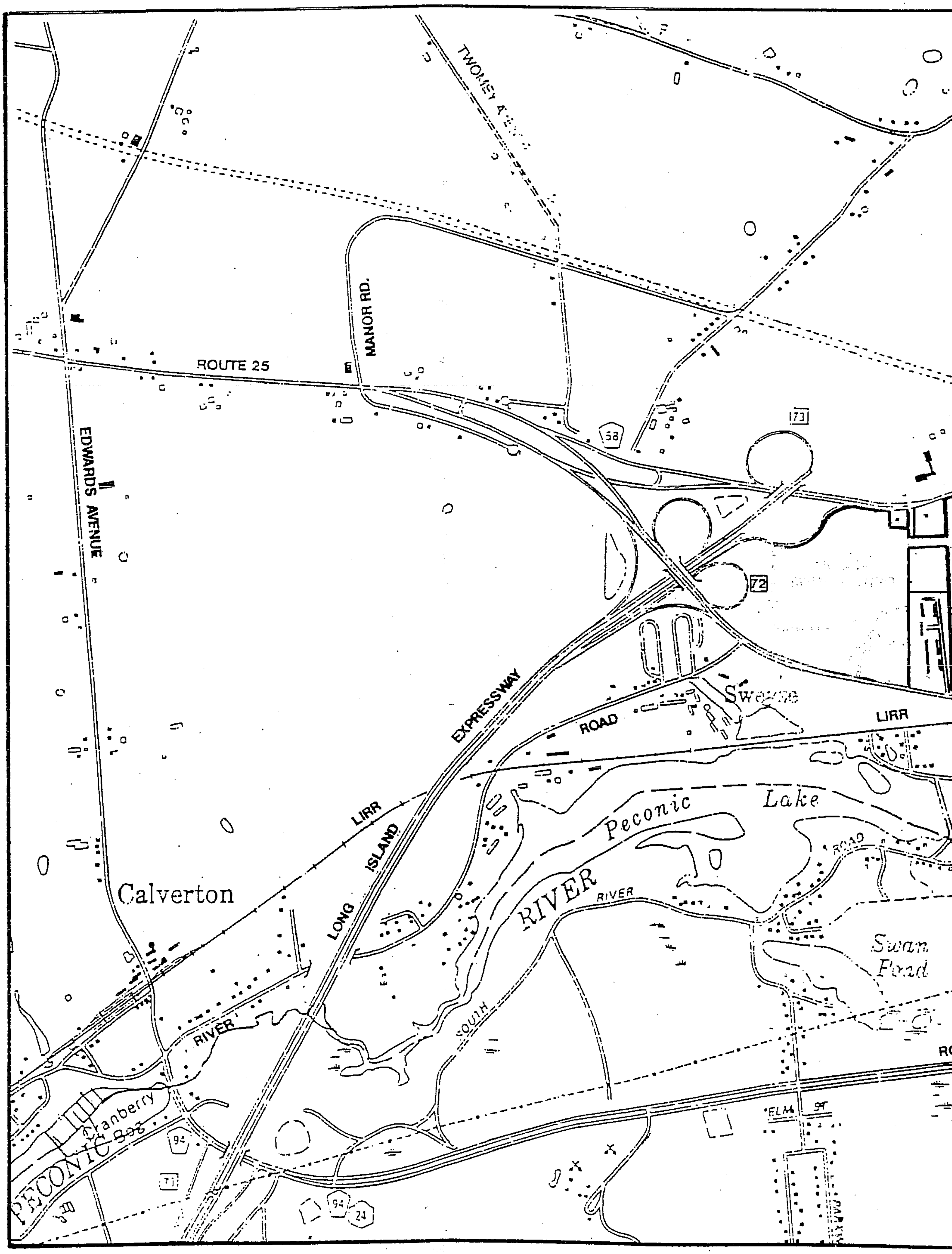
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EDWARDS AVENUE
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ROAD
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Calverton
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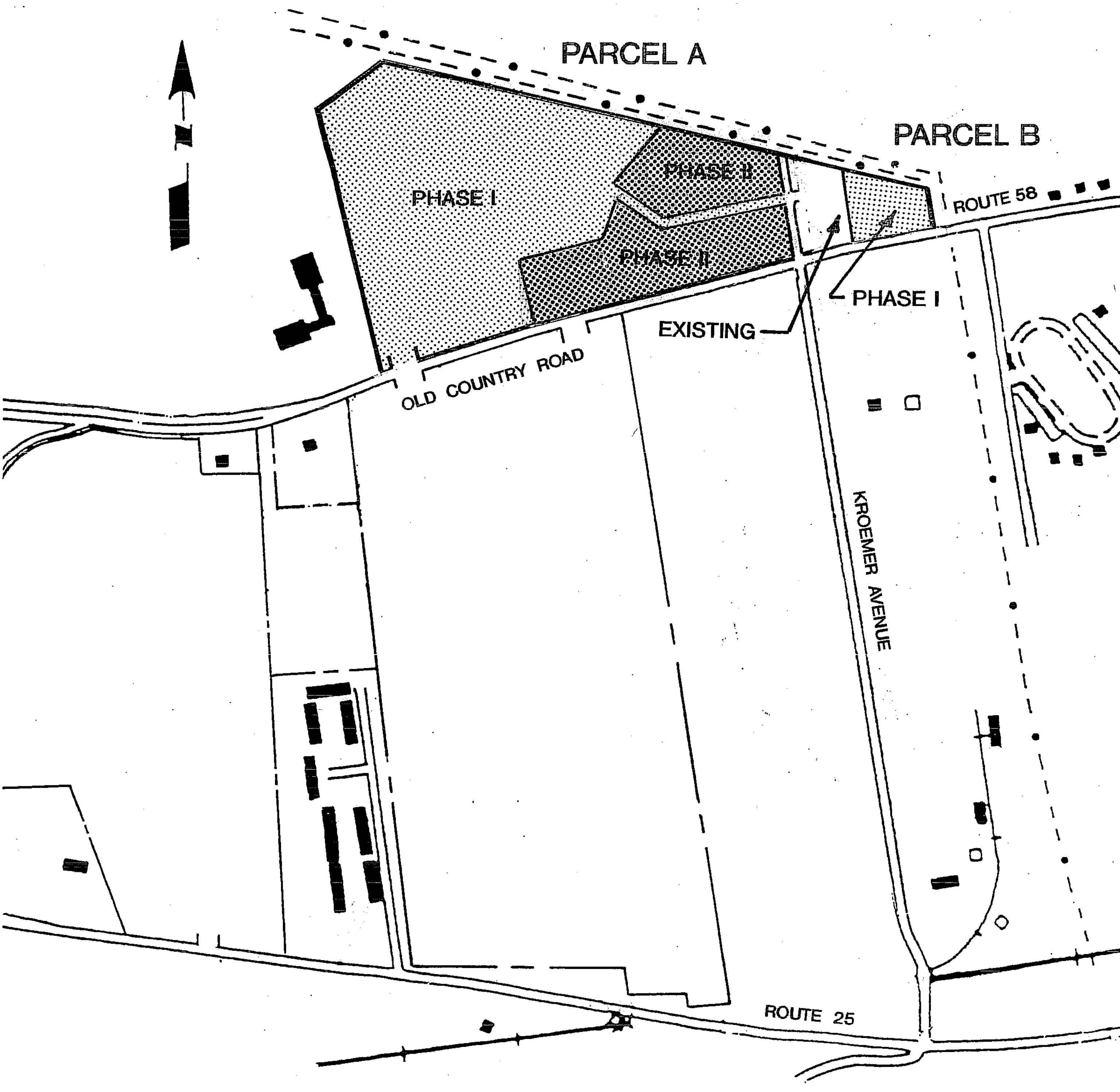


FIGURE 3
SITE MAP

STUDY APPROACH

As part of the preparation of this Traffic Impact Study, the following tasks were performed:

1. Several personal, on-site field visits were made to observe traffic movements under various conditions.

2. A physical inventory was made of the surrounding street network.

3. An analysis was made of traffic volume data that was obtained from the Suffolk County Department of Public Works and the New York State Department of Transportation.

4. Supplemental manual traffic counts were collected as necessary to update available volume counts.

5. An examination was made of the traffic flows on C.R. 58, Kroemer Avenue, and New York State Route 25, and the available capacity of the surrounding street network was determined.

6. An evaluation was made of safety factors based on the review of recent accident records obtained from the New York State Department of Transportation and the Suffolk County Department of Public Works.

7. An examination was made of the availability of police, fire, and other emergency services.

8. A trip generation analysis was made to determine the additional traffic attributable to the proposed development.

9. Directional distribution analyses were made to distribute site-generated traffic onto the surrounding street network.

10. Trip assignments were made and the traffic volumes that would result from the addition of site-generated traffic to existing traffic were examined to determine the impact of the proposed development on the surrounding street system.

11. A review was made of access arrangements.

12. Capacity analyses were made to examine traffic operations on the surrounding street network and at the proposed access points to the site.

13. An evaluation of roadway improvements was made to determine the potential of each improvement to safely handle the increase in traffic generated by the proposed development.

14. Conclusions were made about the traffic impact of the proposed development on the surrounding street network based on the data and facts gathered in this Study.

EXISTING ROADWAY NETWORK

Roadway Descriptions

The major facilities that provide direct access to the proposed development are C.R. 58, N.Y.S. Route 25, and Kroemer Avenue.

C.R. 58 is a major east/west Suffolk County roadway. In the vicinity of the site, C.R. 58 has two eastbound lanes and one westbound lane. Separate turning lanes are provided at major intersections.

N.Y.S. Route 25 is a major east/west undivided roadway. In the vicinity of the site, N.Y.S. Route 25 has one eastbound and one westbound travel lane. Separate turning lanes are provided at major intersections.

Kroemer Avenue is a north/south Town of Riverhead roadway that extends from N.Y.S. Route 25 in the south to C.R. 58 in the north. In the vicinity of the site, Kroemer Avenue has one northbound and one southbound lane. An additional northbound turn lane is provided at Kroemer Avenue and C.R. 58.

Major Intersections

The following signalized intersections exist within the vicinity of the site:

- C.R. 58 at the existing Tanger Factory Outlet Center II driveway
- C.R. 58 at Kroemer Avenue
- C.R. 58 at Mill Road.

The lane configurations on the approaches of the intersection of C.R. 58 and the Tanger Factory Outlet Center II driveway are the following:

1.	Eastbound Approach on C.R. 58:	Two thru lanes and one separate right-turn lane.
2.	Westbound Approach on C.R. 58:	One exclusive left-turn lane and two thru lanes.
3.	Northbound Approach on Tanger Outlet Drive:	Two left-turn lanes and a separate right-turn lane.

The lane configurations on the approaches of the intersection of C.R. 58 and Kroemer Avenue are the following:

1.	Eastbound Approach on C.R. 58:	One thru lane and one combined thru/right-turn lane.
2.	Westbound Approach on C.R. 58:	One exclusive left-turn lane and one thru lane.
3.	Northbound Approach on Kroemer Avenue:	One exclusive left-turn lane and one exclusive right-turn lane.

The lane configurations on the approaches of the intersection of C.R. 58 and Mill Road are the following:

1.	Eastbound Approach on C.R. 58:	One exclusive left-turn lane, one thru lane and one separate right-turn lane.
2.	Westbound Approach on C.R. 58:	One exclusive left-turn lane, one thru lane and one separate right-turn lane.
3.	Northbound Approach on Mill Road:	One combined left-turn/thru lane and one separate right-turn lane.
4.	Southbound Approach on Mill Road:	One combined left-turn/thru lane and one separate right-turn lane.

The following unsignalized intersection exists within the vicinity of the site:

- N.Y.S. Route 25 at Kroemer Avenue/Forge Road.

The lane configurations on the approaches of the intersection of N.Y.S. Route 25 and Kroemer Avenue/Forge Road are the following:

1.	Eastbound Approach on N.Y.S. Route 25:	One combined left-turn/thru/right-turn lane.
2.	Westbound Approach on N.Y.S. Route 25:	One combined left-turn/thru lane and one exclusive right-turn lane.

3. Northbound Approach on Forge Road: One combined left-turn/thru/right-turn lane.

4. Southbound Approach on Kroemer Avenue: One exclusive left-turn lane and one separate right-turn lane.

Grades and Site Distances

There are no sight distance problems along C.R. 58. The grades along C.R. 58 and Kroemer Avenue are generally flat. The vertical curves along Mill Road and the horizontal curves along C.R. 58, Kroemer Avenue, and Mill Road are also so slight that they do not create sight distance problems.

A crest vertical curve exists west of Kroemer Avenue on N.Y.S. Route 25 due to the L.I.R.R. bridge. However, this vertical curvature is not severe, and adequate sight distance is available for safe operation at the intersection.

EXISTING TRAFFIC FLOW CONDITIONS

Traffic Volumes

Available traffic flow information was obtained from the Suffolk County Department of Public Works and the New York State Department of Transportation. The available information, provided in the "Agency Counts" section of the Appendix, consisted of hourly volumes from machine counts for coverage count stations on C.R. 58 in the vicinity of the site of the proposed development. An examination of this data revealed that the weekday A.M. peak period is from 7:00 A.M. to 9:00 A.M., while the weekday P.M. peak period is from 4:00 P.M. to 6:00 P.M.

To supplement available traffic volume information, intersection turning movement counts were collected during the above weekday A.M. and P.M. peak periods and during the Saturday peak period from 12:00 Noon to 4:00 P.M. Counts were taken between June 1999 and October 1999 at the following locations:

- C.R. 58 at the existing Tanger Factory Outlet Center II Driveway
- C.R. 58 at Kroemer Avenue
- C.R. 58 at Mill Road.

Counts were taken in June 2000 at:

- N.Y.S. Route 25 at Kroemer Avenue/Forge Road.

Turning movement count data is provided in the "Traffic Volume Counts" section of the Appendix.

On the east end of Long Island, traffic volumes are higher in August than in any other month. To provide a conservative, worst case examination of the traffic impact of the proposed development, some turning movement counts were adjusted to reflect August volumes. July and October volumes closely resembled August volumes, so these counts were left unchanged. However, June volumes were noticeably lower than August volumes, so these counts were increased by 7%.

Accident Records

An accident history on C.R. 58 for the period from April 1, 1996 to March 31, 1999 was obtained from the Suffolk County Department of Public Works. An accident history on N.Y.S. Route 25 was obtained for the same time period from the New York State Department of Transportation. The information provided by both the County and the State is provided in the "Accident Records" section of the Appendix. A summary of the accidents is shown in Table 1.

Location	NUMBER OF ACCIDENTS				
	4-1-1996 thru 12-31-1996	1-1-1997 thru 12-31-1997	1-1-1998 thru 12-31-1998	1-1-1999 thru 03-31-1999	Total
C.R. 58 at the E/B LIE Exit Ramp	0	0	0	1	1
C.R. 58 between the LIE Exit Ramp and the Tanger Factory Outlet Center II Driveway	2	4	1	0	7
C.R. 58 at the Tanger Factory Outlet Center II Driveway	0	4	4	0	8
C.R. 58 between the Tanger Factory Outlet Center II Driveway and Kroemer Avenue	0	0	2	1	3
C.R. 58 at Kroemer Avenue	4	6	5	1	16
N.Y.S. Route 25 at Kroemer Avenue/Forge Road	N/A	N/A	N/A	N/A	18

Table 1
Accident Summary
C.R. 58 and N.Y.S. Route 25

Most locations in the vicinity of the site have a history of minimal accident occurrence. Site-generated traffic added to the street network in conjunction with the roadway and traffic signal improvements described in this report are not anticipated to detrimentally impact current accident rates.

EXISTING EMERGENCY SERVICES

The availability of police and fire protection services in the vicinity of the proposed development is excellent. The area is patrolled by the Town of Riverhead Police Department, and Police headquarters is located on Howell Avenue less than four miles from the site.

The area is also protected by the Riverhead Fire Department. The firehouse nearest to the proposed site is Sub-Station No. 1, which is located on Hamilton Avenue north of Pulaski Street approximately three and one-half miles from the site. Sub-Station No. 2, located on the south side of Hubbard Avenue west of C.R. 105, is approximately seven and one-half miles east of the site. Fire Department headquarters is on the north side of Second Street east of Roanoke Avenue approximately four miles from the site.

Numerous ambulance services are also available in the area, and Central Suffolk Hospital is approximately two miles from the site.

Due to the presence of police patrols, the proximity of the fire services, and the availability of ambulance and medical services, it should be recognized that excellent emergency services are available to the proposed development.

SITE TRIP
GENERATION ANALYSIS

To determine the number of vehicles expected to be generated by the proposed lumberyard development (Alternative A), a trip generation analysis was performed. This analysis was based on information contained in the 1997 Institute of Transportation Engineers (ITE) report, "Trip Generation". This report provides trip generation rates for various land uses, including Restaurants (Land Use Code 832), Offices (Land Use Code 710), and Home Improvement Superstores (Land Use Code 862). It should be noted that the Home Improvement Superstore land use was used to estimate the traffic generated by the 174,000 square foot Lowe's, in order to more closely reflect the future operating conditions at the site.

It should be further noted that, while it is likely that some of the trips to the proposed development will be multi-purpose trips (i.e., trips with multiple destinations, such as to the retail shops and then to the restaurant), no reduction in trip generation was taken. Thus, a conservative, worst case scenario is presented.

Table 2 shows the number of trips expected to be generated by the proposed development.

Land Use/Size	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour		Saturday Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Phase I						
Lowe's (174,000 S.F.)	139	118	235	265	498	442
4 Take-Out Restaurants (7,200 S.F.)	190	126	96	92	192	200
Subtotal Phase I	329	244	331	357	690	642
Phase II						
Restaurant (6,500 S.F.)	0	0	49	20	102	74
Offices (45,500 S.F.)	88	12	22	108	11	9
Subtotal Phase II	88	12	22	108	11	9
Alternative A Total	417	256	402	485	803	725

Table 2
Site-Generated Traffic
Proposed Development
Alternative A

Similarly, the number of vehicles expected to be generated by the alternate use of the property (Alternative B) under the current zoning were also determined based on information provided in "Trip Generation".

Table 3 shows the number of trips which might be expected to be generated by this condition. However, the applicant at this time has no intention of developing the site in this manner, and this trip generation analysis is presented as a requirement of the Riverhead Town Board.

Land Use/Size	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour		Saturday Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Offices (369,000+ S.F.)	465	63	84	409	59	50
4 Take-Out Restaurants (7,200 S.F.)	190	126	96	92	192	200
Alternative B Total	655	189	180	501	251	250

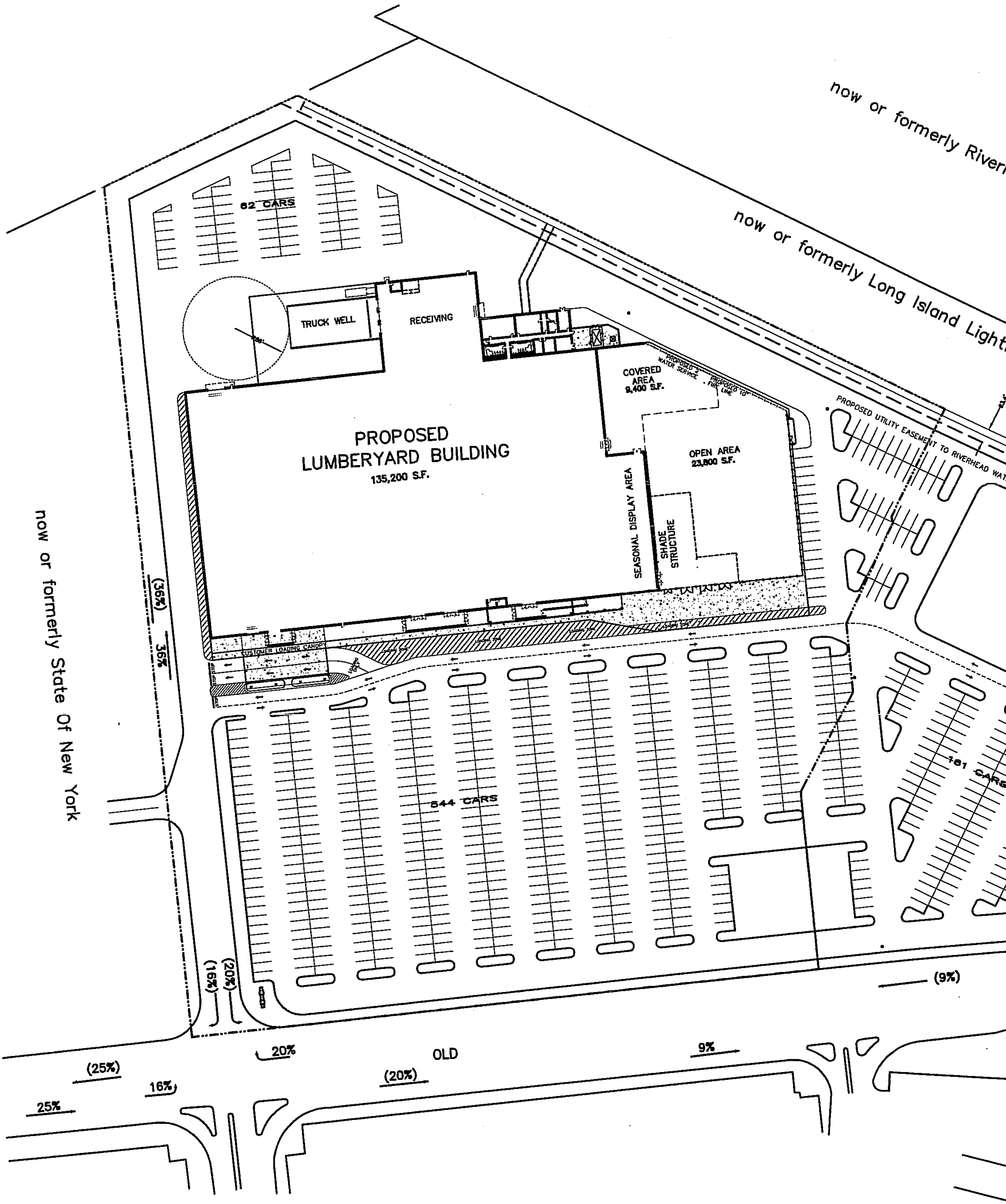
Table 3
Site-Generated Traffic
Alternative B

DIRECTIONAL DISTRIBUTION ANALYSIS

To determine the origins and destinations of vehicles entering and exiting the proposed development and the routes of their approaches and departures, a directional distribution analysis was performed.

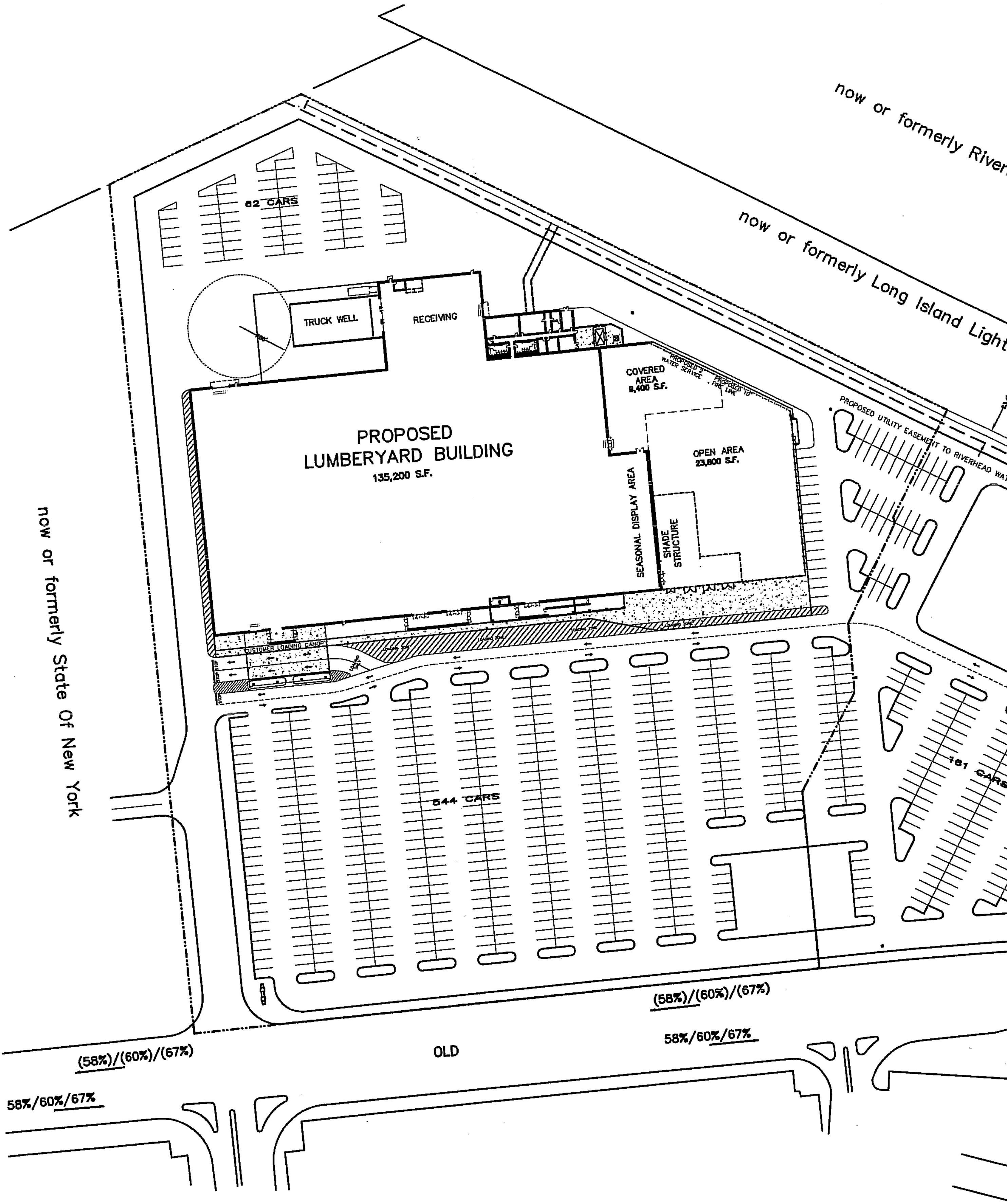
Directional distributions were developed based on the areas from which various land uses on the site were expected to draw traffic. The lumberyard and office land uses were expected to generate traffic from inside the Town of Riverhead and from nearby communities outside the Town of Riverhead. The approach and departure routes to the lumberyard and office uses were, therefore, developed based on the populations of census tracts within the drawing area. The restaurant land use was expected to generate traffic from local areas. The directional distribution of the restaurant land use was, therefore, developed based on traffic patterns near the site.

The overall directional distribution for the lumberyard and office land uses is provided in Figure 4. The overall directional distribution for the restaurant land use is provided in Figure 5.



now or formerly Riverhead
now or formerly Long Island Lighting
now or formerly State Of New York
62 CARS
TRUCK WELL
RECEIVING
PROPOSED
LUMBERYARD BUILDING
135,200 S.F.
COVERED AREA
9,400 S.F.
OPEN AREA
23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
PROPOSED UTILITY EASEMENT TO RIVERHEAD WAT
CUSTOMER LOADING CANOPY
544 CARS
161 CARS
(36%)
36%
(16%)
(20%)
20%
OLD
9%
(9%)
(25%)
16%
(20%)
25%

98124



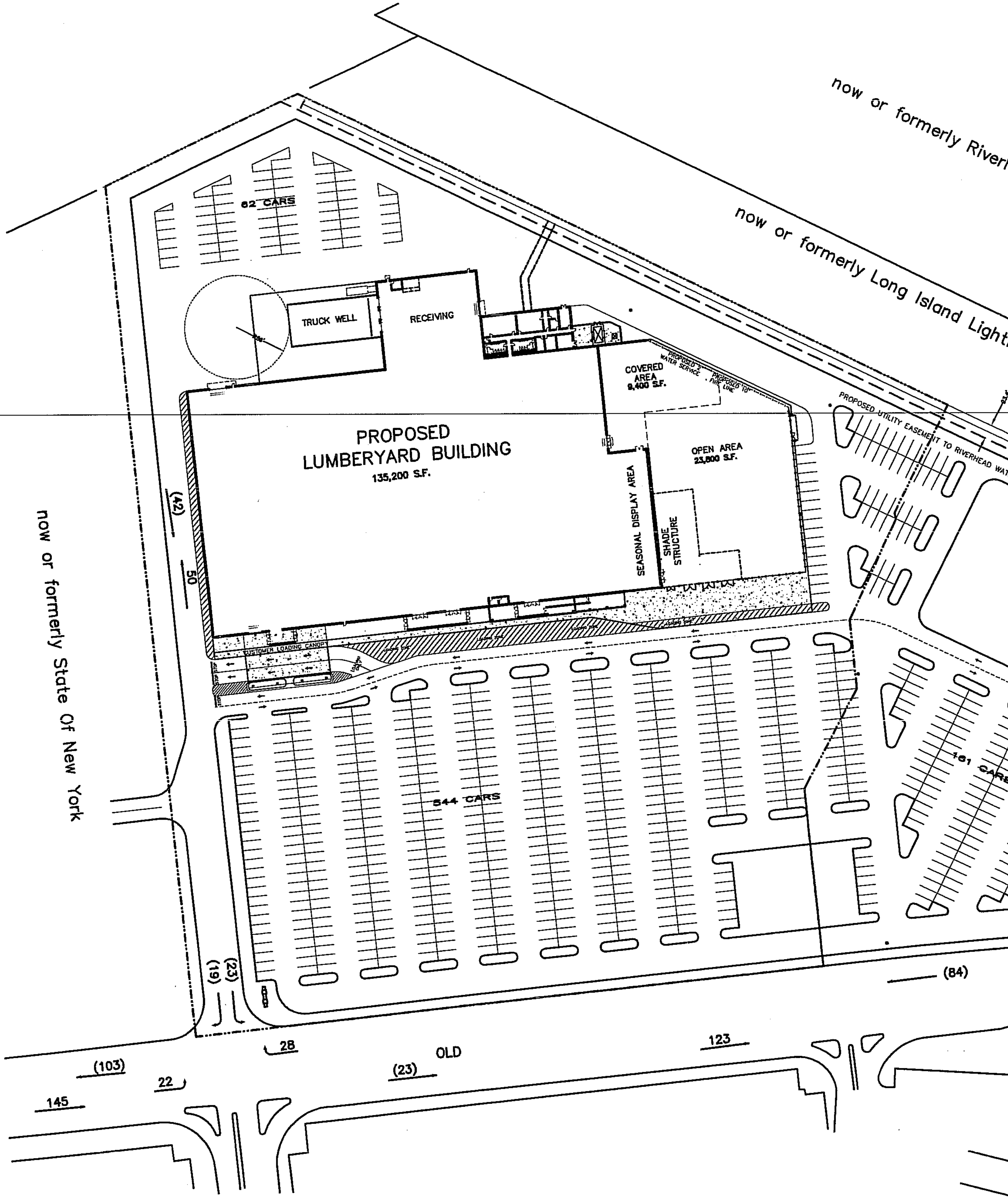
now or formerly River
now or formerly Long Island Light
62 CARS
TRUCK WELL
RECEIVING
COVERED AREA 8,400 S.F.
PROPOSED LUMBERYARD BUILDING
135,200 S.F.
OPEN AREA 23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
PROPOSED UTILITY EASEMENT TO RIVERHEAD WA
CUSTOMER LOADING CANOPY
now or formerly State Of New York
544 CARS
161 CARS
(58%)/(60%)/(67%)
58%/60%/67%
OLD
(58%)/(60%)/(67%)
58%/60%/67%

TRAFFIC ASSIGNMENT ANALYSIS

The results of trip generation analyses and directional distribution analyses were used to assign site-generated traffic volumes to proposed access points and the surrounding street network. Traffic assignments were made for both Alternative A and Alternative B, Alternative A being the proposed development of the site, and Alternative B being the alternate use of the site as required for evaluation by the Riverhead Town Board.

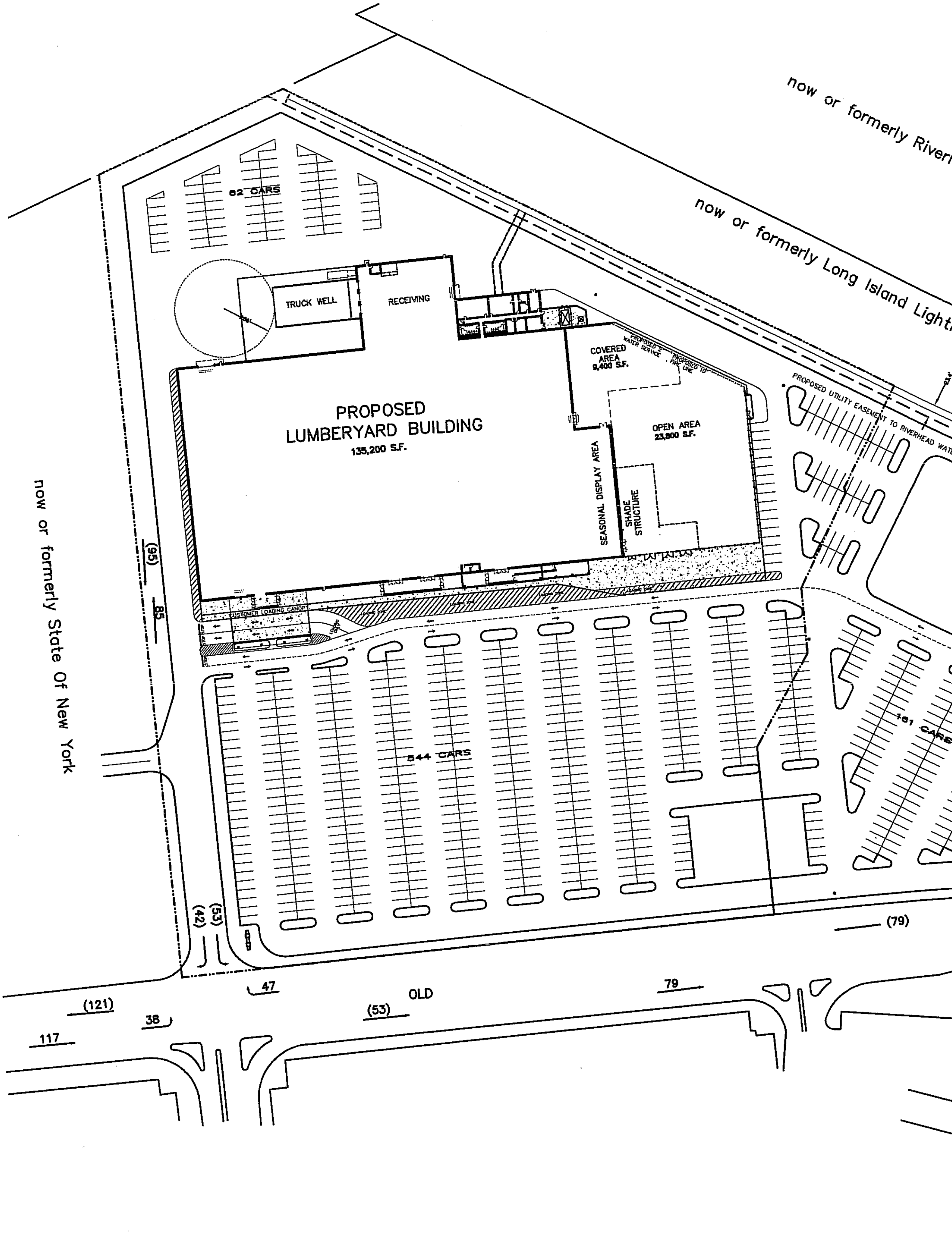
Figures 6 through 8 show the weekday A.M., weekday P.M., and midday Saturday peak-hour volumes for Phase I of the proposed development under Alternative A. Figures 9 through 11 show the weekday A.M., weekday P.M., and midday Saturday peak-hour volumes for Phase II of the proposed development, also under Alternative A. Figures 12 through 14 show the weekday A.M., weekday P.M., and midday Saturday peak-hour volumes for Phase I and Phase II combined, the full build-out of Alternative A.

Figures 15 through 17 are the site-generated traffic volumes for Alternative B. These figures show the weekday A.M., weekday P.M., and midday Saturday peak-hour volumes for the full build-out of Alternative B.

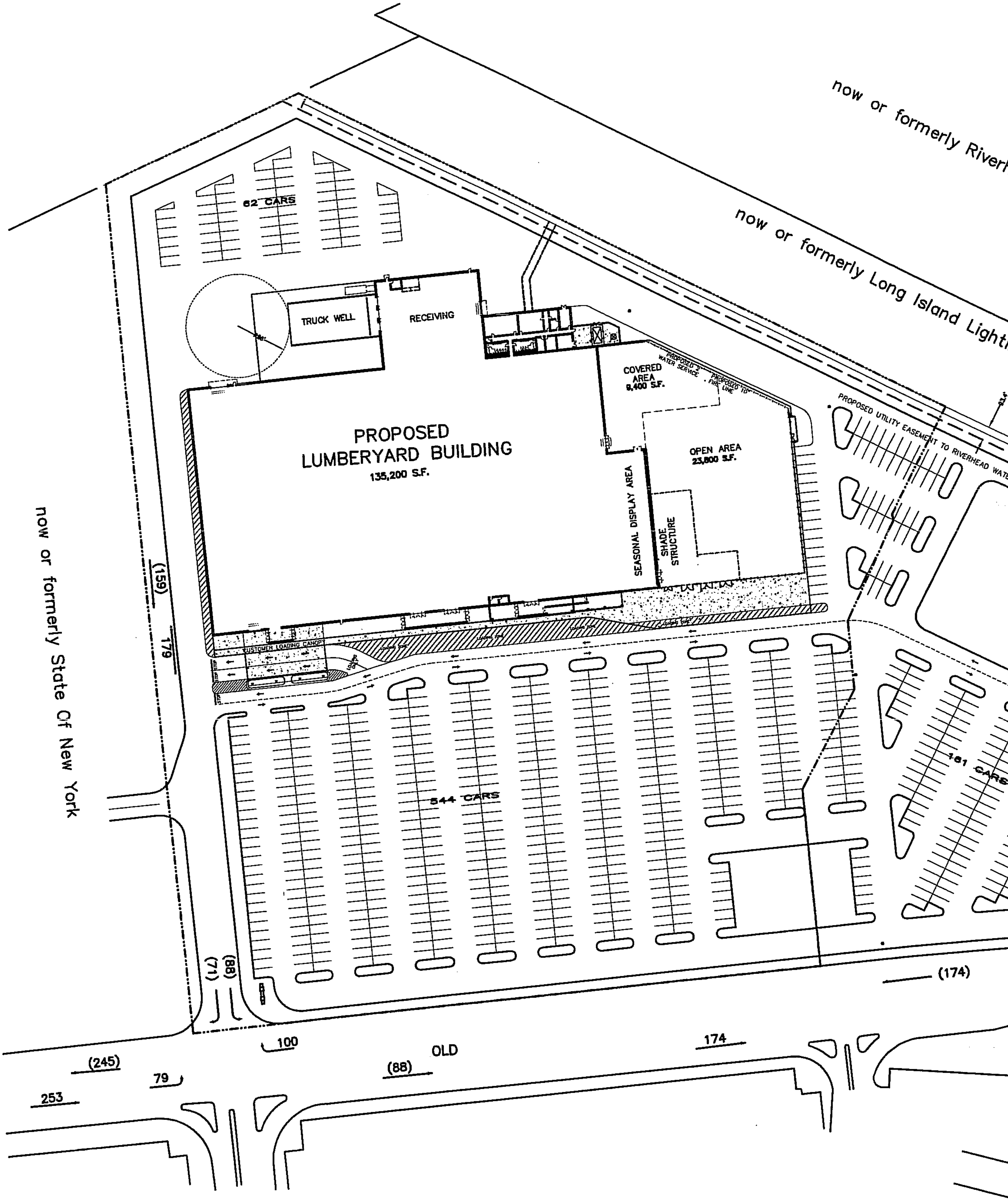


now or formerly Riverh
now or formerly Long Island Light
now or formerly State Of New York
62 CARS
TRUCK WELL
RECEIVING
COVERED AREA 9,400 S.F.
PROPOSED LUMBERYARD BUILDING
135,200 S.F.
OPEN AREA 23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
PROPOSED UTILITY EASEMENT TO RIVERHEAD WAT
CUSTOMER LOADING CANOPY
544 CARS
161 CARS
(42)
50
(19)
(23)
28
OLD
(23)
123
(103)
22
145
(84)

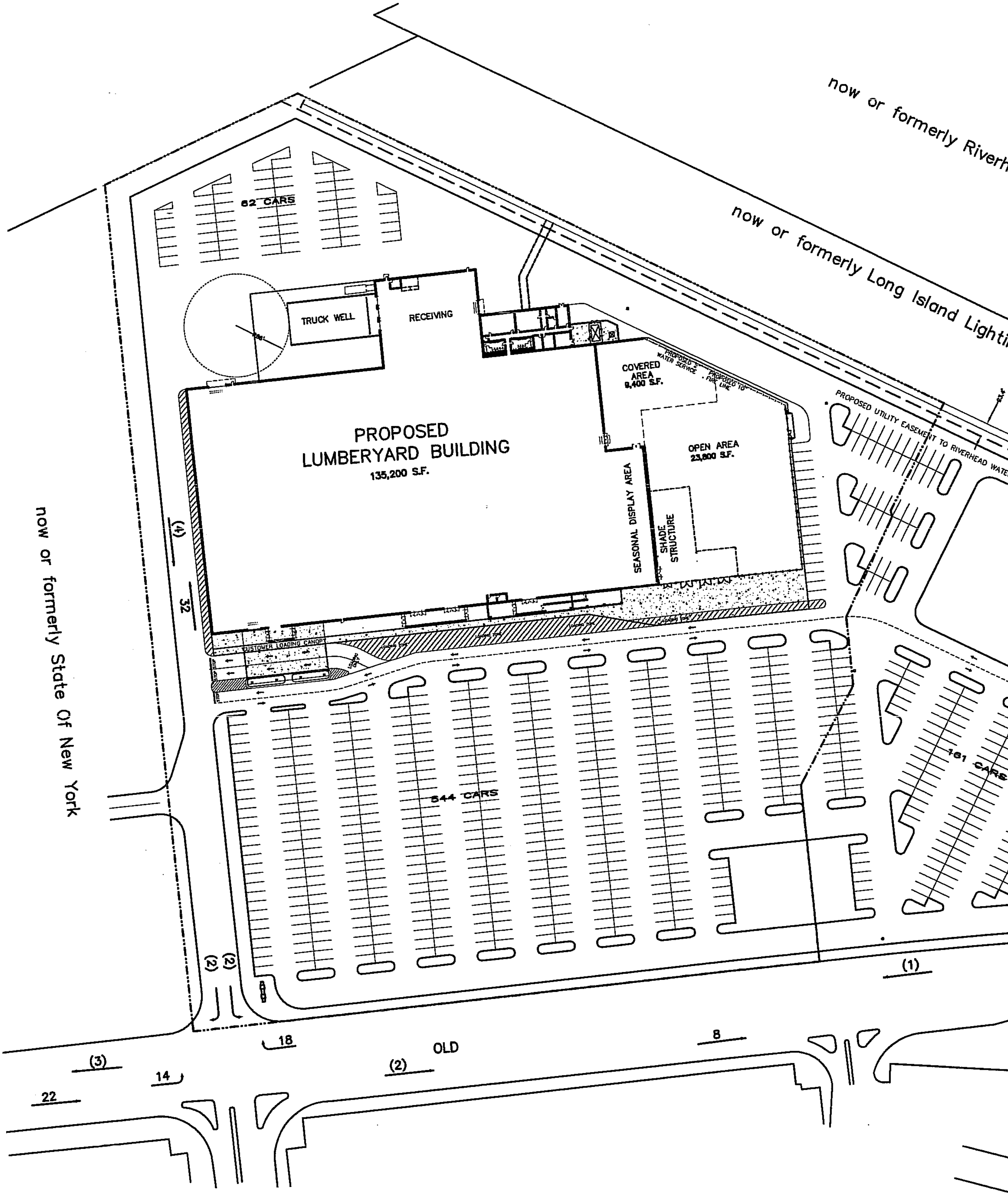
98124


now or formerly
now or formerly Long Island
62 CARS
TRUCK WELL
RECEIVING
PROPOSED
LUMBERYARD BUILDING
135,200 S.F.
COVERED AREA
9,400 S.F.
PROPOSED WATER SERVICE
PROPOSED FIRE LINE
OPEN AREA
23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
CUSTOMER LOADING CANOPY
PROPOSED UTILITY EASEMENT TO RIVERHEAD
544 CARS
161
now or formerly State Of New York
(95)
85
(42)
(53)
47
79
(79)
OLD
(121)
38
117
(53)

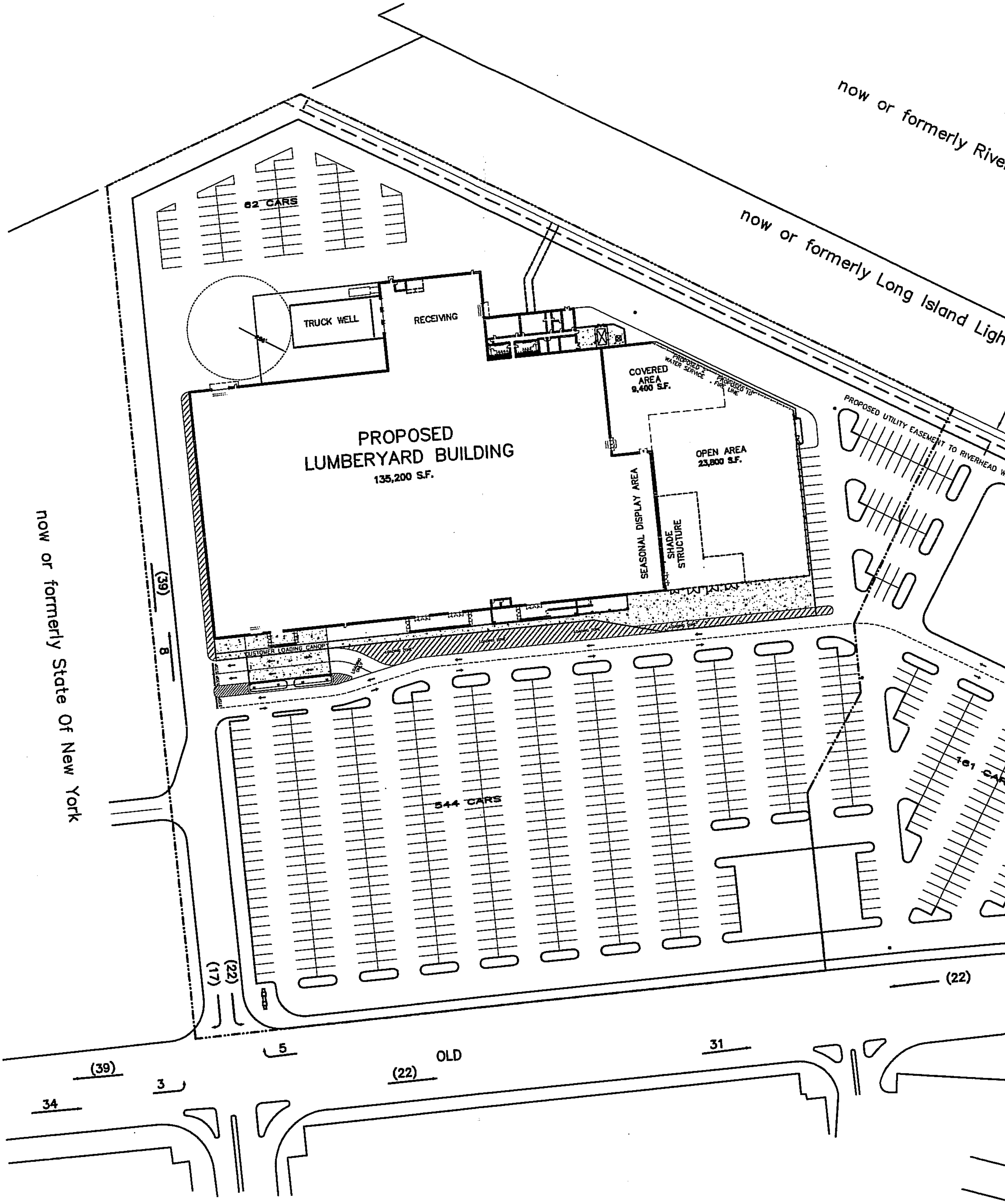
47195



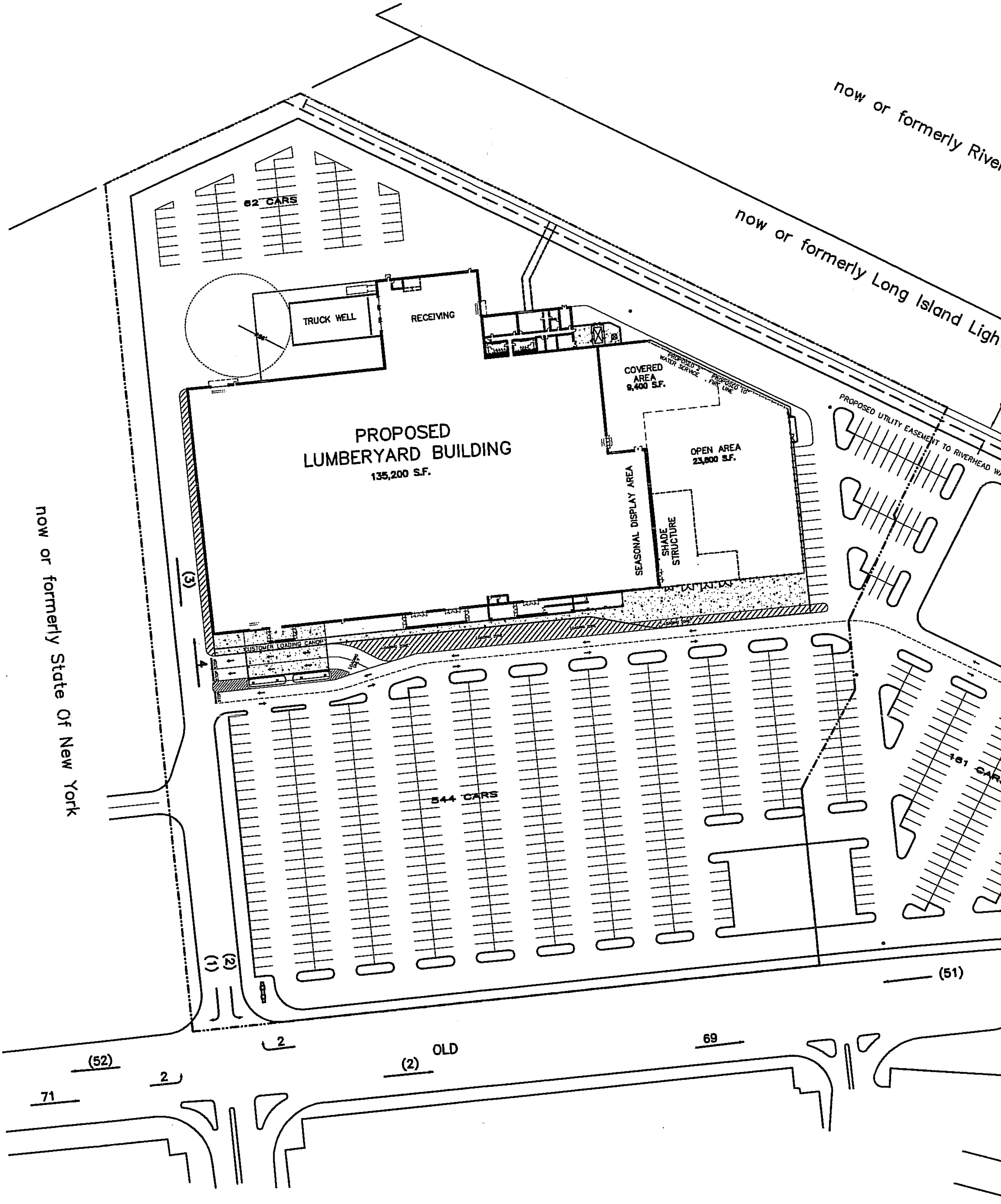
now or formerly Riverh
now or formerly Long Island Lighti
62 CARS
TRUCK WELL
RECEIVING
PROPOSED LUMBERYARD BUILDING
135,200 S.F.
COVERED AREA
9,400 S.F.
OPEN AREA
23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
PROPOSED UTILITY EASEMENT TO RIVERHEAD WATE
CUSTOMER LOADING CANOPY
544 CARS
161 CARS
now or formerly State Of New York
(159)
179
(71)
(88)
100
OLD
(88)
174
(174)
(245)
79
253


now or formerly Riverh
now or formerly Long Island Lighti
now or formerly State Of New York
62 CARS
TRUCK WELL
RECEIVING
PROPOSED
LUMBERYARD BUILDING
135,200 S.F.
COVERED AREA
9,400 S.F.
OPEN AREA
23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
CUSTOMER LOADING CANOPY
PROPOSED UTILITY EASEMENT TO RIVERHEAD WATE
544 CARS
161 CARS
(4)
32
(2)
(2)
18
(3)
14
22
(2)
OLD
8
(1)

98124

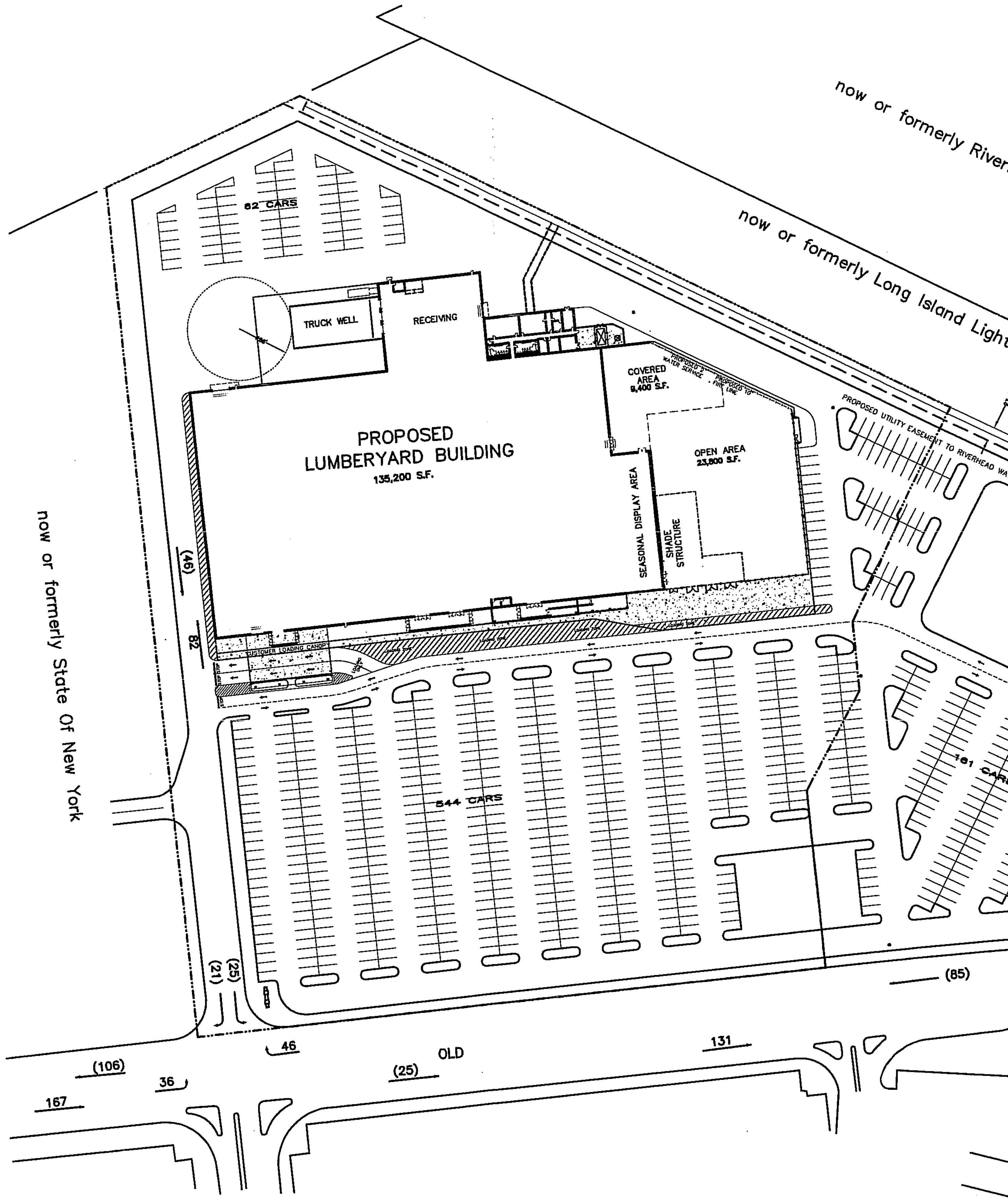

now or formerly Long Island Ligh
62 CARS
TRUCK WELL
RECEIVING
PROPOSED
LUMBERYARD BUILDING
135,200 S.F.
COVERED
AREA
9,400 S.F.
OPEN AREA
23,800 S.F.
SEASONAL DISPLAY AREA
SHADE
STRUCTURE
PROPOSED UTILITY EASEMENT TO RIVERHEAD
CUSTOMER LOADING CANOPY
544 CARS
now or formerly State Of New York
(39)
8
(22)
(17)
5
OLD
(22)
31
(39)
3
34

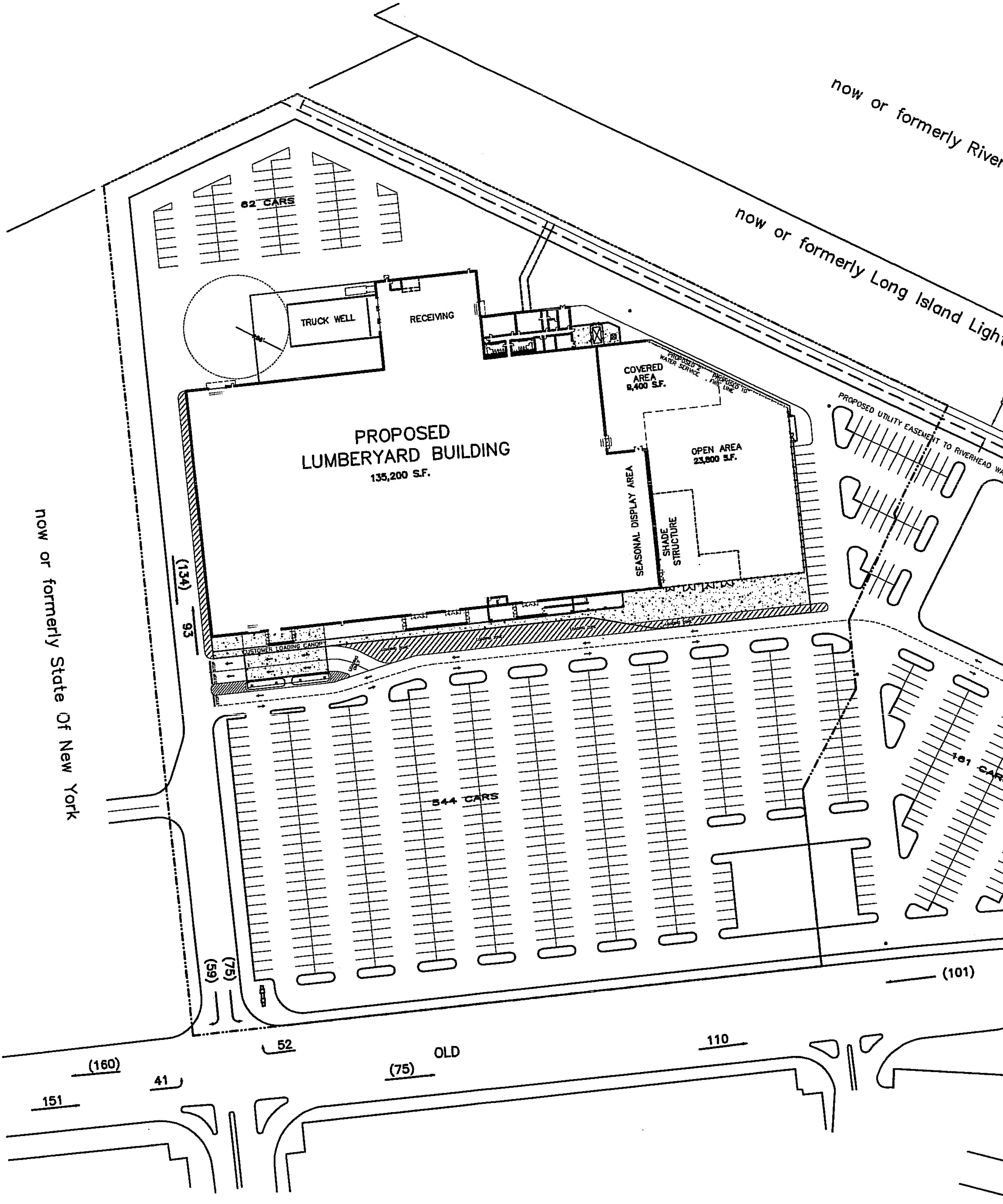
98124

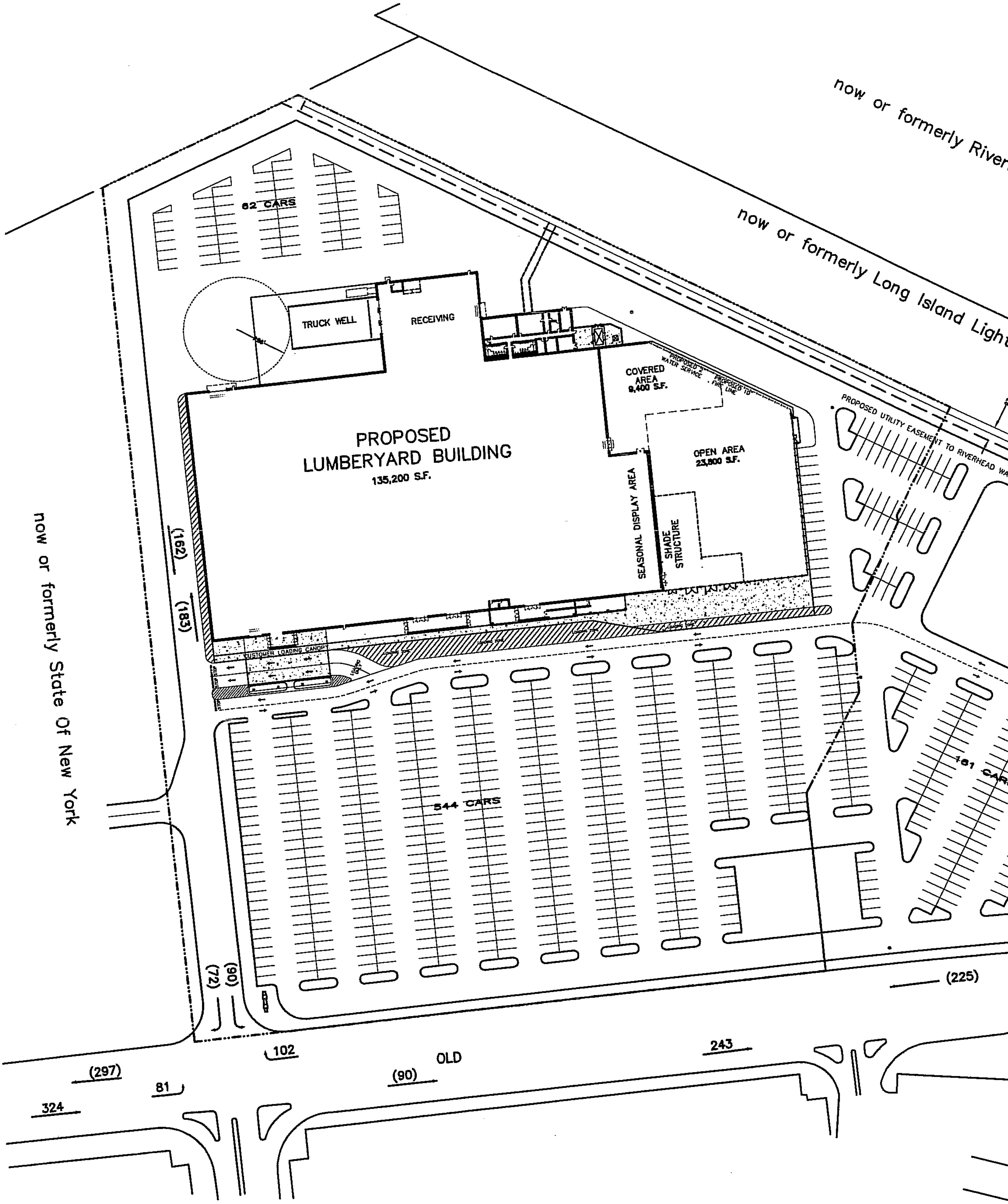


now or formerly Rive
now or formerly Long Island Ligh
62 CARS
TRUCK WELL
RECEIVING
COVERED AREA 9,400 S.F.
PROPOSED 2" WATER SERVICE
PROPOSED FIRE LINE
PROPOSED LUMBERYARD BUILDING
135,200 S.F.
OPEN AREA 23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
PROPOSED UTILITY EASEMENT TO RIVERHEAD W
now or formerly State Of New York
(3)
4
CUSTOMER LOADING CANOPY
544 CARS
181 CAR
(2)
(1)
(51)
2
69
OLD
(2)
(52)
2
71

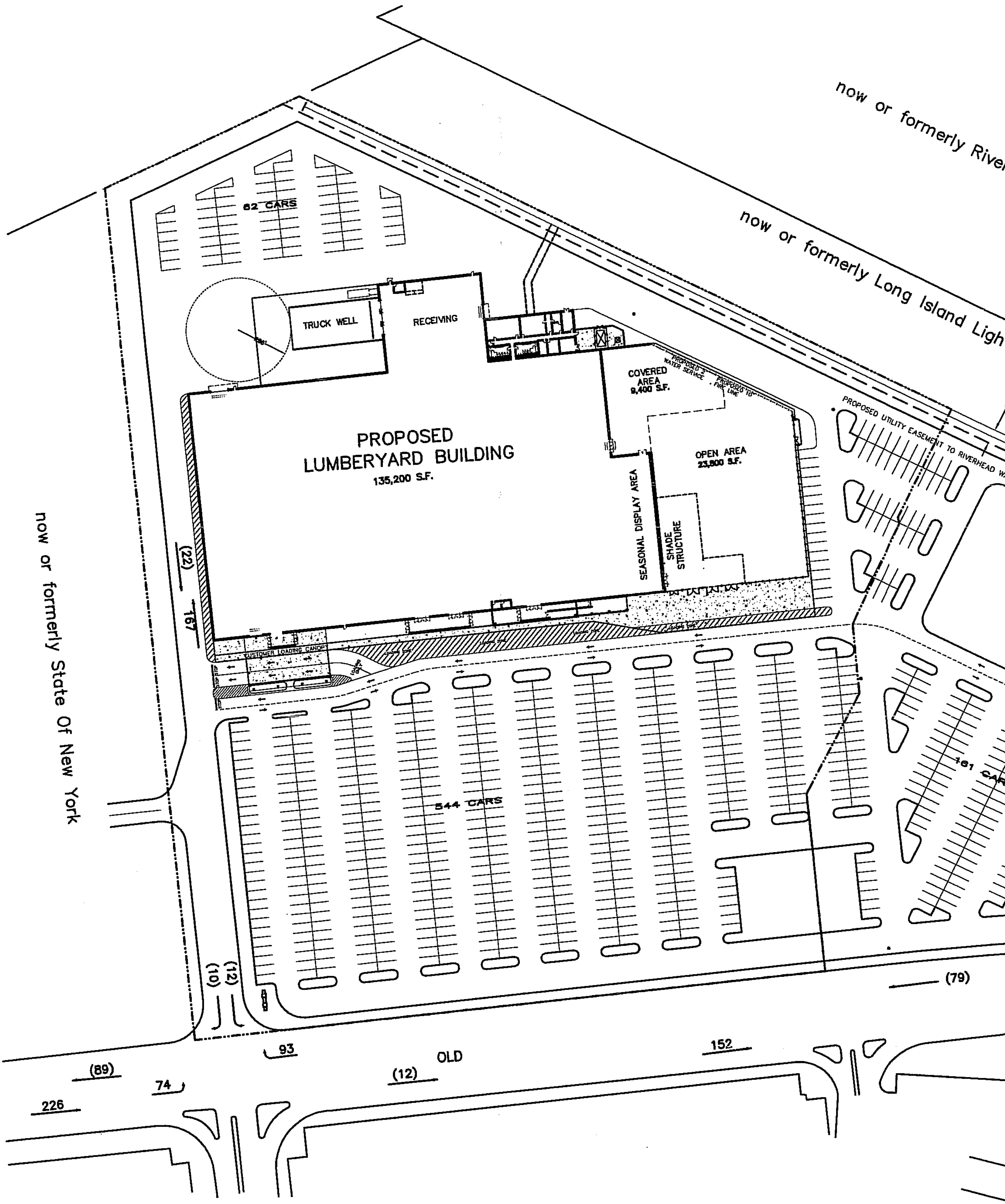
98124


now or formerly River
now or formerly Long Island Light
62 CARS
TRUCK WELL
RECEIVING
COVERED AREA
9,400 S.F.
PROPOSED LUMBERYARD BUILDING
135,200 S.F.
OPEN AREA
23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
CUSTOMER LOADING CANOPY
PROPOSED UTILITY EASEMENT TO RIVERHEAD WA
now or formerly State Of New York
(46)
82
544 CARS
161 CARS
(85)
(25)
(21)
46
131
OLD
(25)
(106)
36
167

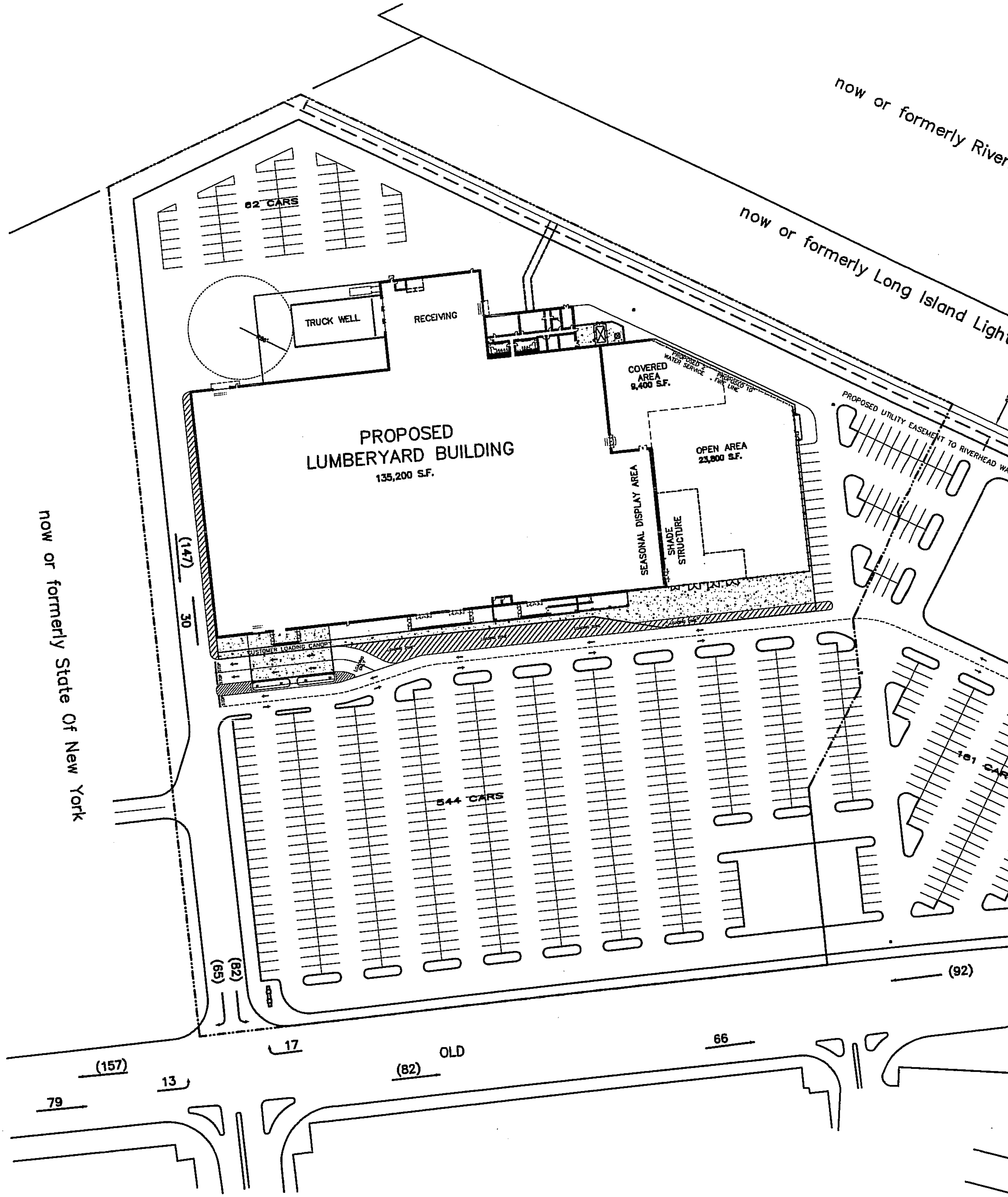

now or formerly River
now or formerly Long Island Light
62 CARS
TRUCK WELL
RECEIVING
PROPOSED
LUMBERYARD BUILDING
135,200 S.F.
COVERED
AREA
9,400 S.F.
OPEN AREA
23,800 S.F.
SEASONAL DISPLAY AREA
SHADE
STRUCTURE
PROPOSED UTILITY EASEMENT TO RIVERHEAD WA
CUSTOMER LOADING CANOPY
544 CARS
161 CAR
now or formerly State Of New York
(134)
93
(59)
(75)
52
(101)
110
OLD
(75)
(160)
41
151


now or formerly River
now or formerly Long Island Light
now or formerly State Of New York
82 CARS
TRUCK WELL
RECEIVING
COVERED AREA 9,400 S.F.
PROPOSED 2" WATER SERVICE
PROPOSED 10" FIRE LINE
PROPOSED LUMBERYARD BUILDING
135,200 S.F.
OPEN AREA 23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
PROPOSED UTILITY EASEMENT TO RIVERHEAD WA
CUSTOMER LOADING CANOPY
544 CARS
181 CAR
(162)
(183)
(72)
(90)
(225)
102
OLD
243
(297)
81
324
(90)

98124

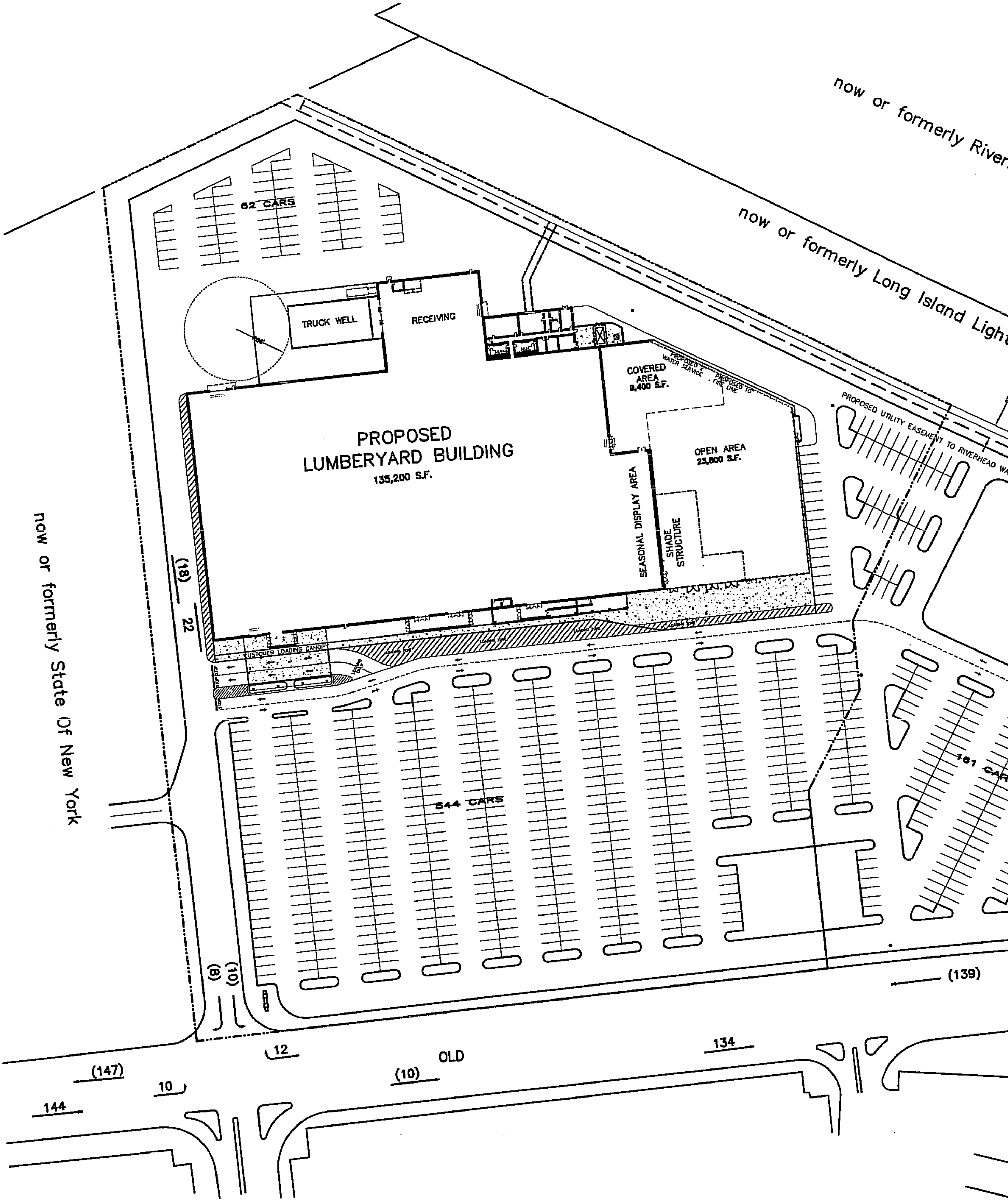

now or formerly River
now or formerly Long Island Ligh
62 CARS
TRUCK WELL
RECEIVING
COVERED AREA 9,400 S.F.
PROPOSED LUMBERYARD BUILDING
135,200 S.F.
OPEN AREA 23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
PROPOSED UTILITY EASEMENT TO RIVERHEAD W
CUSTOMER LOADING CANOPY
now or formerly State Of New York
(22)
167
544 CARS
161 CAR
(10)
(12)
93
OLD
(12)
152
(79)
(89)
74
226

98124



now or formerly River
now or formerly Long Island Light
62 CARS
TRUCK WELL
RECEIVING
COVERED AREA 9,400 S.F.
PROPOSED LUMBERYARD BUILDING 135,200 S.F.
OPEN AREA 23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
PROPOSED UTILITY EASEMENT TO RIVERHEAD WA
CUSTOMER LOADING CANOPY
544 CARS
161 CAR
now or formerly State Of New York
(147)
30
(65)
(82)
(92)
17
66
OLD
(82)
(157)
13
79

98124



now or formerly River
now or formerly Long Island Light
62 CARS
TRUCK WELL
RECEIVING
PROPOSED LUMBERYARD BUILDING
135,200 S.F.
COVERED AREA
9,400 S.F.
OPEN AREA
23,800 S.F.
SEASONAL DISPLAY AREA
SHADE STRUCTURE
PROPOSED UTILITY EASEMENT TO RIVERHEAD WA
CUSTOMER LOADING CANOPY
now or formerly State Of New York
(18)
22
544 CARS
161 CAR
(8)
(10)
(139)
12
134
OLD
(147)
10
(10)
144

98124

OTHER PLANNED DEVELOPMENTS

There are four other developments in the vicinity of the proposed development whose traffic were considered in analyses for the proposed development.

The Applebee's restaurant on Parcel B of the proposed development and the Ralph Lauren Polo Store at Tanger Factory Outlet Center are currently under construction. The traffic expected to be generated by these approved developments is shown in Table 4. The impacts of these volumes on each intersection examined for the proposed development are provided in the "Intersection Traffic Volume Summaries" section of the Appendix. Since these developments are expected to be complete before construction of the proposed development is complete, Applebee's and the Polo store are included in the No Build phase of analysis.

Development/Size	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour		Saturday Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Applebee's Restaurant	0	0	48	35	101	73
Ralph Lauren Polo Store	6	2	13	15	23	22
Total	6	2	61	50	124	95

Table 4
Site-Generated Trips
Approved Developments

Riverhead Centre shopping center on the north side of C.R. 58 east of Mill Road and two restaurants in Tanger Factory Outlet Center are the other proposed developments to be considered in analyses for the proposed lumberyard complex.

The traffic expected to be generated by these proposed developments is shown in Table 5. The impacts of these volumes on each intersection examined for the proposed lumberyard complex are provided in the "Intersection Traffic Volume Summaries" Section of the Appendix. It was estimated that minimal additional traffic would be generated by the restaurants within Tanger Factory Outlet Center because they will be completely contained by the outlet center and their patrons will most likely be shoppers already at the outlet center. Since neither of these projects has as yet been approved, Riverhead Centre and the Tanger restaurants are included at the end of the analyses in the Build with Other Developments conditions.

Development/Size	Weekday A.M. Peak Hour		Weekday P.M. Peak Hour		Saturday Peak Hour	
	Enter	Exit	Enter	Exit	Enter	Exit
Riverhead Centre	149	103	426	426	690	650
Two Restaurants in Tanger Factory Outlet Center	0	0	0	0	39	38
Total	149	103	426	426	729	688

Table 5
Site-Generated Trips
Other Proposed Developments

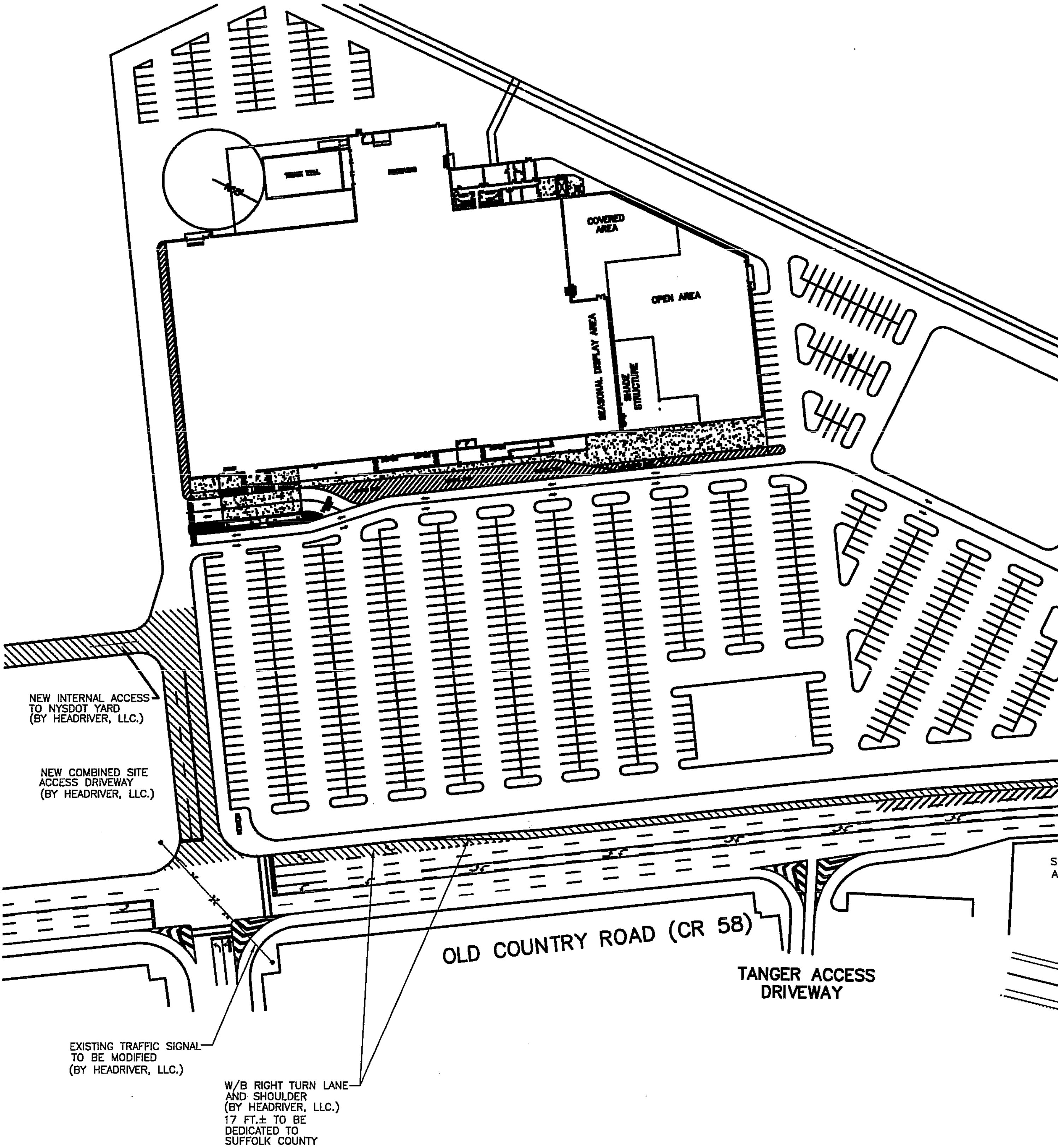
ACCESS EXAMINATION

As shown in Figure 18, access to the proposed development is to be provided at two locations along C.R. 58; one is to the west of the site directly north of the existing signalized driveway to Tanger Factory Outlet Center II, the other is to the east of the site directly north of Kroemer Avenue.

The westerly site driveway will be aligned opposite the existing traffic signal at the Tanger Factory Outlet Center II driveway. The driveway will provide direct access to the proposed development and will also allow the New York State Department of Transportation maintenance facility an internal connection to the signalized intersection. At the intersection of the proposed driveway with C.R. 58, the driveway will have three lanes, one for entering traffic and two for exiting traffic. The traffic signal will be modified to accommodate revised operation at the location.

The easterly access driveway will be aligned opposite Kroemer Avenue. Application has already been made to the Suffolk County Department of Public Works to modify the existing signalized intersection of C.R. 58 at Kroemer Avenue. The modifications are being requested as part of the approved development of the Applebee's restaurant on Parcel B. The requested modifications will provide a new north/south roadway aligned with Kroemer Avenue. Accesses from both Parcel A and Parcel B will be provided to the new north/south roadway. The new roadway will then extend into an existing industrial parcel. At the intersection of the proposed roadway with C.R. 58, the shared access road will have five lanes, two for entering traffic and three for exiting traffic.

The above access plan will provide well-separated access points to the proposed development. Both access points will operate under the protection of traffic signals and, consistent with good access management practices, will provide internal access to adjacent uses, thus reducing the number of curb cuts along C.R. 58.


COVERED AREA
OPEN AREA
SEASONAL DISPLAY AREA
SHADE STRUCTURE
NEW INTERNAL ACCESS TO NYSDOT YARD (BY HEADRIVER, LLC.)
NEW COMBINED SITE ACCESS DRIVEWAY (BY HEADRIVER, LLC.)
OLD COUNTRY ROAD (CR 58)
TANGER ACCESS DRIVEWAY
EXISTING TRAFFIC SIGNAL TO BE MODIFIED (BY HEADRIVER, LLC.)
W/B RIGHT TURN LANE AND SHOULDER (BY HEADRIVER, LLC.) 17 FT.± TO BE DEDICATED TO SUFFOLK COUNTY

98124

CAPACITY ANALYSIS

Signalized Intersection Capacity Analyses

To examine the impact of site-generated traffic on adjacent roadways in the vicinity of the site, signalized intersection capacity analyses were performed at the following locations:

- C.R. 58 at the existing Tanger Factory Outlet Center II driveway
- C.R. 58 at Kroemer Avenue
- C.R. 58 at Mill Road.

Unsignalized and signalized intersection capacity analyses were performed at:

- N.Y.S. Route 25 at Kroemer Avenue/Forge Road.

Analyses were performed at these intersections for the following conditions:

Alternative A

- 2000 Existing
- 2001 No Build
- 2001 Build Phase I
- 2001 Build with Modifications Phase I
- 2001 Build with Other Developments
- 2001 Build with Modifications and Other Developments
- 2001 Build Phase II

Alternative B

- 2000 Existing
- 2001 No Build
- 2001 Build
- 2001 Build with Modifications
- 2001 Build with Other Developments
- 2001 Build with Modifications and Other Developments

Intersection capacity analyses were first conducted for 2000 Existing conditions. The existing conditions were based on 1999 or 2000 traffic counts taken during the peak summer months or on 1999 or 2000 traffic counts adjusted to reflect traffic during the peak summer months.

The 2000 Existing traffic counts were then projected to the 2001 build year using a 3% per year growth factor. Traffic volumes expected to be generated by the approved Applebee's on Parcel B of the site and by the Ralph Lauren Polo Store being constructed at Tanger Factory Outlet Center II were added to projected 2001 traffic volumes. The 2001 No Build analyses were then performed. Roadway improvements associated with the Applebee's restaurant were included as part of the No Build conditions.

Traffic analyses for Alternative A were then conducted. Traffic volumes expected to be generated by Phase I of the proposed development were added to 2001 No Build volumes. The 2001 Build Phase I conditions were then analyzed. Roadway improvements required to accommodate the site-generated traffic were then determined, and the 2001 Build with Modifications Phase I analyses were performed to verify their effectiveness in mitigating the traffic impact. Similarly, traffic volumes generated by Phase II of the proposed development were added to 2001 Build with Modifications Phase I volumes. The 2001 Build Phase II conditions indicated that the roadway modifications implemented in Phase I successfully accommodated the Phase II traffic. Finally, traffic generated by other developments (Riverhead Centre to the east of the proposed development and Tanger Restaurants to the west) was added to the 2001 Build with Modifications Phase II condition. The 2001 Build with Other Developments condition and the 2001 Build with Modifications and Other Developments condition were then analyzed.

Traffic analyses for Alternative B, the alternate use of the site, were also conducted. Traffic volumes generated by 369,000+ square feet of office space were added to 2001 No Build volumes. The 2001 Build and 2001 Build with Modifications conditions were then analyzed. Finally, traffic generated by the other developments was added to the 2001 Build with Modifications condition, and the 2001 Build with Other Developments condition and the 2001 Build with Modifications and Other Developments condition were analyzed.

It should be noted that all capacity analyses were performed in accordance with the methodology set forth in the latest edition of the "Highway Capacity Manual". A summary of the results of these analyses is provided in Table 6.

The results of these analyses indicate that excellent levels of service will be achieved for the proposed development once the proposed geometric and signalization changes are made, regardless of which development scenario is examined.

Location/ Time Period		2000 Existing		2001 No Build (Note 1)		Alternative A (Proposed Development) 2001 Build Phase I (Note 2)		2001 Build with Modifications Phase I (Note 3)		2001 Build Phase II (Note 4)		2001 Build with Other Developments (Note 5)		2001 Build with Modifications and Other Developments (Note 6)		Alternative B (Alternate Use) 2001 Build (Note 7)		2001 Build with Modifications (Note 8)		2001 Build with Other Developments (Note 9)		2001 Build with Modifications and Other Developments (Note 10)	
		LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C	LOS	V/C
C.R. 58 at the Tanger Factory Outlet Center II Driveway	AM	B	0.38	B	0.40	B	0.47	A	0.46	A	0.46	B	0.47	--	--	B	0.47	A	0.43	A	0.44	--	--
	PM	B	0.51	B	0.54	C	0.74	B	0.59	B	0.62	B	0.66	--	--	C	0.74	B	0.60	B	0.65	--	--
	SAT	B	0.66	C	0.71	F	0.99	C	0.89	C	0.91	E	0.96	C	0.94	E	0.95	C	0.89	C	0.94	C	0.94
C.R. 58 at Kroemer Avenue	AM	A	0.42	B	0.37	B	0.51	B	0.45	B	0.46	B	0.47	--	--	B	0.53	A	0.49	A	0.50	--	--
	PM	A	0.76	B	0.49	B	0.65	B	0.67	B	0.68	B	0.71	--	--	B	0.69	B	0.69	B	0.72	--	--
	SAT	A	0.64	B	0.58	C	0.92	B	0.77	C	0.91	C	0.95	C	0.95	B	0.76	B	0.72	B	0.77	--	--
C.R. 58 at Mill Road	AM	A	0.67	A	0.69	A	0.77	A	0.60	A	0.63	B	0.51	B	0.51	A	0.75	A	0.68	B	0.50	B	0.50
	PM	F	0.88	F	0.92	F	1.04	C	0.94	C	0.96	B	0.75	C	0.74	F	1.04	C	0.92	B	0.73	B	0.73
	SAT	A	0.79	B	0.83	F	1.04	B	0.95	B	0.98	D	1.13	C	0.88	B	0.89	B	0.82	B	0.73	--	--
N.Y.S. Route 25 at Kroemer Avenue/Forge Road	AM	C	N/A	C	N/A	C	N/A	A	0.36	A	0.36	--	--	--	--	C	N/A	A	0.35	--	--	--	--
	PM	E	N/A	F	N/A	F	N/A	A	0.54	B	0.56	--	--	--	--	F	N/A	A	0.57	--	--	--	--

Table 6

Summary of Intersection Capacity Analyses Results

Notes for Table 6

Note 1: Includes the traffic expected to be generated by the approved Applebee's restaurant on Parcel B and by the Ralph Lauren Polo Store to be added to Tanger Factory Outlet Center II. Also includes the roadway improvements associated with these developments.

Note 2: Includes Note 1 and the traffic expected to be generated by the lumberyard on Parcel A of the proposed development and by the four take-out restaurants on Parcel B of the proposed development.

Note 3: Includes Note 2 and the roadway improvements needed in conjunction with Alternative A.

Note 4: Includes Note 3 and the traffic expected to be generated by the restaurant and offices on Parcel A of the proposed development.

Note 5: Includes Note 4 and the traffic expected to be generated by the proposed Riverhead Centre and by the two proposed restaurants in Tanger Factory Outlet Center II. Also includes the roadway improvements associated with these developments.

Note 6: Includes Note 5 and additional roadway improvements needed in conjunction with the volumes discussed in Note 5.

Note 7: Includes Note 1 and the traffic expected to be generated by 369,000+ square feet of office space on Parcel A of the proposed development and by four take-out restaurants on Parcel B of the proposed development.

Note 8: Includes Note 7 and the roadway improvements needed in conjunction with Alternative B.

Note 9: Includes Note 8 and the traffic expected to be generated by the proposed Riverhead Centre and by the two proposed restaurants in Tanger Factory Outlet Center II. Also includes the roadway improvements associated with these developments.

Note 10: Includes Note 9 and additional roadway improvements needed in conjunction with the volumes discussed in Note 9.

Unsignalized Intersection Capacity Analyses

Unsignalized intersection capacity analyses were performed at the intersection of N.Y.S. Route 25 at Kroemer Avenue. The results of these analyses indicate that marginal operating conditions exist at the intersection during the P.M. peak hour, and that these conditions will deteriorate to unacceptable levels in the future No-Build condition.

It is recommended that the Town of Riverhead contact the New York State Department of Transportation to discuss this condition. Although the deterioration in levels of service is due, not to the addition of traffic from the proposed development, but to the projected normal traffic growth combined with the traffic from other area developments, the applicant is willing to participate in reasonable improvements at this location as might be requested by NYSDOT.

ROADWAY MODIFICATIONS

In order to minimize the impact of the proposed development on traffic conditions in the vicinity of the site, the following roadway modifications will be made by the developer. It should be noted that these roadway improvements will be sufficient to accommodate the traffic generated by full build out of the site.

Alternative A

The roadway improvements recommended to be implemented in conjunction with the project are discussed below.

C.R. 58 at the Tanger Factory Outlet Center II Driveway

1. A southbound approach will be added to this intersection to act as access to the site. The southbound approach should have one twelve-foot left-turn lane, one twelve-foot thru/right-turn lane, and one sixteen-foot lane for traffic moving away from the intersection.

2. The two-way left-turn lane on C.R. 58 west of the Tanger driveway should be re-striped as an exclusive left-turn lane for eastbound traffic into the site.

3. The right-most of the two existing northbound left-turn lanes should be restriped to provide a northbound combination left/thru lane.

4. One twelve-foot right-turn lane should be added to the westbound approach.

5. The traffic signal should be modified to provide split-phased operation for the northbound and southbound approaches.

6. The traffic signal timing and cycle length should be adjusted to provide optimal intersection performance and progression.

C.R. 58 at Kroemer Avenue

1. The traffic signal should be modified to provide a leading southbound phase and a leading eastbound, rather than exclusive eastbound/westbound left-turn, phase.

2. The traffic signal timing should be adjusted to provide optimal intersection performance and progression.

C.R. 58 at Mill Road

1. C.R. 58 should be re-striped to add a ten-foot or wider second eastbound thru lane.

2. Mill Road should be re-striped and any raised medians removed or re-shaped to add ten-foot or wider northbound and southbound exclusive left-turn lanes.

3. The traffic signal should be modified to provide a leading northbound phase.

4. The traffic signal timing and cycle length should be adjusted to provide optimal intersection performance and progression.

The other developments which may be constructed are Riverhead Centre and two restaurants at the Tanger Factory Outlet center. After the roadway and signalization modifications associated with these developments are made, it may be necessary to adjust signal timings slightly. With these minor adjustments, however, the intersections examined will function well (at levels of service of at least C) for all peak periods. The construction of the proposed lumberyard complex will, therefore, not have a detrimental impact on the surrounding street network.

It should be noted that the geometric changes recommended at C.R. 58 and Mill Road for the proposed development have also been recommended for and are willing to be made by the developers of Riverhead Centre. Since Riverhead Centre will have a more direct impact on traffic at the intersection than the proposed lumberyard complex, it is suggested that changes at C.R. 58 and Mill Road be made by Riverhead Centre, if approval of Riverhead Centre is imminent.

Alternative B

With the exception of the second eastbound thru lane at C.R. 58 and Mill Road, all of the above roadway modifications would be required to provide good levels of service if the site were developed as Alternative B. Results of the signalized and unsignalized intersection capacity analyses performed to evaluate the impact of Alternative B are presented in Table 6.

ADDITIONAL CONSIDERATIONS

Public Transportation

The Suffolk County Transit S-62 bus route provides service in the vicinity of the proposed development. On weekdays, the S-62 runs between Hauppauge Industrial Center and Riverhead County Center and stops on C.R. 58 immediately adjacent to the site. Service is provided hourly in both directions. On weekends, the S-62 operates between Smithaven Mall and Riverhead County Centre.

It should be noted that, with certain modifications, existing bus routes provide bus service that can be utilized by both the customers and employees of the proposed development. This bus service permits residents of the surrounding areas to obtain transportation to the L.I.R.R. station as well as downtown Riverhead. The use of this bus service by both customers and employees of the proposed development will also reduce the traffic impact of the proposed development on the surrounding street network.

CONCLUSIONS

Based on analyses in this Traffic Impact Study, it has been concluded that the construction of the proposed lumberyard complex will not adversely affect traffic conditions on the street network in the vicinity of the site. Although the proposed development will add traffic to the surrounding street system, the impact of additional traffic will be minimized and accommodated by roadway and signalization modifications. The following points should be recognized:

1. Access points to the site are located and designed such that site-generated traffic will be serviced without adversely affecting C.R. 58. In keeping with good access management practices, both access driveways will provide combined access to adjacent properties on C.R. 58.

2. Access points to the site will be clearly visible to traffic on C.R. 58, and no sight distance problems will exist in the vicinity of the driveways.

3. Most locations in the vicinity of the site have a history of minimal accident occurrence. In combination with recommended roadway modifications, traffic volumes generated by the proposed development will not have an adverse impact on current accident experience.

4. Capacity analyses indicate that intersections in the vicinity of the proposed development will operate well once the following roadway modifications are made:

   <u>C.R. 58 at the Tanger Factory Outlet Center II Driveway</u>

   a. A southbound approach will be added to this intersection to act as access to the site. The southbound approach should have one twelve-foot left-turn lane, one twelve-foot thru/right-turn lane, and one sixteen-foot lane for traffic moving away from the intersection.

   b. The two-way left-turn lane on C.R. 58 west of the Tanger driveway should be re-striped as an exclusive left-turn bay for eastbound traffic into the site.

   c. The right-most of the two existing northbound left-turn lanes should be changed to a northbound combination left/thru lane.

   d. One twelve-foot right-turn lane should be added to the westbound approach.

   e. The traffic signal should be modified to provide split-phased operation for the northbound and southbound approaches.

f. The traffic signal timing and cycle length should be adjusted to provide optimal intersection performance and progression.

C.R. 58 at Kroemer Avenue

a. The improvements currently proposed in connection with the Applebee's application must be constructed. These include:

b. The traffic signal should be modified to provide a leading southbound phase and a leading eastbound, rather than exclusive eastbound/westbound left-turn, phase.

c. The traffic signal timing should be adjusted to provide optimal intersection performance and progression.

C.R. 58 at Mill Road

a. C.R. 58 should be re-striped to add a ten-foot or wider second eastbound thru lane.

b. Mill Road should be re-striped and any raised medians removed or re-shaped to add ten-foot or wider northbound and southbound exclusive left-turn lanes.

c. The traffic signal should be modified to provide a leading northbound phase.

d. The traffic signal timing and cycle length should be adjusted to provide optimal intersection performance and progression.

It should be noted that the geometric changes at this intersection have also been recommended in conjunction with the development of the proposed Riverhead Centre. Since Riverhead Centre will have a more direct impact on this intersection than the proposed lumberyard complex, it is suggested that changes be made by Riverhead Centre if approval of Riverhead Centre is imminent.

N.Y.S. Route 25 at Kroemer Avenue

Capacity analyses results indicate that poor levels of service can be expected to prevail at this intersection whether or not this development is approved. It is recommended that the Town of Riverhead contact the New York State Department of Transportation to discuss this condition. Although the deterioration in levels of service is due to the projected normal traffic growth combined with the traffic from other area developments, rather than to the addition of traffic from the proposed development, the applicant is willing to participate in reasonable improvements at this location as might be requested by NYSDOT.

5. The existing S-62 bus route provides service that can be utilized by both the customers and employees of the proposed development. The use of this bus service will reduce the traffic impact of the proposed development on the surrounding street network.

Since detailed traffic engineering examination and analysis indicate that no adverse traffic impacts will occur as a result of the proposed development, it is recommended that the development of the proposed lumberyard complex be approved.

APPENDIX

Agency Counts

NEW YORK STATE
DEPT OF TRANSPORTATION
AVERAGE WEEKDAY
HOURLY REPORT

CR 58 OLD COUNTRY RD
RTE 25(WEST)JERICHO T. TO
OSBORNE AVE
JUNE 1993

FILE NAME
CR 58 0701V0693

AM	EASTBOUND	WESTBOUND
12-1	81	45
1-2	43	37
2-3	31	22
3-4	24	29
4-5	50	77
5-6	129	206
6-7	395	398
7-8	740	527
8-9	715	516
9-10	626	505
10-11	656 **	536
11-12	646	563
PM		
12-1	564	583
1-2	587	624
2-3	596	684
3-4	649	794
4-5	640	843 **
5-6	602	811
6-7	518	496
7-8	406	393
8-9	289	328
9-10	269	372
10-11	206	198
11-12	141	141
TOTALS	9,603	9,728

DAILY TOTAL
19,331

EST. AADT
19,300

** DENOTES
PEAK HOUR

NEW YORK STATE
DEPT OF TRANSPORTATION
AVERAGE WEEKDAY
HOURLY REPORT

ROUTE 25
ROUTE 495 TO
MILL ROAD
JULY 1994

AM	EASTBOUND	WESTBOUND
12-1	33	29
1-2	20	21
2-3	15	15
3-4	18	11
4-5	18	16
5-6	44	31
6-7	124	90
7-8	259	133
8-9	362	181
9-10	345	211
10-11	327	248
11-12	344	290
PM		
12-1	376 **	328
1-2	341	293
2-3	345	318
3-4	337	343
4-5	336	372 **
5-6	307	326
6-7	218	213
7-8	188	191
8-9	143	142
9-10	107	99
10-11	76	86
11-12	44	57
TOTALS	4,727	4,044

FILE	NAME
RT25	070440794

DAILY TOTAL
8,771

EST. AADT
7,900

** DENOTES
PEAK HOUR

58-01 E

PGM. VERSION 3.3 / 3.4

New York State Department of Transportation

COVERAGE AND SPECIAL COUNT HOURLY REPORT

RC 07 STATION 01V ROUTE 58 END MILEPT SCOTCIV LOCATION: RTE 25 (WEST) OSBORNE AVENUE

COUNT TAKEN 07/31/95 WEEK/YR 32 FACTOR GROUP 30 SECTION LENGTH 0243 REFERENCE MKR: LH5290752300

BIN NUMBER:

\# CHANNELS 1 TUBE FEDERAL DIR. 3. FUNCTIONAL CLASS 14 HPMS NUMBER:

RECORDER PLACEMENT: 100' W. OF TANGER MALL DRWY RECORDER SERIAL #: 0021 MODULE SERIAL #: 001X

ADDITIONAL DATA:

NOTES: CHAN-A:

DY MO	D W	D R	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAY TOTAL	HI COUNT	HI HOUR
			AM												PM														
31	1	1													782	758	751	721	743	653	584	507	347	283	221	131			
1	2	1	85	46	35	42	52	134	412	749	824	842	833	854	853	741	734	717	686	589	588	550	314	297	252	265	11364	854	12
2	3	1	92	54	41	43	41	188	381	750	808	763	733	887	822	700	711	719	759	685	548	492	332	273	255	155	11203	887	12
3	4	1	86	65	36	32	61	147	412	737	778	775	832	865	879	833	775	773	813										

AVERAGE WEEKDAY HOUR (MON 6AM THRU FRI 12 NOON)

																								ADT
88	55	37	35	51	138	395	759	803	753	801	869	834	756	743	733	750	642	573	510	331	274	243	150	11370

AXLE - FACTORED (VEHICLES) AVG WEEKDAY HOUR (FACTOR USED = 0.970)

																								ADT
85	53	35	38	50	134	383	736	775	770	777	843	809	735	720	711	728	623	556	494	321	266	235	146	11029

SEASONALLY FACTORED

HRS COUNTED	DAYS COUNTED	AVG HI HR	% AVG DAY	FACTORED HI HOUR	% FACTORED DAY	SEASONAL FACTOR	DIR.DESIGN-HR (ESTIMATE)	EST. AADT 1-WAY COUNT
77	4	869	7.5%	843	7.6%	1.119	* 601	9656

* THIS VALUE + DR2 VALUE = DDHV FOR THIS COUNT LOCATION

58-01W

New York State Department of Transportation   FSM. VERSION 3.3 / 3.4

COVERAGE AND SPECIAL COUNT HOURLY REPORT

RC 07 STATION 01W   ROUTE 58   END MILEPT 5070LV   LOCATION: RTE 25 (WEST)   OSBORNE AVENUE

COUNT TAKEN 07/31/95   WEEK/YR 32   FACTOR GROUP 30   SECTION LENGTH 0243   REFERENCE MKR: LH5290752906
BIN NUMBER:

CHANNELS 1   TUBE   FEDERAL DIR. 7   FUNCTIONAL CLASS 14   HPMS NUMBER:

RECORDER PLACEMENT: 150' W. OF TANGER MALL DRWY   RECORDER SERIAL #: 0021   MODULE SERIAL #: 002X

NOTES: CHAN-A: ADDITIONAL DATA:

DY MO	D W	D R	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	12 TO 1	1 TO 2	2 TO 3	3 TO 4	4 TO 5	5 TO 6	6 TO 7	7 TO 8	8 TO 9	9 TO 10	10 TO 11	11 TO 12	DAY TOTAL	HI COUNT	HI HOUR
			AM												PM														
31	1	2													709	718	723	866	663	875	644	525	506	411	270	165			
1	2	2	92	39	35	54	113	195	370	537	562	574	665	691	684	681	657	806	617	917	673	462	453	443	309	159	10978	917	16
2	3	2	109	56	30	40	111	206	358	497	565	564	659	632	660	660	677	808	878	827	598	506	473	376	276	172	10731	878	17
3	4	2	74	47	40	52	116	203	355	551	546	536	592	609	671	699	761	796	695										

AVERAGE WEEKDAY HOUR (MON 6AM THRU FRI 12 NOON)

																								ADT
88	47	35	49	113	201	359	522	556	538	639	644	681	690	705	819	869	873	638	498	477	410	285	165	10322

AXLE - FACTORED (VEHICLES) AVG WEEKDAY HOUR (FACTOR USED = 0.970)

																								ADT
86	46	34	47	110	195	348	506	541	541	620	625	661	669	683	794	842	847	619	483	463	398	276	160	10534

SEASONALLY FACTORED

HRS COUNTED	DAYS COUNTED	AVG HI HR	% AVG DAY	FACTORED HI HOUR	% FACTORED DAY	SEASONAL FACTOR	DIR.DESIGN-HR (ESTIMATE)	EST. AADT 1 WAY COUNT
77	4	873	8.31	847	6.06	1.119	* 578	9468

* THIS VALUE - DRI VALUE = DDHV FOR THIS COUNT LOCATION

Traffic Volume Counts

DUNN ENGINEERING ASSOCIATES

FILE: None

te Code : 998124
S Street: Tanger II Driveway
W Street: County Road 58
Y OF WK : Wednesday

Movements by: Primary

DATE: 8/18/99

me gin	From North RT	From North THRU	From North LT	From East RT	From East THRU	From East LT	From South RT	From South THRU	From South LT	From West RT	From West THRU	From West LT	Vehicle Total
:00 AM	0	0	0	0	100	1	0	0	0	0	201	0	302
:15	0	0	0	0	131	0	0	0	0	0	188	0	319
:30	0	0	0	0	119	0	0	0	0	2	236	0	357
:45	0	0	0	0	121	1	0	0	0	5	227	0	354
TOTAL	0	0	0	0	471	2	0	0	0	7	852	0	1332
:00 AM	0	0	0	0	97	6	0	0	1	11	206	0	321
:15	0	0	0	0	114	11	0	0	0	7	214	0	346
:30	0	0	0	0	112	17	0	0	0	21	194	0	344
:45	0	0	0	0	105	12	1	0	3	28	207	0	356
TOTAL	0	0	0	0	428	46	1	0	4	67	821	0	1367
AY TOTAL	0	0	0	0	899	48	1	0	4	74	1673	0	2699

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
North	12:00 AM	0.00	0	0	0	0	0	0	0
East	7:45 AM	0.93	0	444	35	479	0	93	7
South	8:00 AM	0.31	1	0	4	5	20	0	80
West	7:30 AM	0.95	25	883	0	908	3	97	0

Entire Intersection

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
North	7:30 AM	0.00	0	0	0	0	0	0	0
East		0.94	0	451	18	469	0	96	4
South		0.25	0	0	1	1	0	0	%100
West		0.95	25	883	0	908	3	97	0

DUNN ENGINEERING ASSOCIATES

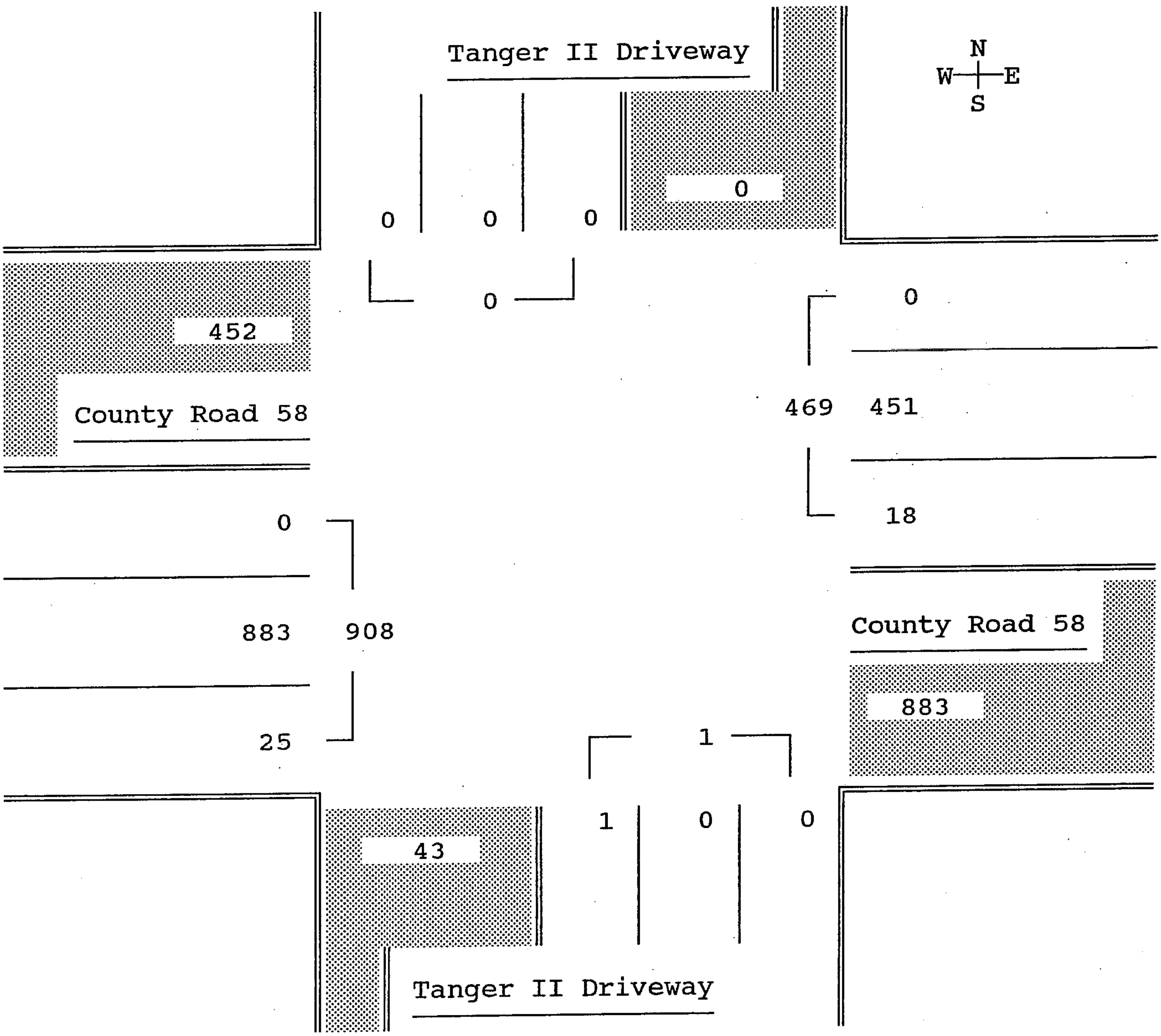
Site Code : 998124
N-S Street: Tanger II Driveway
E-W Street: County Road 58
DAY OF WK : Wednesday

PAGE: 1
FILE: None

Movements by: Primary

DATE: 8/18/99

Total Turning Volumes for the Period: 7:30 AM - 8:30 AM



DUNN ENGINEERING ASSOCIATES

te Code : 98124
-S Street: Tanger II Driveway
-W Street: County Road 58
AY OF WK : Monday

PAGE: 1
FILE: None
DATE: 8/23/99

Movements by: Primary

ime egin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
:00 PM	0	0	0	0	170	37	55	0	64	22	138	0	486
:15	0	0	0	0	191	29	51	0	71	18	156	0	516
:30	0	0	0	0	184	34	47	0	70	27	140	0	502
:45	0	0	0	0	163	33	61	0	59	20	144	0	480
R TOTAL	0	0	0	0	708	133	214	0	264	87	578	0	1984
5:00 PM	0	0	0	0	179	43	53	0	63	19	161	0	518
5:15	0	0	0	0	189	42	59	0	68	14	136	0	508
5:30	0	0	0	0	194	45	46	0	76	23	150	0	534
5:45	0	0	0	0	190	40	43	0	75	24	142	0	514
R TOTAL	0	0	0	0	752	170	201	0	282	80	589	0	2074
AY TOTAL	0	0	0	0	1460	303	415	0	546	167	1167	0	4058

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	12:00 AM	0.00	0	0	0	0	0	0	0
East	5:00 PM	0.96	0	752	170	922	0	82	18
South	4:45 PM	0.95	219	0	266	485	45	0	55
West	4:15 PM	0.95	84	601	0	685	12	88	0

Entire Intersection

North	5:00 PM	0.00	0	0	0	0	0	0	0
East		0.96	0	752	170	922	0	82	18
South		0.95	201	0	282	483	42	0	58
West		0.93	80	589	0	669	12	88	0

DUNN ENGINEERING ASSOCIATES

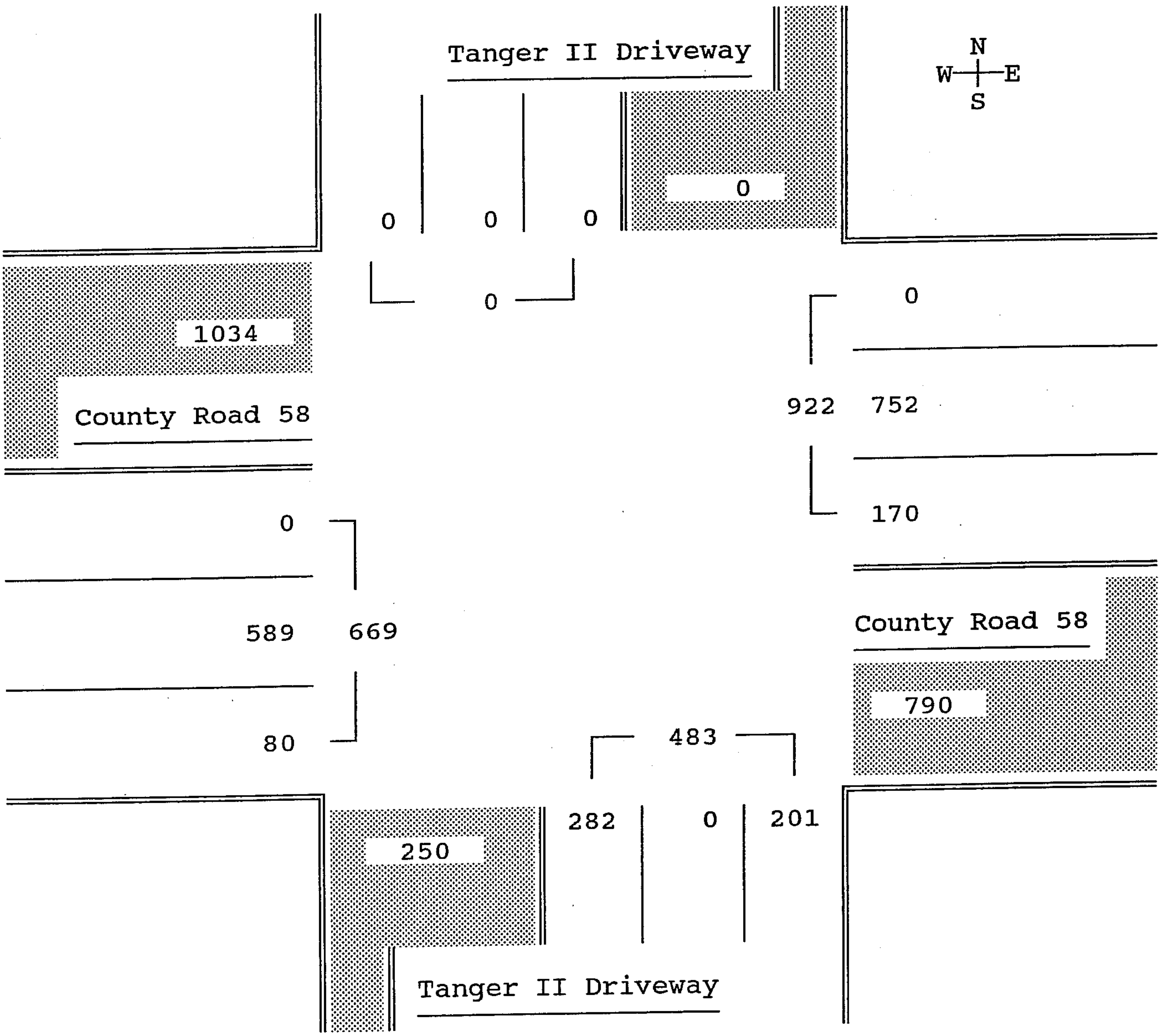
te Code : 98124
S Street: Tanger II Driveway
W Street: County Road 58
Y OF WK : Monday

Movements by: Primary

PAGE: 1
FILE: None

DATE: 8/23/99

Total Turning Volumes for the Period: 5:00 PM - 6:00 PM



DUNN ENGINEERING ASSOCIATES

PAGE: 1
FILE: None

te Code : 98124
S Street: Tanger II Driveway
W Street: County Road 58
Y OF WK : Saturday

DATE: 8/28/99

Movements by: Primary

me gin	From North RT	From North THRU	From North LT	From East RT	From East THRU	From East LT	From South RT	From South THRU	From South LT	From West RT	From West THRU	From West LT	Vehicle Total
:00 AM	0	0	0	0	135	34	70	0	21	26	211	0	497
:15	0	0	0	0	162	39	59	0	25	31	236	0	552
:30	0	0	0	0	177	41	62	0	27	31	245	0	583
:45	0	0	0	0	145	55	64	0	40	33	215	0	552
TOTAL	0	0	0	0	619	169	255	0	113	121	907	0	2184
:00 PM	0	0	0	0	151	56	60	0	41	35	217	0	560
2:15	0	0	0	0	175	38	60	0	37	28	238	0	576
2:30	0	0	0	0	144	53	57	0	54	37	261	0	606
2:45	0	0	0	0	144	45	62	0	61	57	238	0	607
R TOTAL	0	0	0	0	614	192	239	0	193	157	954	0	2349
1:00 PM	0	0	0	0	133	48	61	0	51	42	260	0	595
1:15	0	0	0	0	160	43	54	0	61	34	245	0	597
1:30	0	0	0	0	149	60	54	0	61	31	238	0	593
1:45	0	0	0	0	170	52	64	0	76	29	221	0	612
R TOTAL	0	0	0	0	612	203	233	0	249	136	964	0	2397
2:00 PM	0	0	0	0	214	26	65	0	84	32	257	0	678
2:15	0	0	0	0	187	45	77	0	81	37	226	0	653
2:30	0	0	0	0	192	51	59	0	78	38	234	0	652
2:45	0	0	0	0	204	42	66	0	83	35	209	0	639
R TOTAL	0	0	0	0	797	164	267	0	326	142	926	0	2622
AY TOTAL	0	0	0	0	2642	728	994	0	881	556	3751	0	9552

PEAK PERIOD ANALYSIS FOR THE PERIOD: 11:00 AM - 3:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	12:00 AM	0.00	0	0	0	0	0	0	0
East	2:00 PM	0.98	0	797	164	961	0	83	17
South	2:00 PM	0.94	267	0	326	593	45	0	55
West	12:30 PM	0.97	170	1004	0	1174	14	86	0

Entire Intersection

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	2:00 PM	0.00	0	0	0	0	0	0	0
East		0.98	0	797	164	961	0	83	17
South		0.94	267	0	326	593	45	0	55
West		0.92	142	926	0	1068	13	87	0

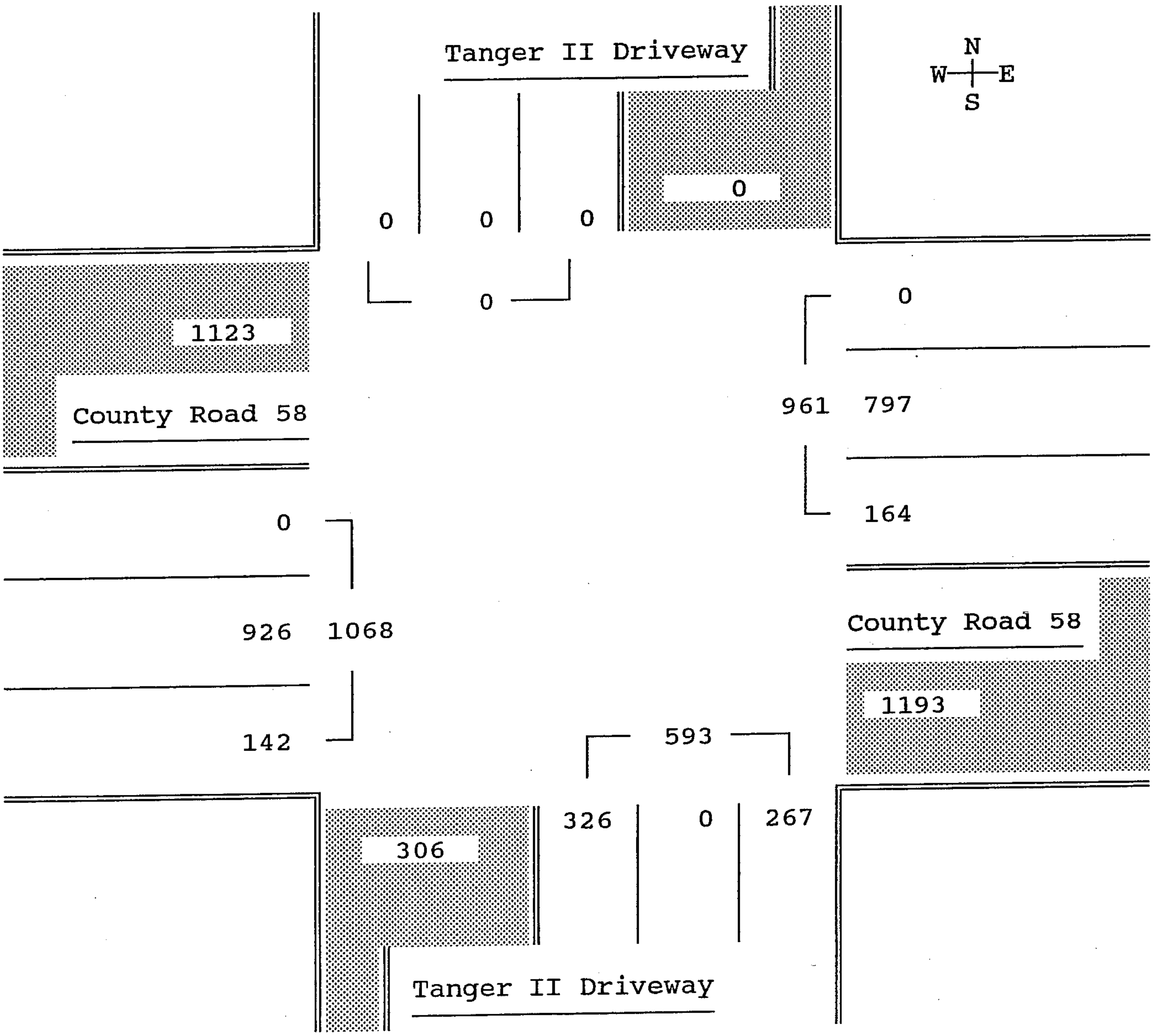
DUNN ENGINEERING ASSOCIATES

ite Code : 98124
-S Street: Tanger II Driveway
-W Street: County Road 58
AY OF WK : Saturday

Movements by: Primary

PAGE: 1
FILE: None
DATE: 8/28/99

Total Turning Volumes for the Period: 2:00 PM - 3:00 PM



DUNN ENGINEERING ASSOCIATES

ite Code : 98124
-S Street: Adchem / Kroemer
-W Street: County Road 58
AY OF WK : Tuesday

PAGE: 1
FILE: None
DATE: 10/05/99

Movements by: Primary

ime egin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
7:00 AM	1	0	0	1	0	0	0	0	0	0	0	4	6
7:15	1	0	0	0	0	0	0	0	0	0	0	1	2
7:30	1	1	0	2	0	0	0	0	0	0	0	2	6
7:45	0	0	0	0	0	0	0	1	0	0	0	4	5
R TOTAL	3	1	0	3	0	0	0	1	0	0	0	11	19
8:00 AM	0	0	0	2	0	0	0	1	0	0	0	5	8
8:15	1	0	1	0	0	0	0	0	0	0	0	3	5
8:30	1	0	1	4	0	0	0	2	0	0	0	0	8
8:45	1	0	1	1	0	0	0	1	0	0	0	4	8
R TOTAL	3	0	3	7	0	0	0	4	0	0	0	12	29
AY TOTAL	6	1	3	10	0	0	0	5	0	0	0	23	48

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	8:00 AM	0.75	3	0	3	6	50	0	50
East	8:00 AM	0.44	7	0	0	7	%100	0	0
South	7:45 AM	0.50	0	4	0	4	0	%100	0
West	7:30 AM	0.70	0	0	14	14	0	0	%100

Entire Intersection

North	8:00 AM	0.75	3	0	3	6	50	0	50
East		0.44	7	0	0	7	%100	0	0
South		0.50	0	4	0	4	0	%100	0
West		0.60	0	0	12	12	0	0	%100

DUNN ENGINEERING ASSOCIATES

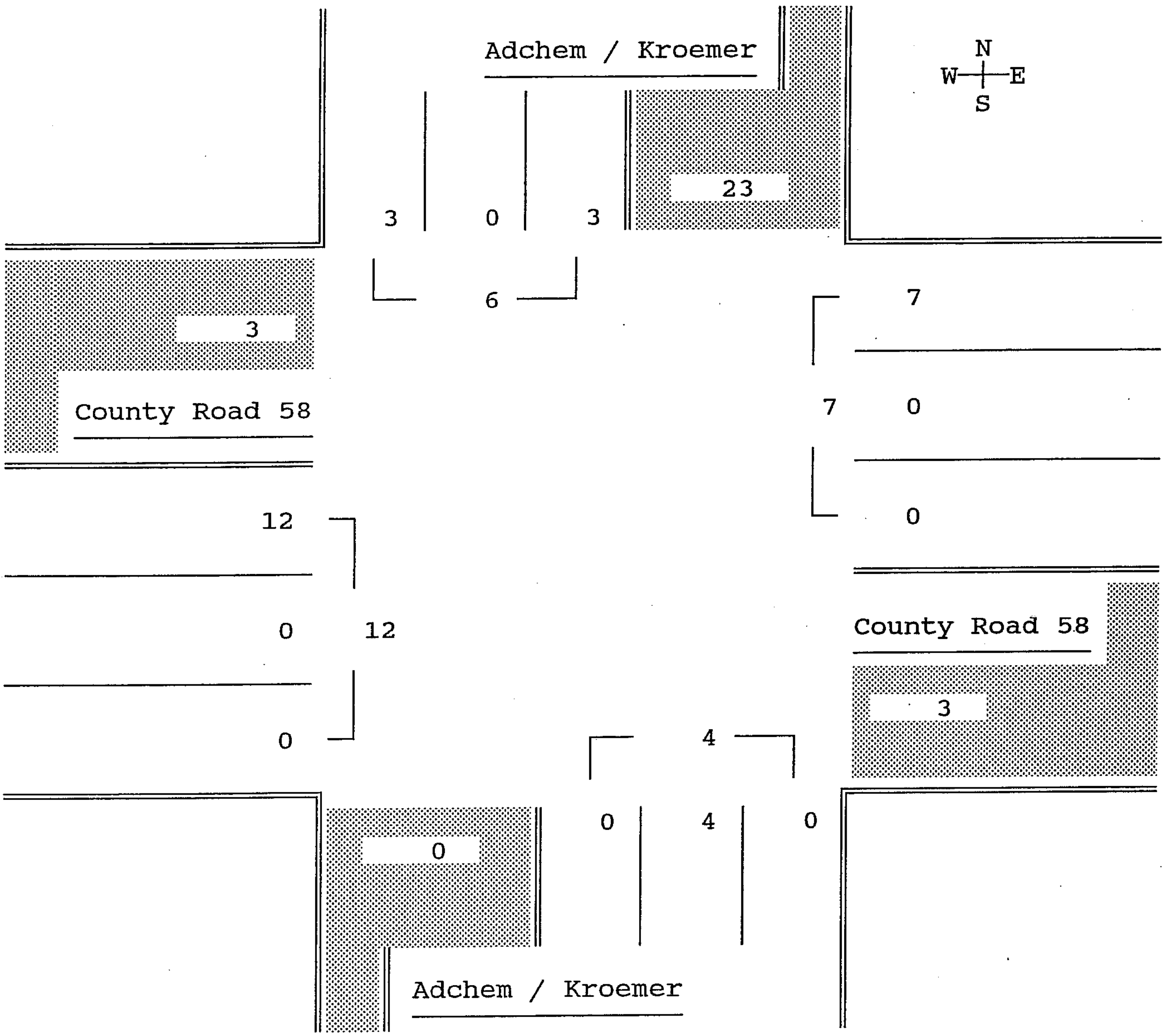
te Code : 98124
S Street: Adchem / Kroemer
W Street: County Road 58
Y OF WK : Tuesday

PAGE: 1
FILE: None

Movements by: Primary

DATE: 10/05/99

Total Turning Volumes for the Period: 8:00 AM - 9:00 AM



DUNN ENGINEERING ASSOCIATES

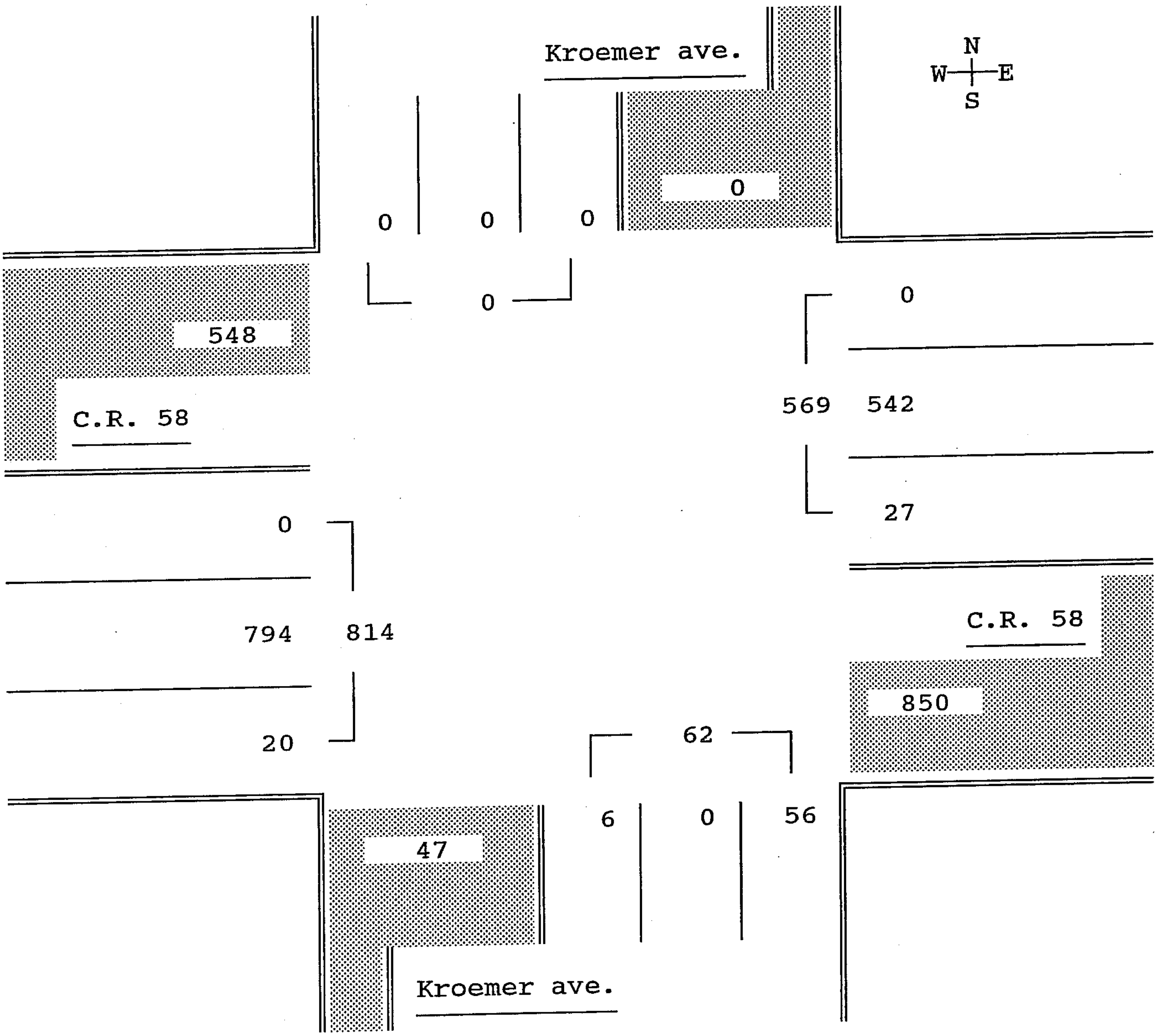
e Code : 95165
Street: Kroemer ave.
Street: C.R. 58
OF WK : TUESDAY

PAGE: 1
FILE: None

Movements by: Primary

DATE: 6/29/99

Total Turning Volumes for the Period: 7:30 AM - 8:30 AM



DUNN ENGINEERING ASSOCIATES

ite Code : 98124
-S Street: ADCHEM/KROEMER
-W Street: CR58
AY OF WK : FRIDAY

Movements by: Primary

PAGE: 1
FILE: None
DATE: 7/09/99

ime egin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
3:00 PM	2	0	1	1	234	0	0	0	0	0	247	2	487
3:15	1	0	0	0	252	12	7	0	5	5	233	0	515
3:30	1	0	1	0	240	12	14	0	3	5	278	1	555
3:45	2	0	1	0	253	14	14	0	4	1	238	0	527
R TOTAL	6	0	3	1	979	38	35	0	12	11	996	3	2084
4:00 PM	2	0	1	0	267	12	10	0	4	3	223	0	522
4:15	1	0	0	0	256	13	12	0	3	2	241	1	529
4:30	0	0	0	1	261	16	17	0	5	6	257	0	563
4:45	1	0	0	0	249	10	8	0	4	5	263	0	540
R TOTAL	4	0	1	1	1033	51	47	0	16	16	984	1	2154
5:00 PM	2	0	0	0	251	21	11	0	3	6	230	0	524
5:15	0	0	0	0	273	14	11	0	7	9	283	0	597
5:30	0	0	0	0	278	22	11	0	1	3	236	0	551
5:45	0	0	0	0	269	18	9	0	3	5	245	0	549
R TOTAL	2	0	0	0	1071	75	42	0	14	23	994	0	2221
AY TOTAL	12	0	4	2	3083	164	124	0	42	50	2974	4	6459

PEAK PERIOD ANALYSIS FOR THE PERIOD: 3:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	3:00 PM	0.75	6	0	3	9	67	0	33
East	5:00 PM	0.95	0	1071	75	1146	0	93	7
South	3:45 PM	0.78	53	0	16	69	77	0	23
West	4:30 PM	0.91	26	1033	0	1059	2	98	0

Entire Intersection

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	Right	Thru	Left	Total	Right	Thru	Left
North	4:30 PM	0.38	3	0	0	3	%100	0	0
East		0.95	1	1034	61	1096	0	94	6
South		0.75	47	0	19	66	71	0	29
West		0.91	26	1033	0	1059	2	98	0

DUNN ENGINEERING ASSOCIATES

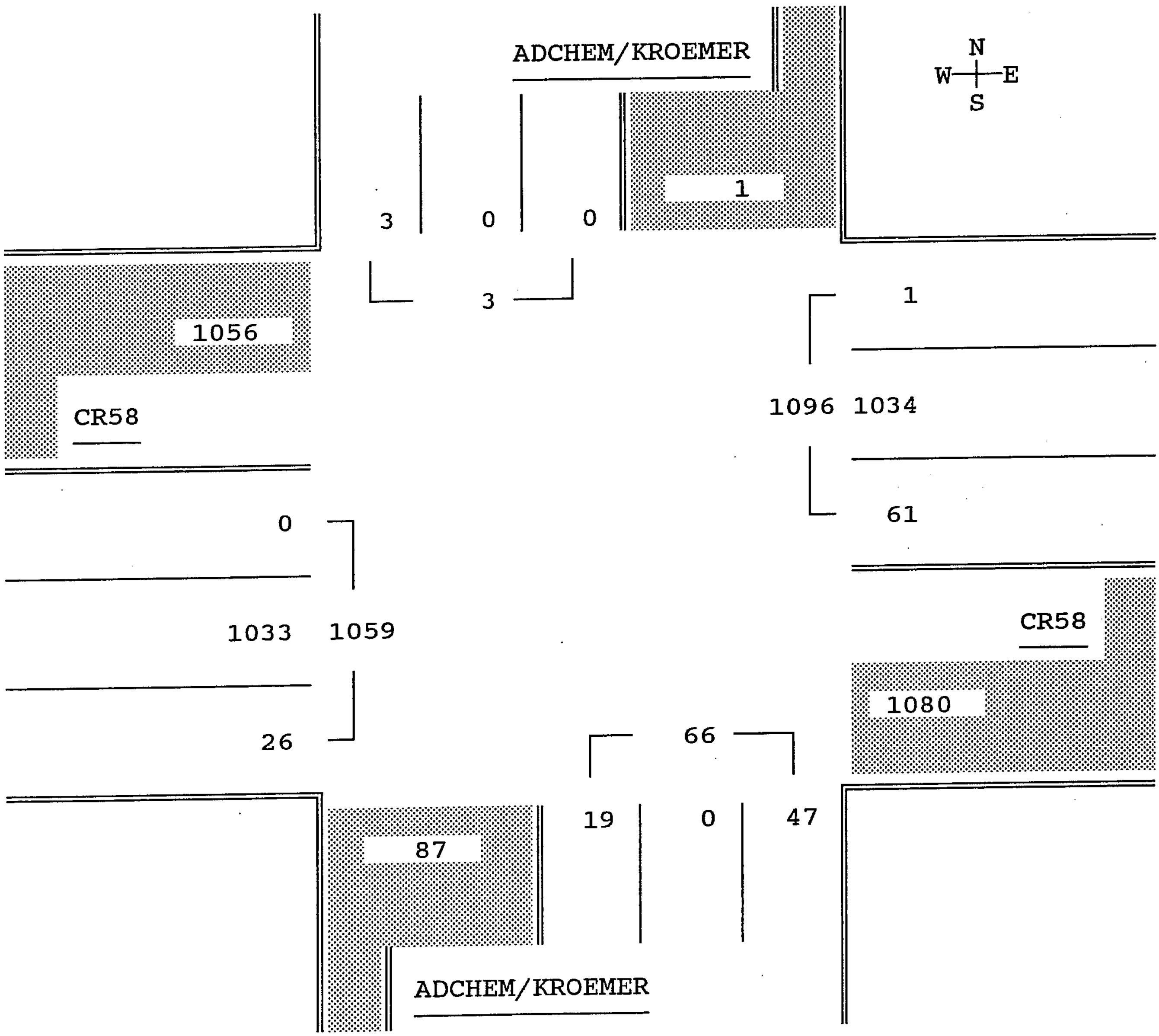
te Code : 98124
S Street: ADCHEM/KROEMER
W Street: CR58
Y OF WK : FRIDAY

PAGE: 1
FILE: None

Movements by: Primary

DATE: 7/09/99

Total Turning Volumes for the Period: 04:30 PM - 05:30 PM



DUNN ENGINEERING ASSOCIATES

Site Code : 98124 PAGE: 1
N-S Street: ADCHEM/KROEMER FILE: None
E-W Street: CR58
DAY OF WK : SATURDAY Movements by: Primary DATE: 7/10/99

Time Begin	From North RT	From North THRU	From North LT	From East RT	From East THRU	From East LT	From South RT	From South THRU	From South LT	From West RT	From West THRU	From West LT	Vehicle Total
11:00 AM	0	0	0	0	149	13	5	0	1	1	227	0	396
11:15	0	0	0	0	208	18	10	0	2	3	245	0	486
11:30	0	0	0	0	190	13	14	0	3	4	268	0	492
11:45	0	0	0	0	205	9	7	0	3	4	256	0	484
HR TOTAL	0	0	0	0	752	53	36	0	9	12	996	0	1858
12:00 PM	0	0	0	0	226	13	11	0	3	4	269	0	526
12:15	0	0	1	0	243	14	13	0	1	3	264	0	539
12:30	1	0	0	2	237	10	9	0	2	6	312	0	579
12:45	0	0	0	0	212	10	10	0	2	6	272	0	512
HR TOTAL	1	0	1	2	918	47	43	0	8	19	1117	0	2156
1:00 PM	0	0	0	0	220	12	13	0	3	18	311	0	577
1:15	0	0	0	0	225	13	10	0	4	10	299	0	561
1:30	0	0	0	0	228	13	8	0	5	10	330	0	594
1:45	0	0	0	0	221	10	9	0	3	11	302	0	556
HR TOTAL	0	0	0	0	894	48	40	0	15	49	1242	0	2288
DAY TOTAL	1	0	1	2	2564	148	119	0	32	80	3355	0	6302

PEAK PERIOD ANALYSIS FOR THE PERIOD: 11:00 AM - 2:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
North	11:45 AM	0.50	1	0	1	2	50	0	50
East	12:00 PM	0.94	2	918	47	967	0	95	5
South	11:30 AM	0.81	45	0	10	55	82	0	18
West	1:00 PM	0.95	49	1242	0	1291	4	96	0

Entire Intersection

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
North	1:00 PM	0.00	0	0	0	0	0	0	0
East		0.98	0	894	48	942	0	95	5
South		0.86	40	0	15	55	73	0	27
West		0.95	49	1242	0	1291	4	96	0

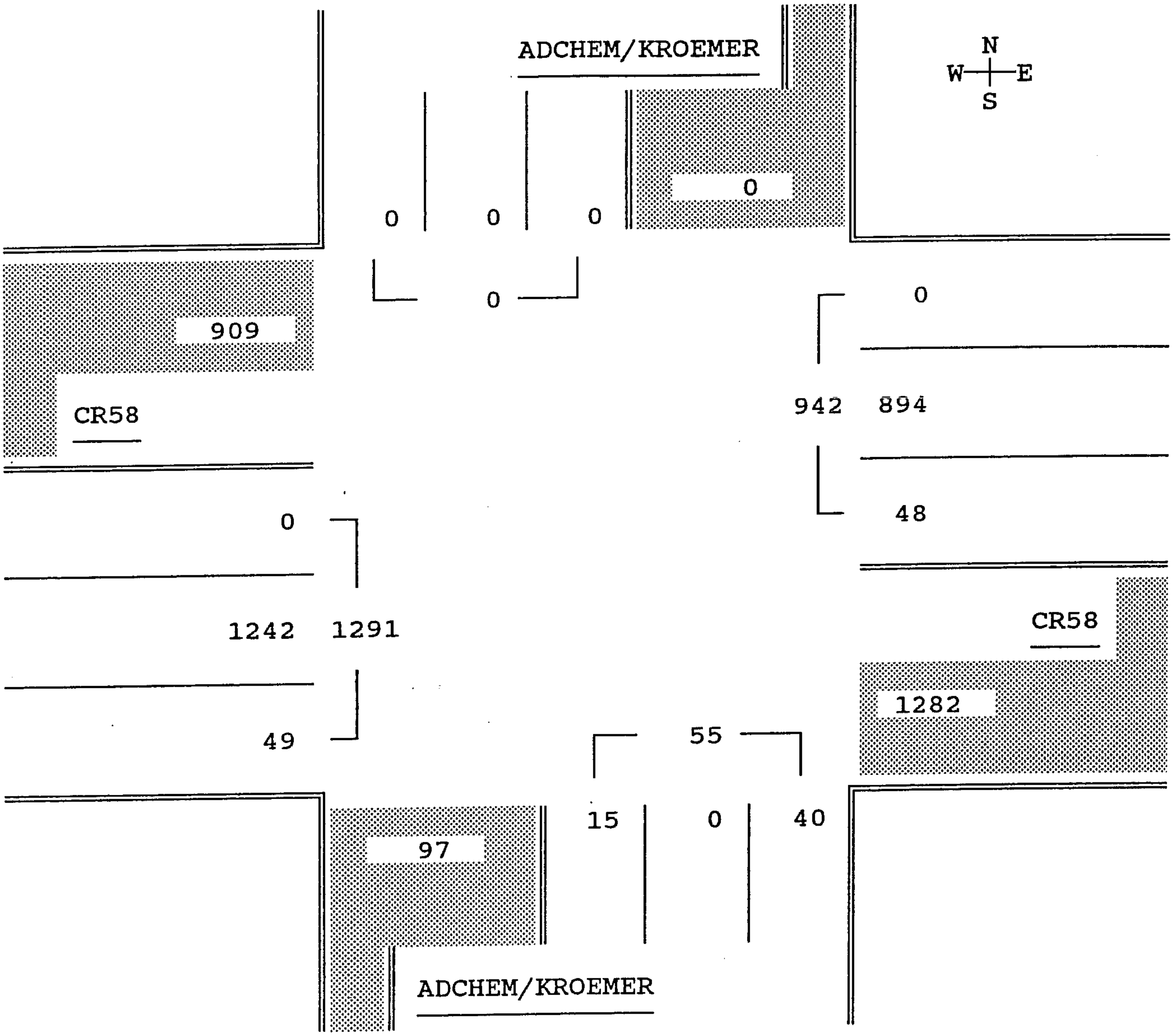
DUNN ENGINEERING ASSOCIATES

ite Code : 98124
-S Street: ADCHEM/KROEMER
-W Street: CR58
AY OF WK : SATURDAY

Movements by: Primary

PAGE: 1
FILE: None
DATE: 7/10/99

Total Turning Volumes for the Period: 01:00 PM - 2:00 PM



DUNN ENGINEERING ASSOCIATES

ite Code : 95165
-S Street: Mill Road
-W Street: Pulaski Street
AY OF WK : Tuesday

PAGE: 1
FILE: milpulam
DATE: 6/22/99

Movements by: Primary

ime egin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
7:00 AM	0	3	7	5	0	4	0	8	0	7	24	0	58
7:15	0	1	7	15	0	3	5	13	0	2	19	0	65
7:30	0	7	5	21	0	4	6	5	0	7	27	0	82
7:45	0	11	13	23	0	2	5	20	0	5	40	0	119
R TOTAL	0	22	32	64	0	13	16	46	0	21	110	0	324
8:00 AM	0	6	9	13	0	1	5	20	0	2	11	0	67
8:15	0	6	10	11	0	1	4	15	0	2	14	0	63
8:30	0	7	7	12	0	3	2	17	0	1	17	0	66
8:45	0	3	10	13	0	2	4	8	0	3	19	0	62
R TOTAL	0	22	36	49	0	7	15	60	0	8	61	0	258
AY TOTAL	0	44	68	113	0	20	31	106	0	29	171	0	582

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:45 AM	0.72	0	30	39	69	0	43	57
East	7:15 AM	0.82	72	0	10	82	88	0	12
South	7:45 AM	0.88	16	72	0	88	18	82	0
West	7:00 AM	0.73	21	110	0	131	16	84	0

Entire Intersection

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	Right	Thru	Left	Total	Right	Thru	Left
North	7:15 AM	0.61	0	25	34	59	0	42	58
East		0.82	72	0	10	82	88	0	12
South		0.79	21	58	0	79	27	73	0
West		0.63	16	97	0	113	14	86	0

DUNN ENGINEERING ASSOCIATES

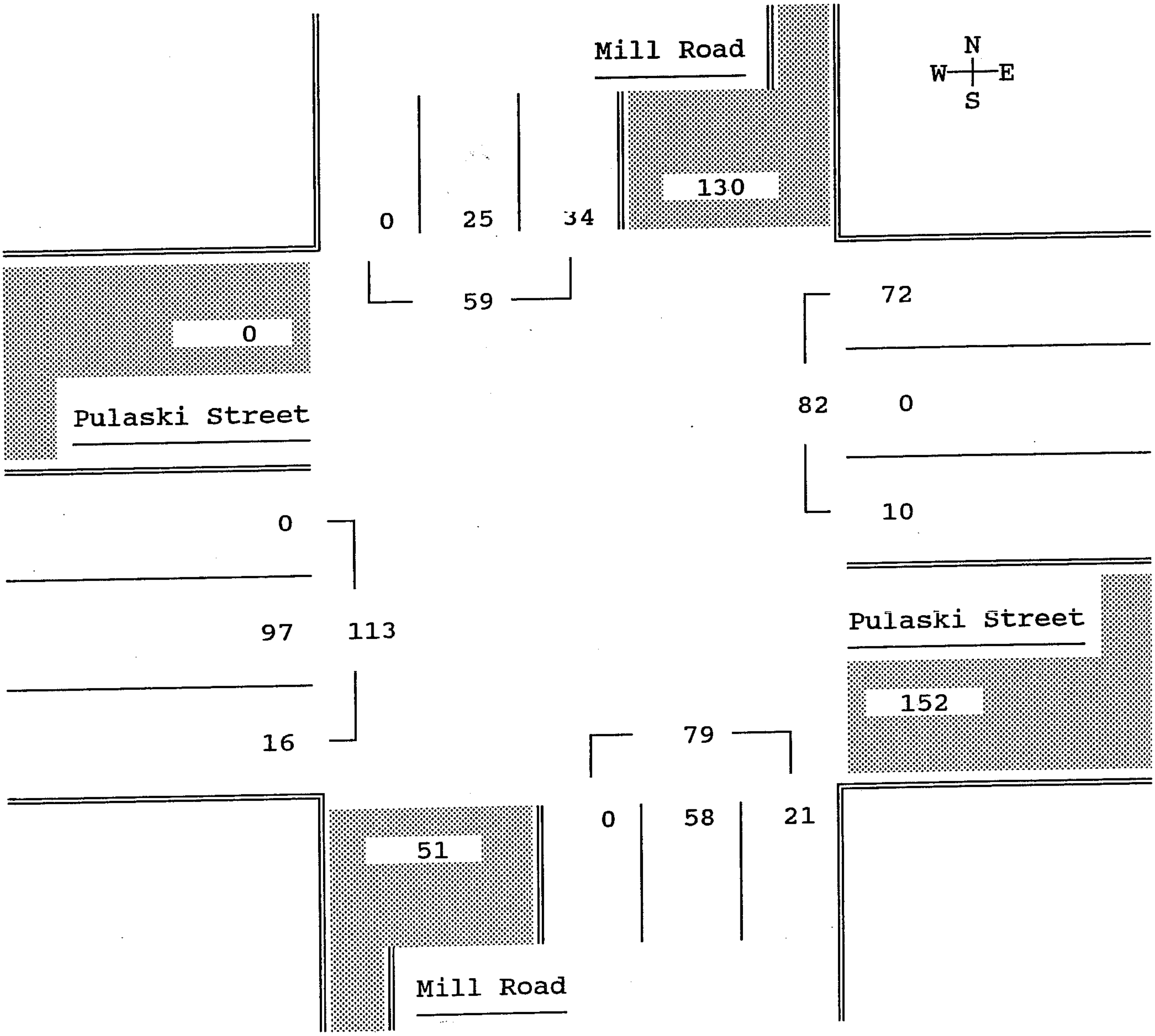
ite Code : 95165
-S Street: Mill Road
-W Street: Pulaski Street
AY OF WK : Tuesday

Movements by: Primary

PAGE: 1
FILE: milpulam

DATE: 6/22/99

Total Turning Volumes for the Period: 7:15 AM - 8:15 AM



DUNN ENGINEERING ASSOCIATES

FILE: mill58am

ite Code : 95165
-S Street: Mill Road
-W Street: County Road 58
AY OF WK : Thursday

Movements by: Primary

DATE: 6/24/99

ime egin	From North RT	From North THRU	From North LT	From East RT	From East THRU	From East LT	From South RT	From South THRU	From South LT	From West RT	From West THRU	From West LT	Vehicle Total
7:00 AM	21	8	4	3	134	2	0	4	9	0	184	2	371
7:15	16	5	7	1	133	3	7	6	15	0	167	7	367
7:30	20	3	7	2	136	9	0	5	21	0	200	4	407
7:45	19	20	10	2	128	4	8	10	25	0	213	13	452
R TOTAL	76	36	28	8	531	18	15	25	70	0	764	26	1597
8:00 AM	10	12	7	5	129	3	5	7	21	0	155	8	362
8:15	9	13	3	4	106	3	6	6	14	0	182	7	353
8:30	14	7	4	2	117	7	3	6	20	0	174	4	358
8:45	13	12	4	3	109	1	3	4	14	0	161	2	326
R TOTAL	46	44	18	14	461	14	17	23	69	0	672	21	1399
AY TOTAL	122	80	46	22	992	32	32	48	139	0	1436	47	2996

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
North	7:00 AM	0.71	76	36	28	140	54	26	20
East	7:00 AM	0.95	8	531	18	557	1	95	3
South	7:45 AM	0.76	22	29	80	131	17	22	61
West	7:00 AM	0.87	0	764	26	790	0	97	3

Entire Intersection

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	Right	Thru	Left	Total	Right	Thru	Left
North	7:00 AM	0.71	76	36	28	140	54	26	20
East		0.95	8	531	18	557	1	95	3
South		0.64	15	25	70	110	14	23	64
West		0.87	0	764	26	790	0	97	3

DUNN ENGINEERING ASSOCIATES

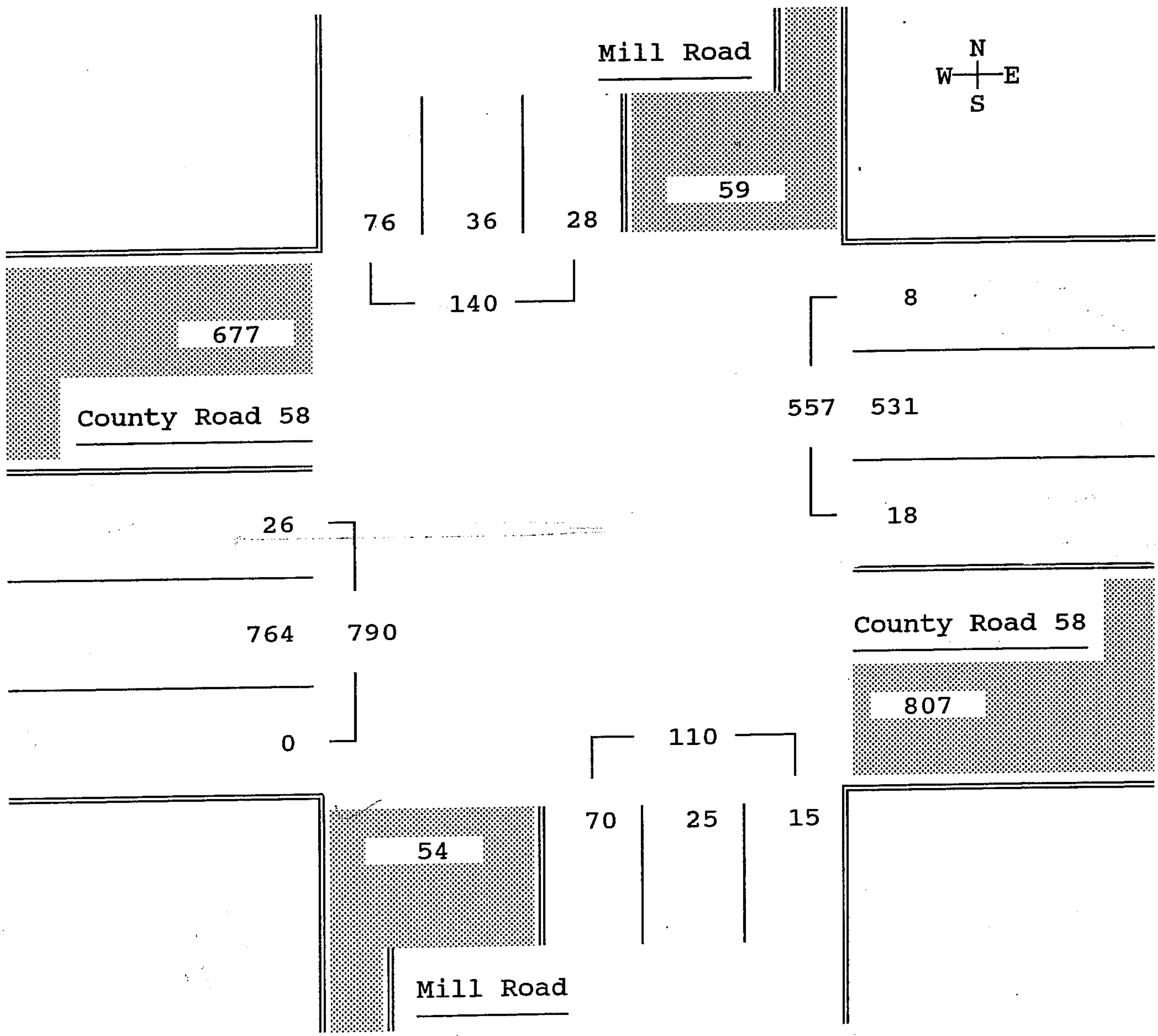
ite Code : 95165
-S Street: Mill Road
-W Street: County Road 58
AY OF WK : Thursday

Movements by: Primary

PAGE: 1
FILE: mill58am

DATE: 6/24/99

Total Turning Volumes for the Period: 7:00 AM - 8:00 AM



DUNN ENGINEERING ASSOCIATES

ite Code : 95165
-S Street: Mill Road
-W Street: Pulaski Street
AY OF WK : Tuesday

PAGE: 1
FILE: milpulpm

Movements by: Primary

DATE: 6/22/99

ime	From North			From East			From South			From West			Vehicle
egin	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	Total
4:00 PM	0	15	12	54	0	2	0	17	0	3	26	0	129
4:15	0	12	4	58	0	1	1	19	0	6	32	0	133
4:30	0	2	6	39	0	0	2	38	0	3	18	0	108
4:45	0	14	6	58	0	0	0	31	0	2	23	0	134
R TOTAL	0	43	28	209	0	3	3	105	0	14	99	0	504
5:00 PM	0	11	3	48	0	0	0	21	0	6	27	0	116
5:15	0	12	10	48	0	3	1	27	0	2	21	0	124
5:30	0	9	2	45	0	0	0	31	0	1	33	0	121
5:45	0	8	9	48	0	1	0	19	0	2	16	0	103
R TOTAL	0	40	24	189	0	4	1	98	0	11	97	0	464
AY TOTAL	0	83	52	398	0	7	4	203	0	25	196	0	968

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION	START	PEAK HR	.... VOLUMES				.... PERCENTS ...		
FROM	PEAK HOUR	FACTOR	Right	Thru	Left	Total	Right	Thru	Left
North	4:00 PM	0.66	0	43	28	71	0	61	39
East	4:00 PM	0.90	209	0	3	212	99	0	1
South	4:30 PM	0.75	3	117	0	120	2	98	0
West	4:15 PM	0.77	17	100	0	117	15	85	0

Entire Intersection

North	4:00 PM	0.66	0	43	28	71	0	61	39
East		0.90	209	0	3	212	99	0	1
South		0.68	3	105	0	108	3	97	0
West		0.74	14	99	0	113	12	88	0

DUNN ENGINEERING ASSOCIATES

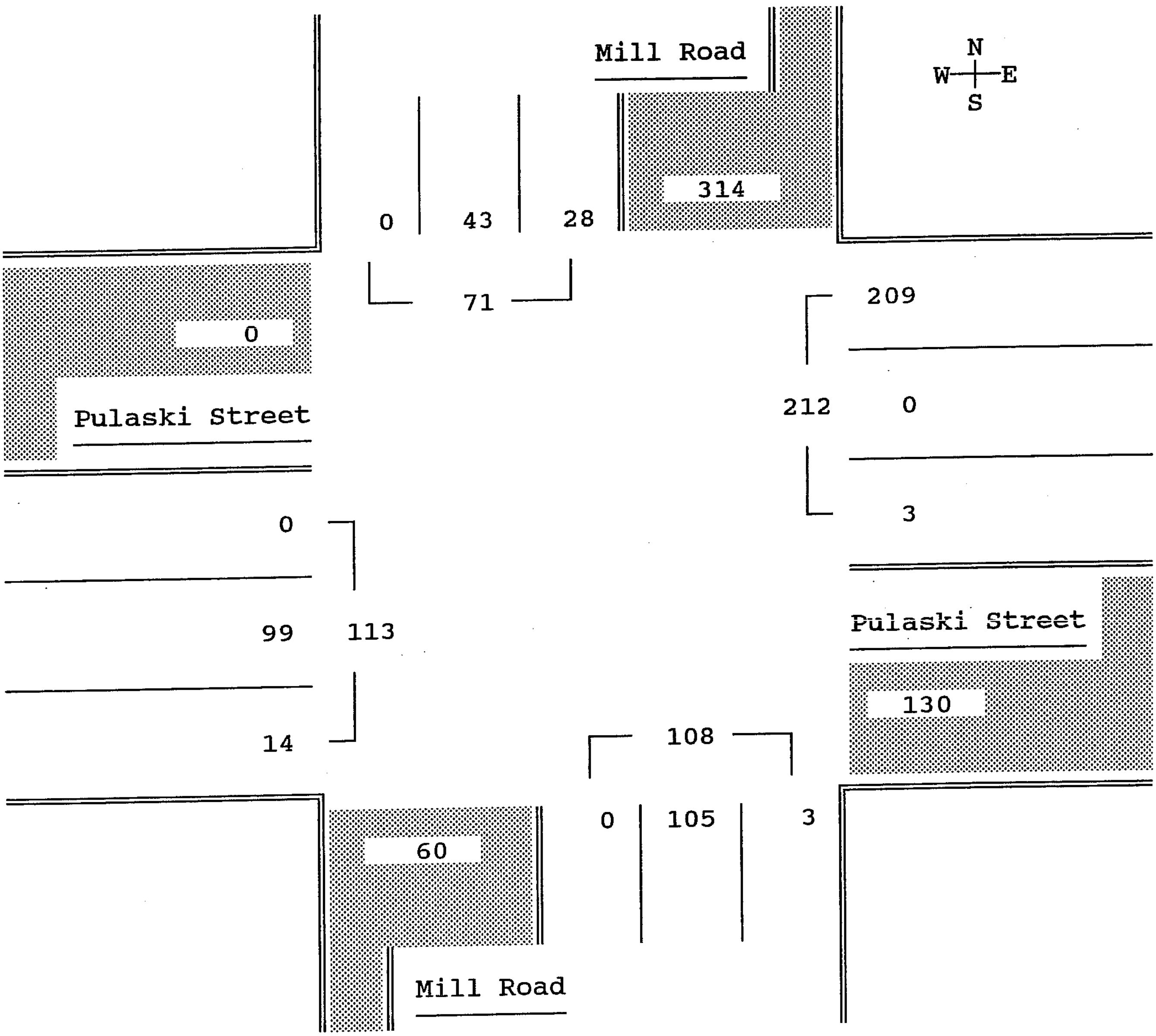
ite Code : 95165
-S Street: Mill Road
-W Street: Pulaski Street
AY OF WK : Tuesday

Movements by: Primary

PAGE: 1
FILE: milpulpm

DATE: 6/22/99

Total Turning Volumes for the Period: 4:00 PM - 5:00 PM



DUNN ENGINEERING ASSOCIATES

ite Code : 95165
-S Street: Mill Road
-W Street: County Road 58
AY OF WK : Wednesday

PAGE: 1
FILE: mill58pm

Movements by: Primary

DATE: 6/23/99

ime	From North			From East			From South			From West			Vehicle
egin	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	Total
4:00 PM	8	17	3	4	202	10	0	24	47	0	172	8	495
4:15	13	4	3	5	214	12	2	21	54	0	200	15	543
4:30	16	8	6	3	203	10	4	35	38	0	193	18	534
4:45	15	12	6	8	196	8	1	35	53	0	173	14	521
R TOTAL	52	41	18	20	815	40	7	115	192	0	738	55	2093
5:00 PM	12	8	2	5	207	4	2	16	51	0	188	24	519
5:15	14	13	3	1	213	9	1	27	47	0	194	19	541
5:30	17	2	2	4	186	9	2	31	43	0	177	28	501
5:45	14	15	2	6	204	2	0	17	50	0	184	21	515
R TOTAL	57	38	9	16	810	24	5	91	191	0	743	92	2076
AY TOTAL	109	79	27	36	1625	64	12	206	383	0	1481	147	4169

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	.... VOLUMES				.... PERCENTS ...		
			Right	Thru	Left	Total	Right	Thru	Left
North	4:30 PM	0.87	57	41	17	115	50	36	15
East	4:00 PM	0.95	20	815	40	875	2	93	5
South	4:00 PM	0.88	7	115	192	314	2	37	61
West	5:00 PM	0.98	0	743	92	835	0	89	11

Entire Intersection

North	4:15 PM	0.80	56	32	17	105	53	30	16
East		0.95	21	820	34	875	2	94	4
South		0.88	9	107	196	312	3	34	63
West		0.96	0	754	71	825	0	91	9

DUNN ENGINEERING ASSOCIATES

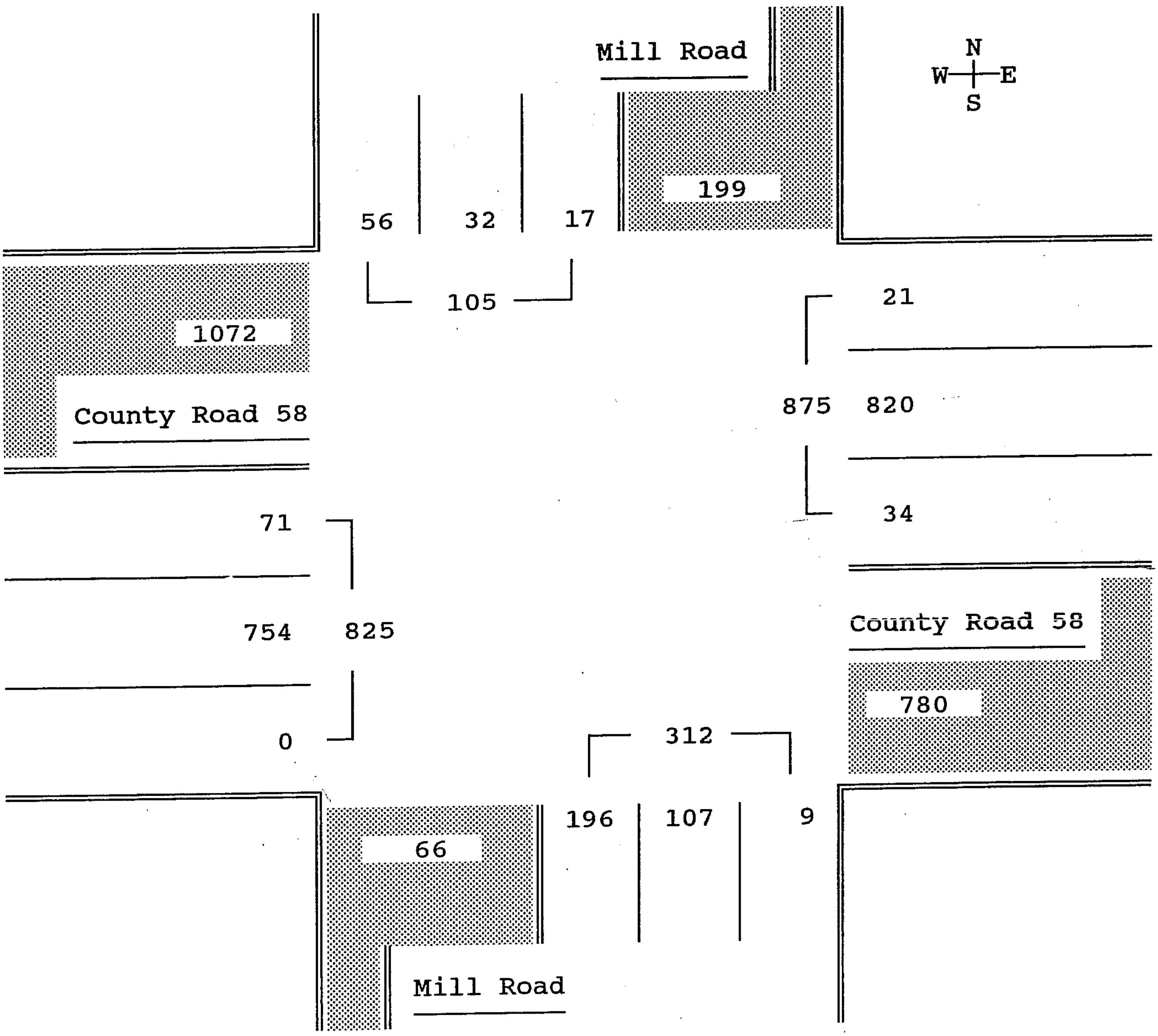
ite Code : 95165
-S Street: Mill Road
-W Street: County Road 58
AY OF WK : Wednesday

Movements by: Primary

PAGE: 1
FILE: mill58pm

DATE: 6/23/99

Total Turning Volumes for the Period: 4:15 PM - 5:15 PM



DUNN ENGINEERING ASSOCIATES

ite Code : 95165
-S Street: MILL RD
-W Street: PULASKI ST
AY OF WK : SATURDAY

PAGE: 1
FILE: None

Movements by: Primary

DATE: 6/26/99

ime	From North			From East			From South			From West			Vehicle
egin	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	Total
1:00 AM	0	17	11	25	0	2	4	27	0	4	21	0	111
1:15	0	13	8	15	0	0	0	18	0	11	18	0	83
1:30	0	8	12	27	0	1	6	22	0	4	27	0	107
1:45	0	10	12	23	0	2	3	21	0	2	33	0	106
R TOTAL	0	48	43	90	0	5	13	88	0	21	99	0	407
2:00 PM	0	15	8	15	0	1	7	24	0	8	30	0	108
2:15	0	12	6	19	0	4	6	18	0	4	23	0	92
2:30	0	12	12	24	0	3	4	12	0	6	16	0	89
2:45	0	14	9	25	0	1	0	15	0	2	19	0	85
R TOTAL	0	53	35	83	0	9	17	69	0	20	88	0	374
1:00 PM	0	14	14	29	0	2	2	17	0	4	17	0	99
1:15	0	6	9	34	0	2	3	10	0	1	12	0	77
1:30	0	11	4	25	0	3	4	7	0	1	12	0	67
1:45	0	13	4	20	0	1	3	12	0	2	19	0	74
R TOTAL	0	44	31	108	0	8	12	46	0	8	60	0	317
2:00 PM	0	13	2	22	0	1	5	16	0	4	17	0	80
2:15	0	12	11	23	0	4	2	21	0	6	15	0	94
2:30	0	5	12	24	0	0	1	16	0	6	13	0	77
2:45	0	6	6	20	0	2	3	13	0	2	19	0	71
R TOTAL	0	36	31	89	0	7	11	66	0	18	64	0	322
3:00 PM	0	14	5	27	0	1	3	17	0	3	21	0	91
3:15	0	14	5	16	0	3	4	23	0	4	14	0	83
3:30	0	9	5	27	0	3	4	13	0	2	17	0	80
3:45	0	13	9	22	0	3	1	9	0	2	10	0	69
R TOTAL	0	50	24	92	0	10	12	62	0	11	62	0	323
AY TOTAL	0	231	164	462	0	39	65	331	0	78	373	0	1743

DUNN ENGINEERING ASSOCIATES

ite Code : 95165
-S Street: MILL RD
-W Street: PULASKI ST
AY OF WK : SATURDAY

Movements by: Primary

PAGE: 2
FILE: None
DATE: 6/26/99

PEAK PERIOD ANALYSIS FOR THE PERIOD: 11:00 AM - 4:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	12:15 PM	0.83	0	52	41	93	0	56	44
East	12:45 PM	0.84	113	0	8	121	93	0	7
South	11:30 AM	0.86	22	85	0	107	21	79	0
West	11:15 AM	0.88	25	108	0	133	19	81	0

Entire Intersection

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	11:30 AM	0.90	0	45	38	83	0	54	46
East		0.82	84	0	8	92	91	0	9
South		0.86	22	85	0	107	21	79	0
West		0.86	18	113	0	131	14	86	0

DUNN ENGINEERING ASSOCIATES

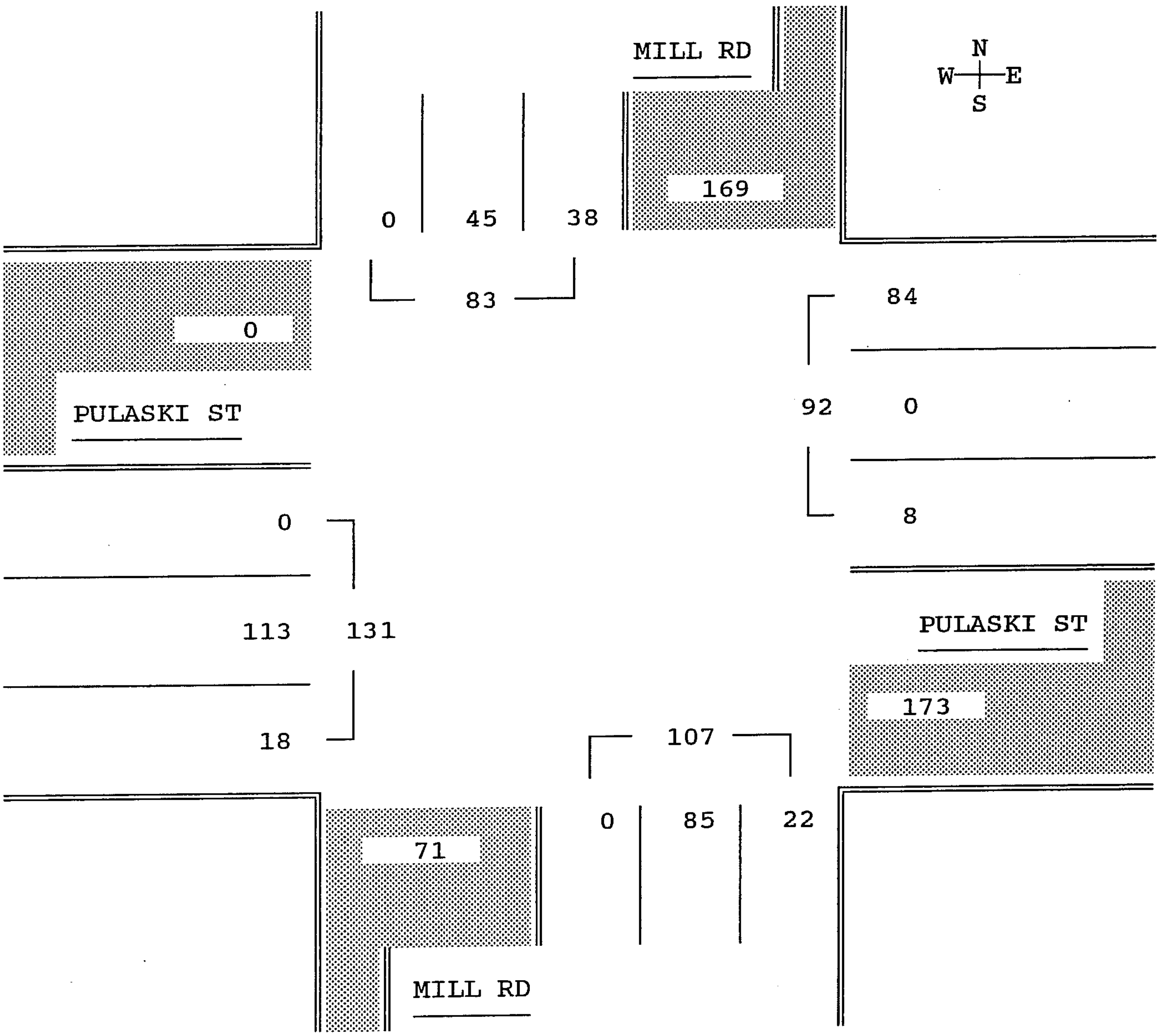
Site Code : 95165
N-S Street: MILL RD
E-W Street: PULASKI ST
DAY OF WK : SATURDAY

PAGE: 1
FILE: None

Movements by: Primary

DATE: 6/26/99

Total Turning Volumes for the Period: 11:30 AM - 12:30 PM



DUNN ENGINEERING ASSOCIATES

ite Code : 95165
-S Street: MILL RD
-W Street: C.R. 58
AY OF WK : SATURDAY

PAGE: 1
FILE: mil58sat

Movements by: Primary

DATE: 6/26/99

ime	From North			From East			From South			From West			Vehicle
egin	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	RT	THRU	LT	Total
1:00 AM	18	17	9	7	194	11	12	10	30	0	208	28	544
1:15	14	16	8	1	171	5	7	10	16	0	219	33	500
1:30	15	17	3	8	207	3	10	18	21	0	222	22	546
1:45	19	15	4	9	194	7	6	16	22	0	240	10	542
IR TOTAL	66	65	24	25	766	26	35	54	89	0	889	93	2132
2:00 PM	11	13	7	3	171	10	11	13	15	0	230	32	516
2:15	11	10	5	8	202	8	4	8	25	0	214	22	517
2:30	24	14	5	3	181	10	4	7	25	0	222	24	519
2:45	14	16	10	1	173	7	7	10	23	0	209	27	497
IR TOTAL	60	53	27	15	727	35	26	38	88	0	875	105	2049
1:00 PM	18	22	7	7	154	6	5	15	26	0	233	16	509
1:15	22	13	2	4	171	2	6	13	25	0	241	21	520
1:30	21	8	6	7	163	7	2	10	20	0	225	19	488
1:45	17	12	2	7	165	5	4	9	19	0	203	18	461
IR TOTAL	78	55	17	25	653	20	17	47	90	0	902	74	1978
2:00 PM	18	5	7	10	154	10	9	9	20	0	181	22	445
2:15	18	13	2	11	177	10	6	16	22	0	174	17	466
2:30	21	13	6	6	176	4	8	6	26	0	212	19	497
2:45	14	10	4	4	167	2	3	11	19	0	199	21	454
HR TOTAL	71	41	19	31	674	26	26	42	87	0	766	79	1862
3:00 PM	13	12	4	7	189	7	2	11	31	0	180	17	473
3:15	8	12	5	7	169	7	3	9	27	0	197	19	463
3:30	19	9	3	3	162	5	1	11	28	0	200	19	460
3:45	15	14	3	8	170	8	1	7	23	0	192	15	456
HR TOTAL	55	47	15	25	690	27	7	38	109	0	769	70	1852
DAY TOTAL	330	261	102	121	3510	134	111	219	463	0	4201	421	9873

DUNN ENGINEERING ASSOCIATES

Site Code : 95165
N-S Street: MILL RD
E-W Street: C.R. 58
DAY OF WK : SATURDAY

FILE: mil58sat

Movements by: Primary

DATE: 6/26/99

PEAK PERIOD ANALYSIS FOR THE PERIOD: 11:00 AM - 4:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	12:30 PM	0.89	78	65	24	167	47	39	14
East	11:30 AM	0.95	28	774	28	830	3	93	3
South	11:00 AM	0.86	35	54	89	178	20	30	50
West	11:15 AM	0.96	0	911	97	1008	0	90	10

Entire Intersection

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	11:00 AM	0.88	66	65	24	155	43	42	15
East		0.94	25	766	26	817	3	94	3
South		0.86	35	54	89	178	20	30	50
West		0.97	0	889	93	982	0	91	9

DUNN ENGINEERING ASSOCIATES

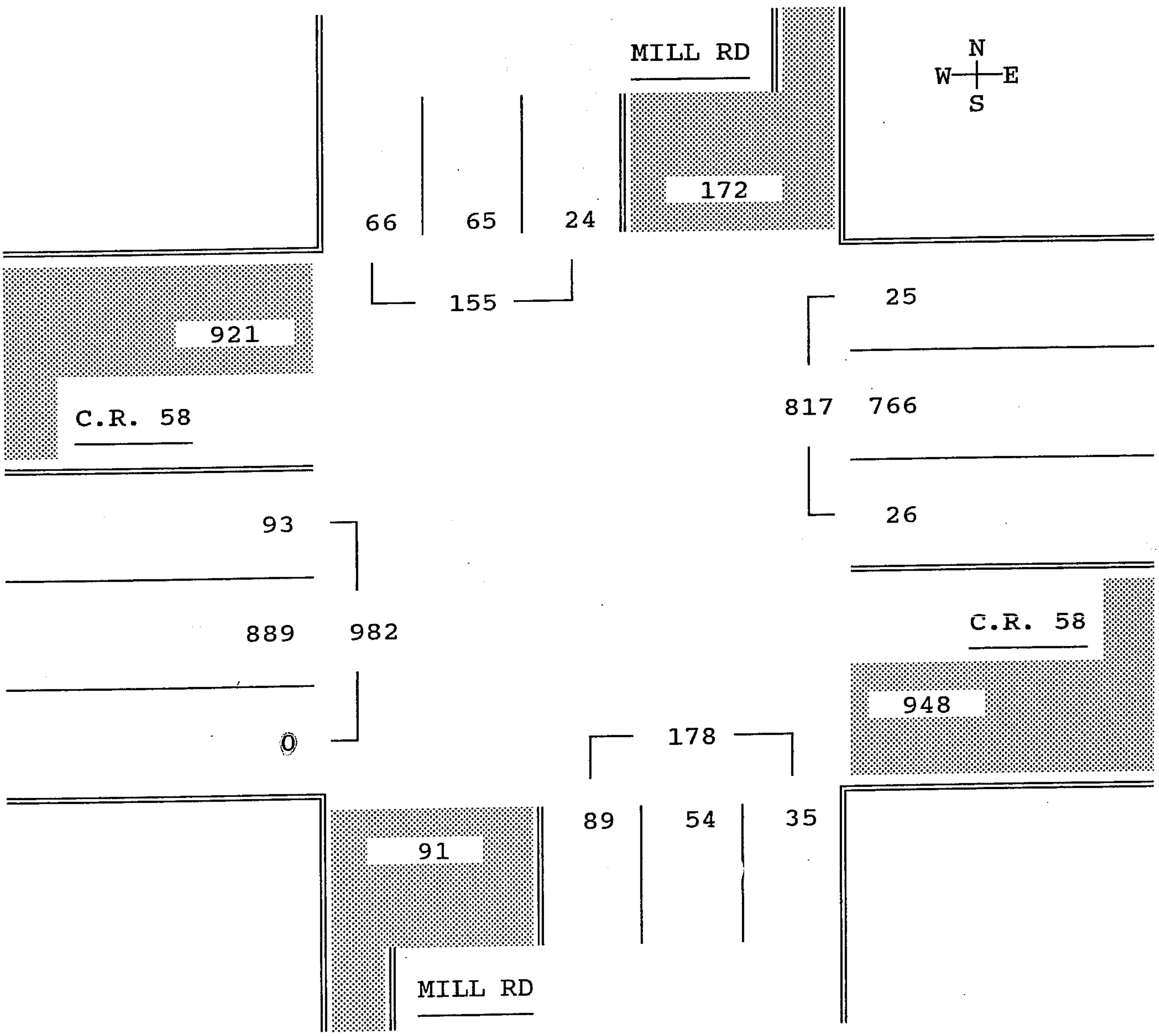
te Code : 95165
S Street: MILL RD
W Street: C.R. 58
AY OF WK : SATURDAY

Movements by: Primary

PAGE: 1
FILE: mil58sat

DATE: 6/26/99

Total Turning Volumes for the Period: 11:00 AM - 12:00 PM



DUNN ENGINEERING ASSOCIATES

ite Code : 98124 PAGE: 1

-S Street: Kroemer Ave / Forge Road FILE: None

-W Street: Route 25

AY OF WK : Friday Movements by: Primary DATE: 7/14/00

ime egin	From North RT	THRU	LT	From East RT	THRU	LT	From South RT	THRU	LT	From West RT	THRU	LT	Vehicle Total
7:00 AM	6	1	5	10	20	2	4	3	4	0	28	5	88
7:15	6	0	8	6	32	6	1	4	1	0	56	7	127
7:30	4	1	8	6	43	4	9	2	3	0	62	1	143
7:45	8	1	4	7	37	0	3	0	2	0	80	9	151
R TOTAL	24	3	25	29	132	12	17	9	10	0	226	22	509
8:00 AM	10	3	10	17	43	2	5	3	1	0	65	8	167
8:15	7	1	16	7	48	2	7	1	2	0	79	15	185
8:30	7	1	7	8	47	2	4	1	1	0	71	10	159
8:45	3	1	8	9	51	4	6	6	4	1	82	3	178
R TOTAL	27	6	41	41	189	10	22	11	8	1	297	36	689
Y TOTAL	51	9	66	70	321	22	39	20	18	1	523	58	1198

PEAK PERIOD ANALYSIS FOR THE PERIOD: 7:00 AM - 9:00 AM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	Thru	Left	Total	PERCENTS Right	Thru	Left
North	7:45 AM	0.78	32	6	37	75	43	8	49
East	8:00 AM	0.94	41	189	10	240	17	79	4
South	8:00 AM	0.64	22	11	8	41	54	27	20
West	7:45 AM	0.90	0	295	42	337	0	88	12

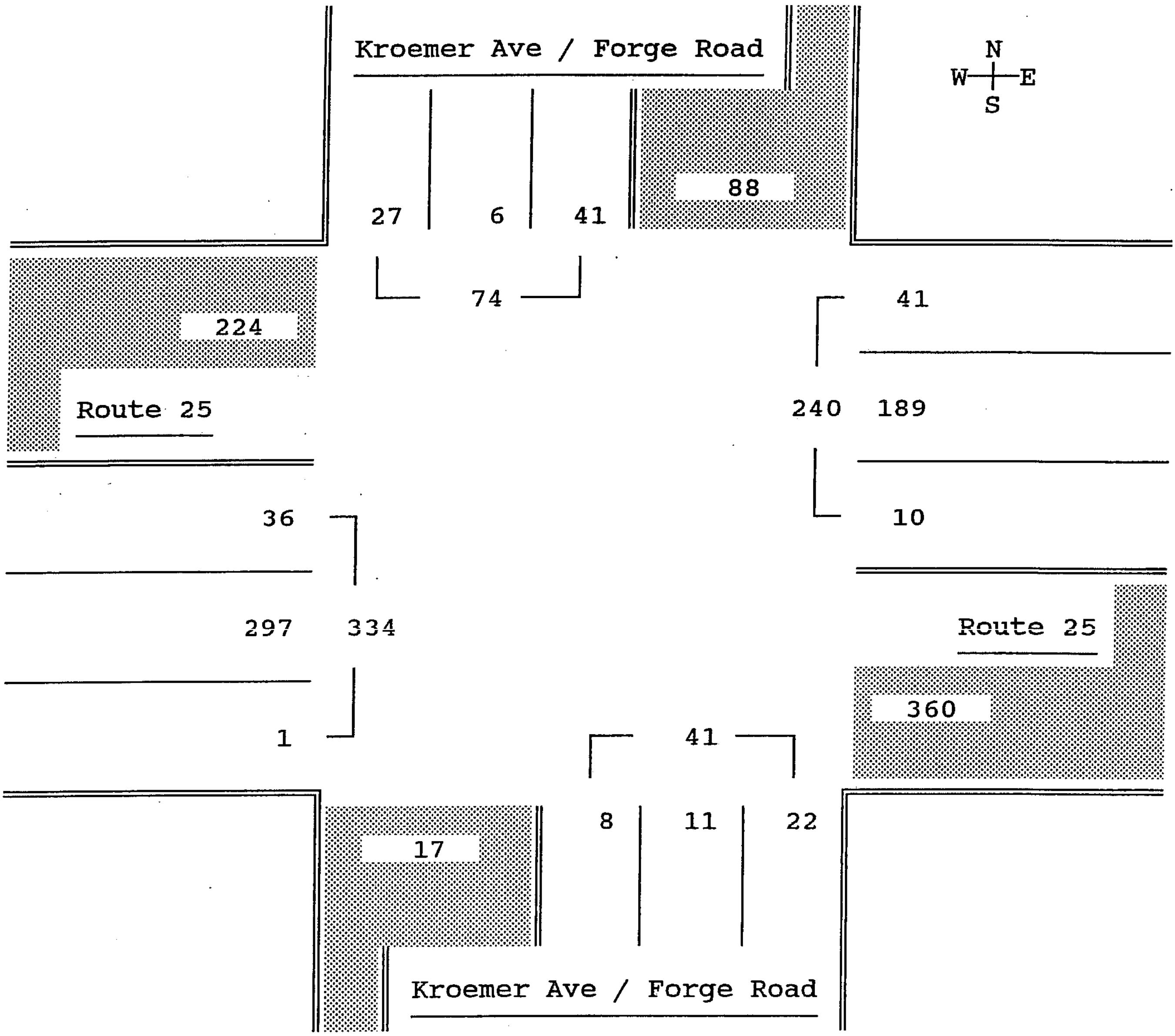
Entire Intersection

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	Right	Thru	Left	Total	Right	Thru	Left
North	8:00 AM	0.77	27	6	41	74	36	8	55
East		0.94	41	189	10	240	17	79	4
South		0.64	22	11	8	41	54	27	20
West		0.89	1	297	36	334	0	89	11

DUNN ENGINEERING ASSOCIATES

ite Code : 98124 PAGE: 1
-S Street: Kroemer Ave / Forge Road FILE: None
-W Street: Route 25
AY OF WK : Friday Movements by: Primary DATE: 7/14/00

Total Turning Volumes for the Period: 8:00 AM - 9:00 AM



DUNN ENGINEERING ASSOCIATES

e Code : 98124
Street: Kroemer Avenue/Forge Rd
Street: Route 25
OF WK : Thursday

PAGE: 1
FILE: None

Movements by: Primary

DATE: 6/01/00

e jin	From North RT	From North THRU	From North LT	From East RT	From East THRU	From East LT	From South RT	From South THRU	From South LT	From West RT	From West THRU	From West LT	Vehicle Total
00 PM	5	6	8	6	95	4	4	5	2	2	88	7	232
15	8	3	11	8	116	8	14	5	0	0	73	6	252
30	8	3	5	4	119	7	5	4	2	0	98	5	260
45	10	4	8	7	105	7	10	2	2	1	78	3	237
TOTAL	31	16	32	25	435	26	33	16	6	3	337	21	981
:00 PM	9	7	6	3	110	12	7	4	2	2	95	2	259
:15	11	9	10	12	142	13	4	2	0	1	95	5	304
:30	9	7	12	14	115	17	8	2	0	1	92	8	285
:45	6	7	11	8	118	5	9	4	2	0	78	5	253
TOTAL	35	30	39	37	485	47	28	12	4	4	360	20	1101
TOTAL	66	46	71	62	920	73	61	28	10	7	697	41	2082

PEAK PERIOD ANALYSIS FOR THE PERIOD: 4:00 PM - 6:00 PM

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	VOLUMES Right	VOLUMES Thru	VOLUMES Left	VOLUMES Total	PERCENTS Right	PERCENTS Thru	PERCENTS Left
North	5:00 PM	0.87	35	30	39	104	34	29	38
East	5:00 PM	0.85	37	485	47	569	7	85	8
South	4:15 PM	0.75	36	15	6	57	63	26	11
West	4:30 PM	0.93	4	366	15	385	1	95	4

Entire Intersection

DIRECTION FROM	START PEAK HOUR	PEAK HR FACTOR	Right	Thru	Left	Total	Right	Thru	Left
North	5:00 PM	0.87	35	30	39	104	34	29	38
East		0.85	37	485	47	569	7	85	8
South		0.73	28	12	4	44	64	27	9
West		0.95	4	360	20	384	1	94	5

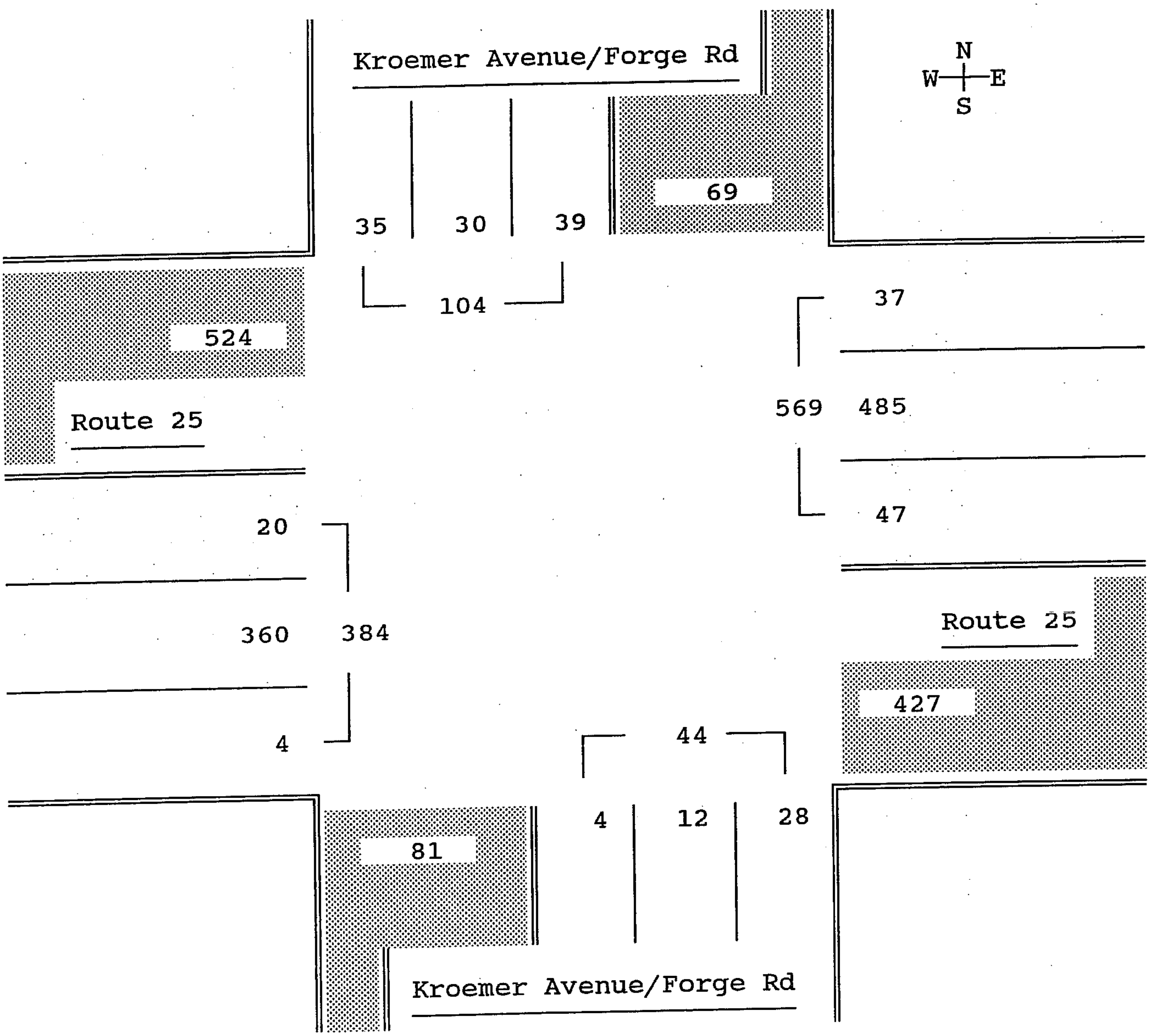
DUNN ENGINEERING ASSOCIATES

e Code : 98124
Street: Kroemer Avenue/Forge Rd
Street: Route 25
OF WK : Thursday

Movements by: Primary

PAGE: 1
FILE: None
DATE: 6/01/00

Total Turning Volumes for the Period: 5:00 PM - 6:00 PM



Accident Records

CR 58, OLD COUNTRY ROAD

(LIE Exit 73 to NY25/Doctor's Path)

Intersection	Milepost	Total Number of Accidents Per Year 1996	1997	1998	1999
		4/1/96 - 12/31/96			1/1/99- 3/31/99
CR 58 E/B @ SR 25 E/B	0				
		1			
I495	1824		1		
LIE EB EXIT RAMP	2603				1
		2	4	1	
TANGER DWY [NEW]	4026		4	4	
				2	1
KROEMER AVENUE	5234	4	6	5	1
		1	2	1	
RACEWAY	5888				
			2	4	
GATEWOOD ROAD	7628	1	1		
			2	4	
MILL RD/PULASKI RD	8365	4	5	2	1
		1	3	3	1
OSBORNE AVENUE	11786	8	6	20	1
		2	5		2
WOODCREST AVENUE	12458	2	2	4	
		1	2	1	
RALPH AVENUE	12932				
HARRISON AVENUE	13055	6	6	9	1
		9	8	16	1
WALDBAUM'S	14672		1	1	
		2	4	7	3
CR 73	15328	8	10	13	
		4	3	3	3
OSTRANDER AVENUE	16723	5	2	3	
		2	6	4	1
RIVERHEAD PLAZA	17713	1	3	1	
		1	1	6	
OLIVER AVENUE	18123	2	2	6	1
		5	3		2
KMART	18942				
		1	3	2	
CR 43	19767	8	7	17	1
			1	2	
MAC DONALDS DWY	20932		1		
				1	
OSPREY AVENUE	21332		2	3	1
			2	2	1
NY 25/ DOCTORS PAT	22293	2	5	9	4

J ID. ?ASS1704

NYSDOT-SAFETY INFORMATION MANAGEMENT SYSTEM
INTERIM ACCIDENT SUMMARY
INTERSECTION & NON-INTERSECTION ACCIDENTS

ROUTE: 25 HIGHWAY LOCATION 25 0704 1391 - 25 0704 1750 DATES: 01-APR-1996 - 31-MAR-1999

REFERENCE MARKER	INT. #	DESCRIPTION	TOTAL	FTL	INJ	PDO	N/R	WET ROAD **	FIXED OBJ **	PED & BIKE **	TRUCK *** **	LIGHT DWN/DSK **	CONDITION DAY **	NIGHT **
25 0704 1391			7	0	3	1	3	1	0	0	0	1	1	0
25 0704 1391	78	EDWARDS AVE	26	0	13	5	8	4	0	0	1	1	11	3
25 0704 1391	00	UNKNOWN INTERSECTION	1	0	1	0	0	1	0	0	0	0	1	0
25 0704 1393			4	0	3	0	1	1	1	0	1	0	2	1
25 0704 1394			1	0	0	0	1	0	0	0	0	0	0	0
25 0704 1395			1	0	1	0	0	0	0	0	0	0	1	0
25 0704 1397			3	0	2	0	1	0	0	0	0	0	2	0
25 0704 1397	80	MANOR RD	5	0	3	1	1	2	0	0	1	0	4	0
25 0704 1398			1	0	0	0	1	0	0	0	0	0	0	0
25 0704 1402			1	0	0	0	1	0	0	0	0	0	0	0
25 0704 1402	60	RAMP 25 E TO OCR E	4	0	2	1	1	0	0	0	0	0	1	0
25 0704 1404			3	0	2	0	1	0	1	0	0	0	2	0
25 0704 1404	62	RAMP 25 E TO 495 W	1	0	0	0	1	0	0	0	0	0	0	0
25 0704 1404	63	RAMP 25 W TO 495 W	1	0	0	0	1	0	0	0	0	0	0	0
25 0704 1406	64	RAMP 25 E FM 495 E	1	0	1	0	0	0	0	0	0	0	1	0
25 0704 1406	65	RAMP 25 W FM 495 E	1	0	0	0	1	0	0	0	0	0	0	0
25 0704 1407	82	RIVER RD	2	0	2	0	0	0	0	0	0	0	2	0
25 0704 1408			2	0	1	1	0	0	0	0	0	0	1	1
25 0704 1409			1	0	1	0	0	0	1	0	0	0	1	0
25 0704 1410			2	0	2	0	0	0	0	0	1	0	2	0
25 0704 1411			3	0	1	1	1	0	0	0	0	0	2	0
25 0704 1415	83	KROEMER AVE FORGERD	18	0	7	5	6	2	0	0	1	0	7	2
25 0704 1416			1	0	1	0	0	0	0	0	0	0	1	0
25 0704 1417			1	0	1	0	0	0	0	0	0	0	1	0
25 0704 1418			1	0	0	0	1	0	0	0	0	0	0	0
25 0704 1422			1	0	0	1	0	1	0	0	0	0	1	0
25 0704 1423			3	0	1	0	2	0	0	0	0	0	1	0
25 0704 1424			5	0	2	0	3	1	2	0	0	0	0	2
25 0704 1425			5	0	3	0	2	0	0	0	0	0	3	0
25 0704 1425	85	MILL RD	5	0	4	0	1	2	0	0	1	1	2	1
25 0704 1426			8	0	6	0	2	2	3	0	0	2	2	2
25 0704 1427			2	0	1	1	0	0	0	0	0	0	1	1

** EXCLUDES NON-REPORTABLES *** EXCLUDES PICKUPS & VANS

Directional Distribution Data

Town	Census Designated Place	1990 Census Population	Location Factor	Route Choice Factor	Weight	Weighted Population	Route		Route #1		Route #2		Route #3		Route #4		Route #5	
Brookhaven	Brookhaven National Labratory	287	1.00	1.00	1	287	1		287	2%								
	Calverton P/O	1093	1.00	1.00	1	1093	2				1093	3%						
	East Moriches	4021	0.50	1.00	1	2011	2				2011	6%						
	East Shoreham	5461	0.25	1.00	1	1365	1		1365	7%								
	Eastport	575	1.00	1.00	1	575	2				575	2%						
	Manorville	6198	1.00	1.00	1	6198	1		6198	33%								
	Ridge	11734	0.25	1.00	1	2934	1		2934	15%								
	Shoreham	540	0.25	1.00	1	135	1		135	1%								
East Hampton	East Hampton-1	16132	1.00	0.10	1	1613	5										1613	20%
	East Hampton-2	16132	1.00	0.45	1	7259	2				7259	21%						
	East Hampton-3	16132	1.00	0.45	1	7259	4								7259	14%		
Riverhead	Aquebogue	2060	1.00	1.00	1	2060	4								2060	4%		
	Baiting Hollow	981	1.00	1.00	1	981	3						981	11%				
	Calverton-1	3666	1.00	0.05	1	183	3						183	2%				
	Calverton-2	3666	1.00	0.05	1	183	2				183	1%						
	Calverton-3	3666	1.00	0.90	1	3299	1		3299	17%								
	Jamesport	1532	1.00	1.00	1	1532	4								1532	3%		
	Northville	641	1.00	1.00	1	641	4								641	1%		
	Riverhead-1	8814	1.00	0.15	1	1322	2				1322	4%						
	Riverhead-2	8814	1.00	0.10	1	881	5										881	11%
	Riverhead-3	8814	1.00	0.15	1	1322	3						1322	15%				
	Riverhead-4	8814	1.00	0.60	1	5288	4								5288	10%		
	Wading River-1	5317	1.00	0.90	1	4785	1		4785	25%								
	Wading River-2	5317	1.00	0.10	1	532	3						532	6%				
Shelter Island	Shelter Island	2263	1.00	1.00	1	2263	4								2263	4%		
Southampton	Bridgehampton-1	1997	1.00	0.10	1	200	5										200	2%
	Bridgehampton-2	1997	1.00	0.45	1	899	2				899	3%						
	Bridgehampton-3	1997	1.00	0.45	1	899	4								899	2%		
	East Quogue-1	4372	1.00	0.10	1	437	5										437	5%
	East Quogue-2	4372	1.00	0.45	1	1967	2				1967	6%						
	East Quogue-3	4372	1.00	0.45	1	1967	4								1967	4%		
	Eastport-1	724	1.00	0.10	1	72	5										72	1%
	Eastport-2	724	1.00	0.45	1	326	2				326	1%						
	Eastport-3	724	1.00	0.45	1	326	4								326	1%		
	Flanders-1	3231	1.00	0.30	1	969	5										969	12%
	Flanders-2	3231	1.00	0.70	1	2262	2				2262	7%						
	Hampton Bays-1	7893	1.00	0.10	1	789	5										789	10%
	Hampton Bays-2	7893	1.00	0.45	1	3552	2				3552	10%						
	Hampton Bays-3	7893	1.00	0.45	1	3552	4								3552	7%		
	North Haven-1	713	1.00	0.10	1	71	5										71	1%
	North Haven-2	713	1.00	0.45	1	321	2				321	1%						
	North Haven-3	713	1.00	0.45	1	321	4								321	1%		
	North Sea-1	2530	1.00	0.10	1	253	5										253	3%
	North Sea-2	2530	1.00	0.45	1	1139	2				1139	3%						
	North Sea-3	2530	1.00	0.45	1	1139	4								1139	2%		
	Noyack-1	2059	1.00	0.10	1	206	5										206	3%
	Noyack-2	2059	1.00	0.45	1	927	2				927	3%						
	Noyack-3	2059	1.00	0.45	1	927	4								927	2%		
	Quiogue-1	584	1.00	0.10	1	58	5										58	1%
	Quiogue-2	584	1.00	0.45	1	263	2				263	1%						
	Quiogue-3	584	1.00	0.45	1	263	4								263	1%		
	Quogue-1	898	1.00	0.10	1	90	5										90	1%
	Quogue-2	898	1.00	0.45	1	404	2				404	1%						
	Quogue-3	898	1.00	0.45	1	404	4								404	1%		
	Remsenburg-Speonk-1	1851	1.00	0.10	1	185	5										185	2%
	Remsenburg-Speonk-2	1851	1.00	0.45	1	833	2				833	2%						
	Remsenburg-Speonk-3	1851	1.00	0.45	1	833	4								833	2%		
	Riverside w/S.C.J.-1	2786	1.00	0.30	1	836	5										836	10%
	Riverside w/S.C.J.-2	2786	1.00	0.70	1	1950	2				1950	6%						
	Sag Harbor-1	1276	1.00	0.10	1	128	5										128	2%
	Sag Harbor-2	1276	1.00	0.45	1	574	2				574	2%						
	Sag Harbor-3	1276	1.00	0.45	1	574	4								574	1%		
	Sagaponack-1	324	1.00	0.10	1	32	5										32	0%
	Sagaponack-2	324	1.00	0.45	1	146	2				146	0%						
	Sagaponack-3	324	1.00	0.45	1	146	4								146	0%		
	Shinnecock Hills w/L.I.U.-1	2847	1.00	0.10	1	285	5										285	3%
	Shinnecock Hills w/L.I.U.-2	2847	1.00	0.45	1	1281	2				1281	4%						
	Shinnecock Hills w/L.I.U.-3	2847	1.00	0.45	1	1281	4								1281	3%		
	Shinnecock Indian Reservation-1	375	1.00	0.10	1	38	5										38	0%
	Shinnecock Indian Reservation-2	375	1.00	0.45	1	169	2				169	0%						
	Shinnecock Indian Reservation-3	375	1.00	0.45	1	169	4								169	0%		
	Southampton-1	3980	1.00	0.10	1	398	5										398	5%
	Southampton-2	3980	1.00	0.45	1	1791	2				1791	5%						
	Southampton-3	3980	1.00	0.45	1	1791	4								1791	4%		
	Southampton, unincorporated-1	1302	1.00	0.10	1	130	5										130	2%
	Southampton, unincorporated-2	1302	1.00	0.45	1	586	2				586	2%						
	Southampton, unincorporated-3	1302	1.00	0.45	1	586	4								586	1%		
	Watermill-1	1893	1.00	0.10	1	189	5										189	2%
	Watermill-2	1893	1.00	0.45	1	852	2				852	2%						
	Watermill-3	1893	1.00	0.45	1	852	4								852	2%		
	Westhampton-1	2129	1.00	0.10	1	213	5										213	3%
	Westhampton-2	2129	1.00	0.45	1	958	2				958	3%						
	Westhampton-3	2129	1.00	0.45	1	958	4								958	2%		
	Westhampton Beach-1	1571	1.00	0.10	1	157	5										157	2%
	Westhampton Beach-2	1571	1.00	0.45	1	707	2				707	2%						
	Westhampton Beach-3	1571	1.00	0.45	1	707	4								707	1%		
	Westhampton Beach, unincorporated-1	16	1.00	0.10	1	2	5										2	0%
	Westhampton Beach, unincorporated-2	16	1.00	0.45	1	7	2				7	0%						
	Westhampton Beach, unincorporated-3	16	1.00	0.45	1	7	4								7	0%		
Southold	Southold-1	19836	1.00	0.30	1	5951	3						5951	66%				
	Southold-2	19836	1.00	0.70	1	13885	4								13885	27%		
								TOTAL	19003	100%	34356	100%	8969	100%	50629	100%	8233	100%
Routes:								Directional	Route #1		Route #2		Route #3		Route #4		Route #5	
1	EB Route 25 to EB CR 58							Distribution	16%		28%		7%		42%		7%	
2	NB Mill Road																	
3	SB Osborn Ave to SB Mill Road																	
4	WB CR 58																	
5	NB Pulaski Street																	

Drawing Area Analysis
Distribution A

Town	Census Designated Place	1990 Census Population	Location Factor	Route Choice Factor	Weight	Weighted Population	Route		Route #1		Route #2		Route #3		Route #4		Route #5	
Brookhaven	Brookhaven National Labratory	287	1.00	1.00	1	287	1		287	2%								
	Calverton P/O	1093	1.00	1.00	1	1093	2				1093	6%						
	East Moriches	4021	0.50	1.00	1	2011	2				2011	12%						
	East Shoreham	5461	0.25	1.00	1	1365	1		1365	7%								
	Eastport	575	1.00	1.00	1	575	2				575	3%						
	Manorville	6198	1.00	1.00	1	6198	1		6198	33%								
	Ridge	11734	0.25	1.00	1	2934	1		2934	15%								
	Shoreham	540	0.25	1.00	1	135	1		135	1%								
Riverhead	Aquebogue	2060	1.00	1.00	1	2060	4								2060	8%		
	Baiting Hollow	981	1.00	1.00	1	981	3						981	14%				
	Calverton-1	3666	0.70	0.05	1	128	3						128	2%				
		3666	0.30	0.05	1	55	3						55	1%				
	Calverton-2	3666	0.70	0.05	1	128	2				128	1%						
		3666	0.30	0.05	1	55	2				55	0%						
	Calverton-3	3666	0.70	0.90	1	2310	1		2310	12%								
		3666	0.30	0.90	1	990	1		990	5%								
	Jamesport	1532	1.00	1.00	1	1532	4								1532	6%		
	Northville	641	0.35	1.00	1	224	4								224	1%		
		641	0.65	1.00	1	417	4								417	2%		
	Riverhead-1	8814	1.00	0.15	1	1322	2				1322	8%						
	Riverhead-2	8814	1.00	0.10	1	881	5										881	20%
	Riverhead-3	8814	1.00	0.15	1	1322	3						1322	18%				
	Riverhead-4	8814	1.00	0.60	1	5288	4								5288	20%		
	Wading River-1	5317	1.00	0.90	1	4785	1		4785	25%								
	Wading River-2	5317	1.00	0.10	1	532	3						532	7%				
Southampton	East Quogue-1	4372	1.00	0.10	1	437	5										437	10%
	East Quogue-2	4372	1.00	0.45	1	1967	2				1967	12%						
	East Quogue-3	4372	1.00	0.45	1	1967	4								1967	7%		
	Eastport-1	724	1.00	0.10	1	72	5										72	2%
	Eastport-2	724	1.00	0.45	1	326	2				326	2%						
	Eastport-3	724	1.00	0.45	1	326	4								326	1%		
	Flanders-1	3231	1.00	0.30	1	969	5										969	22%
	Flanders-2	3231	1.00	0.70	1	2262	2				2262	13%						
	Hampton Bays-1	7893	0.60	0.10	1	474	5										474	11%
	Hampton Bays-2	7893	0.60	0.45	1	2131	2				2131	13%						
	Hampton Bays-3	7893	0.60	0.45	1	2131	4								2131	8%		
	Quiogue-1	584	1.00	0.10	1	58	5										58	1%
	Quiogue-2	584	1.00	0.45	1	263	2				263	2%						
	Quiogue-3	584	1.00	0.45	1	263	4								263	1%		
	Quogue-1	898	1.00	0.10	1	90	5										90	2%
	Quogue-2	898	1.00	0.45	1	404	2				404	2%						
	Quogue-3	898	1.00	0.45	1	404	4								404	2%		
	Remsenburg-Speonk-1	1851	1.00	0.10	1	185	5										185	4%
	Remsenburg-Speonk-2	1851	1.00	0.45	1	833	2				833	5%						
	Remsenburg-Speonk-3	1851	1.00	0.45	1	833	4								833	3%		
	Riverside w/S.C.J.-1	2786	1.00	0.30	1	836	5										836	19%
	Riverside w/S.C.J.-2	2786	1.00	0.70	1	1950	2				1950	11%						
	Westhampton-1	2129	1.00	0.10	1	213	5										213	5%
	Westhampton-2	2129	1.00	0.45	1	958	2				958	6%						
	Westhampton-3	2129	1.00	0.45	1	958	4								958	4%		
	Westhampton Beach-1	1571	1.00	0.10	1	157	5										157	4%
	Westhampton Beach-2	1571	1.00	0.45	1	707	2				707	4%						
	Westhampton Beach-3	1571	1.00	0.45	1	707	4								707	3%		
	Westhampton Beach, unincorporated-1	16	1.00	0.10	1	2	5										2	0%
	Westhampton Beach, unincorporated-2	16	1.00	0.45	1	7	2				7	0%						
	Westhampton Beach, unincorporated-3	16	1.00	0.45	1	7	4								7	0%		
Southold	Southold-1	19836	0.70	0.30	1	4166	3						4166	58%				
	Southold-2	19836	0.70	0.70	1	9720	4								9720	36%		
								TOTAL	19003	100%	16992	100%	7184	100%	26837	100%	4375	100%
Routes:								Directional	Route #1		Route #2		Route #3		Route #4		Route #5	
1	EB Route 25 to EB CR 58							Distribution	26%		23%		10%		36%		6%	
2	NB Mill Road																	
3	SB Osborn Ave to SB Mill Road																	
4	WB CR 58																	
5	NB Pulaski Street																	

Drawing Area Analysis
Distribution B

Town	Census Designated Place	1990 Census Population	Location Factor	Route Choice Factor	Weight	Weighted Population	Route		Route #1		Route #2		Route #3		Route #4		Route #5	
Riverhead	Aquebogue	2060	0.70	1.00	1	1442	4								1442	21%		
	Baiting Hollow	981	1.00	1.00	1	981	3						981	40%				
	Calverton-1	3666	0.70	0.05	1	128	3						128	5%				
	Calverton-2	3666	0.70	0.05	1	128	2				128	2%						
	Calverton-3	3666	0.70	0.90	1	2310	1		2310	100%								
	Northville	641	0.35	1.00	1	224	4								224	3%		
	Riverhead-1	8814	1.00	0.15	1	1322	2				1322	23%						
	Riverhead-2	8814	1.00	0.10	1	881	5										881	33%
	Riverhead-3	8814	1.00	0.15	1	1322	3						1322	54%				
	Riverhead-4	8814	1.00	0.60	1	5288	4								5288	76%		
Southampton	Flanders-1	3231	1.00	0.30	1	969	5										969	36%
	Flanders-2	3231	1.00	0.70	1	2262	2				2262	40%						
	Riverside w/S.C.J.-1	2786	1.00	0.30	1	836	5										836	31%
	Riverside w/S.C.J.-2	2786	1.00	0.70	1	1950	2				1950	34%						
								TOTAL	2310	100%	5662	100%	2431	100%	6955	100%	2687	100%
Routes:								**Directional**	Route #1		Route #2		Route #3		Route #4		Route #5	
1	EB Route 25 to EB CR 58							**Distribution**	**12%**		**28%**		**12%**		**35%**		**13%**	
2	NB Mill Road																	
3	SB Osborn Ave to SB Mill Road																	
4	WB CR 58																	
5	NB Pulaski Street																	

Drawing Area Analysis
Distribution C

Town	Census Designated Place	1990 Census Population	Location Factor	Route Choice Factor	Weight	Weighted Population	Route		Route #1		Route #2		Route #3		Route #4		Route #5	
Brookhaven	Brookhaven National Labratory	287	1.00	1.00	2	574	1		574	1%								
	Calverton P/O	1093	1.00	1.00	2	2186	2				2186	3%						
	East Moriches	4021	0.50	1.00	2	4021	2				4021	6%						
	East Shoreham	5461	0.25	1.00	2	2731	1		2731	6%								
	Eastport	575	1.00	1.00	2	1150	2				1150	2%						
	Manorville	6198	1.00	1.00	2	12396	1		12396	29%								
	Ridge	11734	0.25	1.00	2	5867	1		5867	14%								
	Shoreham	540	0.25	1.00	2	270	1		270	1%								
East Hampton	East Hampton-1	16132	1.00	0.10	1	1613	5										1613	9%
	East Hampton-2	16132	1.00	0.45	1	7259	2				7259	12%						
	East Hampton-3	16132	1.00	0.45	1	7259	4								7259	8%		
Riverhead	Aquebogue	2060	0.70	1.00	4	5768	4								5768	6%		
		2060	0.30	1.00	2	1236	4								1236	1%		
	Baiting Hollow	981	1.00	1.00	4	3924	3						3924	19%				
	Calverton-1	3666	0.70	0.05	4	513	3						513	2%				
		3666	0.30	0.05	2	110	3						110	1%				
	Calverton-2	3666	0.70	0.05	4	513	2				513	1%						
		3666	0.30	0.05	2	110	2				110	0%						
	Calverton-3	3666	0.70	0.90	4	9238	1		9238	22%								
		3666	0.30	0.90	2	1980	1		1980	5%								
	Jamesport	1532	1.00	1.00	2	3064	4								3064	3%		
	Northville	641	0.35	1.00	4	897	4								897	1%		
		641	0.65	1.00	2	833	4								833	1%		
	Riverhead-1	8814	1.00	0.15	4	5288	2				5288	8%						
	Riverhead-2	8814	1.00	0.10	4	3526	5										3526	20%
	Riverhead-3	8814	1.00	0.15	4	5288	3						5288	25%				
	Riverhead-4	8814	1.00	0.60	4	21154	4								21154	23%		
	Wading River-1	5317	1.00	0.90	2	9571	1		9571	22%								
	Wading River-2	5317	1.00	0.10	2	1063	3						1063	5%				
Shelter Island	Shelter Island	2263	1.00	1.00	1	2263	4								2263	2%		
Southampton	Bridgehampton-1	1997	1.00	0.10	1	200	5										200	1%
	Bridgehampton-2	1997	1.00	0.45	1	899	2				899	1%						
	Bridgehampton-3	1997	1.00	0.45	1	899	4								899	1%		
	East Quogue-1	4372	1.00	0.10	2	874	5										874	5%
	East Quogue-2	4372	1.00	0.45	2	3935	2				3935	6%						
	East Quogue-3	4372	1.00	0.45	2	3935	4								3935	4%		
	Eastport-1	724	1.00	0.10	2	145	5										145	1%
	Eastport-2	724	1.00	0.45	2	652	2				652	1%						
	Eastport-3	724	1.00	0.45	2	652	4								652	1%		
	Flanders-1	3231	1.00	0.30	4	3877	5										3877	22%
	Flanders-2	3231	1.00	0.70	4	9047	2				9047	14%						
	Hampton Bays-1	7893	0.60	0.10	2	947	5										947	5%
		7893	0.40	0.10	1	316	5										316	2%
	Hampton Bays-2	7893	0.60	0.45	2	4262	2				4262	7%						
		7893	0.40	0.45	1	1421	2				1421	2%						
	Hampton Bays-3	7893	0.60	0.45	2	4262	4								4262	5%		
		7893	0.40	0.45	1	1421	4								1421	2%		
	North Haven-1	713	1.00	0.10	1	71	5										71	0%
	North Haven-2	713	1.00	0.45	1	321	2				321	1%						
	North Haven-3	713	1.00	0.45	1	321	4								321	0%		
	North Sea-1	2530	1.00	0.10	1	253	5										253	1%
	North Sea-2	2530	1.00	0.45	1	1139	2				1139	2%						
	North Sea-3	2530	1.00	0.45	1	1139	4								1139	1%		
	Noyack-1	2059	1.00	0.10	1	206	5										206	1%
	Noyack-2	2059	1.00	0.45	1	927	2				927	1%						
	Noyack-3	2059	1.00	0.45	1	927	4								927	1%		
	Quiogue-1	584	1.00	0.10	2	117	5										117	1%
	Quiogue-2	584	1.00	0.45	2	526	2				526	1%						
	Quiogue-3	584	1.00	0.45	2	526	4								526	1%		
	Quogue-1	898	1.00	0.10	2	180	5										180	1%
	Quogue-2	898	1.00	0.45	2	808	2				808	1%						
	Quogue-3	898	1.00	0.45	2	808	4								808	1%		
	Remsenburg-Speonk-1	1851	1.00	0.10	2	370	5										370	2%
	Remsenburg-Speonk-2	1851	1.00	0.45	2	1666	2				1666	3%						
	Remsenburg-Speonk-3	1851	1.00	0.45	2	1666	4								1666	2%		
	Riverside w/S.C.J.-1	2786	1.00	0.30	4	3343	5										3343	19%
	Riverside w/S.C.J.-2	2786	1.00	0.70	4	7801	2				7801	12%						
	Sag Harbor-1	1276	1.00	0.10	1	128	5										128	1%
	Sag Harbor-2	1276	1.00	0.45	1	574	2				574	1%						
	Sag Harbor-3	1276	1.00	0.45	1	574	4								574	1%		
	Sagaponack-1	324	1.00	0.10	1	32	5										32	0%
	Sagaponack-2	324	1.00	0.45	1	146	2				146	0%						
	Sagaponack-3	324	1.00	0.45	1	146	4								146	0%		
	Shinnecock Hills w/L.I.U.-1	2847	1.00	0.10	1	285	5										285	2%
	Shinnecock Hills w/L.I.U.-2	2847	1.00	0.45	1	1281	2				1281	2%						
	Shinnecock Hills w/L.I.U.-3	2847	1.00	0.45	1	1281	4								1281	1%		
	Shinnecock Indian Reservation-1	375	1.00	0.10	1	38	5										38	0%
	Shinnecock Indian Reservation-2	375	1.00	0.45	1	169	2				169	0%						
	Shinnecock Indian Reservation-3	375	1.00	0.45	1	169	4								169	0%		
	Southampton-1	3980	1.00	0.10	1	398	5										398	2%
	Southampton-2	3980	1.00	0.45	1	1791	2				1791	3%						
	Southampton-3	3980	1.00	0.45	1	1791	4								1791	2%		
	Southampton, unincorporated-1	1302	1.00	0.10	1	130	5										130	1%
	Southampton, unincorporated-2	1302	1.00	0.45	1	586	2				586	1%						
	Southampton, unincorporated-3	1302	1.00	0.45	1	586	4								586	1%		
	Watermill-1	1893	1.00	0.10	1	189	5										189	1%
	Watermill-2	1893	1.00	0.45	1	852	2				852	1%						
	Watermill-3	1893	1.00	0.45	1	852	4								852	1%		
	Westhampton-1	2129	1.00	0.10	2	426	5										426	2%
	Westhampton-2	2129	1.00	0.45	2	1916	2				1916	3%						
	Westhampton-3	2129	1.00	0.45	2	1916	4								1916	2%		
	Westhampton Beach-1	1571	1.00	0.10	2	314	5										314	2%
	Westhampton Beach-2	1571	1.00	0.45	2	1414	2				1414	2%						
	Westhampton Beach-3	1571	1.00	0.45	2	1414	4								1414	2%		
	Westhampton Beach, unincorporated-1	16	1.00	0.10	2	3	5										3	0%
	Westhampton Beach, unincorporated-2	16	1.00	0.45	2	14	2				14	0%						
	Westhampton Beach, unincorporated-3	16	1.00	0.45	2	14	4								14	0%		
Southold	Southold-1	19836	0.70	0.30	2	8331	3						8331	40%				
		19836	0.30	0.30	1	1785	3						1785	8%				
	Southold-2	19836	0.70	0.70	2	19439	4								19439	21%		
		19836	0.30	0.70	1	4166	4								4166	5%		
								TOTAL	42626	100%	62672	100%	21015	100%	91376	100%	17981	100%
Routes:								Directional	Route #1		Route #2		Route #3		Route #4		Route #5	
1	EB Route 25 to EB CR 58							Distribution	18%		27%		9%		39%		8%	
2	NB Mill Road																	
3	SB Osborn Ave to SB Mill Road																	
4	WB CR 58																	
5	NB Pulaski Street																	

Drawing Area Analysis
Distribution D

Intersection Traffic Volume Summaries

HEADRIVER LLC LUMBERYARD COMPLEX

DUNN ENGINEERING ASSOCIATES
66 MAIN STREET, WESTHAMPTON BEACH, NEW YORK 11978

TRAFFIC VOLUME SUMMARY

INTERSECTION: CR 58 & TANGER FACTORY OUTLET CENTER DRIVEWAY

TIME PERIOD: AM

DONE BY: DEA/JMC

COUNT YEAR: 1999
EXISTING YEAR: 2000
HORIZON YEAR: 2001

	APPROACH											
	NB			SB			EB			WB		
CONDITION	L	T	R	L	T	R	L	T	R	L	T	R
1999 COUNT VOLUMES	1	0	0	0	0	0	0	883	25	18	451	0
GROWTH PER SEASON 0.00	1	0	0	0	0	0	0	883	25	18	451	0
GROWTH PER YEAR 3.00	1	0	0	0	0	0	0	909	26	19	465	0
2000 "EXISTING"	1	0	0	0	0	0	0	909	26	19	465	0
GROWTH PER YEAR 3.00	1	0	0	0	0	0	0	936	27	20	479	0
OTHER DEVELOPMENTS												
1) Applebee's Restaurant	0	0	0	0	0	0	0	0	0	0	0	0
2) Polo Store at Tanger	1	0	0	0	0	0	0	0	2	1	0	0
SUBTOTAL	1	0	0	0	0	0	0	0	2	1	0	0
2001 FUTURE "NO BUILD"	2	0	0	0	0	0	0	936	29	21	479	0

ALTERNATIVE A

	L	T	R	L	T	R	L	T	R	L	T	R
PROJECT TRAFFIC PHASE I												
1) Lumberyard	0	0	0	23	0	19	22	13	0	0	11	28
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	110	0	0	73	0
SUBTOTAL	0	0	0	23	0	19	22	123	0	0	84	28
2001 FUTURE "BUILD PHASE I"	2	0	0	23	0	19	22	1059	29	21	563	28
PROJECT TRAFFIC PHASE II												
1) Restaurant	0	0	0	0	0	0	0	0	0	0	0	0
2) Offices	0	0	0	2	0	2	14	8	0	0	1	18
SUBTOTAL	0	0	0	2	0	2	14	8	0	0	1	18
2001 FUTURE "BUILD PHASE II"	2	0	0	25	0	21	36	1067	29	21	564	46
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	27	0	0	18	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	27	0	0	18	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	2	0	0	25	0	21	36	1094	29	21	582	46

ALTERNATIVE B

	L	T	R	L	T	R	L	T	R	L	T	R
PROJECT TRAFFIC												
1) Offices	0	0	0	12	0	10	74	42	0	0	6	93
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	110	0	0	73	0
SUBTOTAL	0	0	0	12	0	10	74	152	0	0	79	93
2001 FUTURE "BUILD"	2	0	0	12	0	10	74	1088	29	21	558	93
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	27	0	0	18	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	27	0	0	18	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	2	0	0	12	0	10	74	1115	29	21	576	93

HEADRIVER LLC LUMBERYARD COMPLEX

DUNN ENGINEERING ASSOCIATES
66 MAIN STREET, WESTHAMPTON BEACH, NEW YORK 11978

TRAFFIC VOLUME SUMMARY

INTERSECTION: CR 58 & TANGER FACTORY OUTLET CENTER DRIVEWAY

TIME PERIOD: PM

DONE BY: DEA/JMC

COUNT YEAR: 1999
EXISTING YEAR: 2000
HORIZON YEAR: 2001

APPROACH

CONDITION		NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
1999 COUNT VOLUMES		282	0	201	0	0	0	0	589	80	170	752	0
GROWTH PER SEASON	0.00	282	0	201	0	0	0	0	589	80	170	752	0
GROWTH PER YEAR	3.00	290	0	207	0	0	0	0	607	82	175	775	0
2000 "EXISTING"		290	0	207	0	0	0	0	607	82	175	775	0
GROWTH PER YEAR	3.00	299	0	213	0	0	0	0	625	84	180	798	0
OTHER DEVELOPMENTS													
1) Applebee's Restaurant		0	0	0	0	0	0	0	29	0	0	21	0
2) Polo Store at Tanger		4	0	2	0	0	0	0	0	2	4	0	0
SUBTOTAL		4	0	2	0	0	0	0	29	2	4	21	0
2001 FUTURE "NO BUILD"		303	0	215	0	0	0	0	654	86	184	819	0

ALTERNATIVE A

	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC PHASE I												
1) Lumberyard	0	0	0	53	0	42	38	21	0	0	24	47
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	58	0	0	55	0
SUBTOTAL	0	0	0	53	0	42	38	79	0	0	79	47
2001 FUTURE "BUILD PHASE I"	303	0	215	53	0	42	38	733	86	184	898	47
PROJECT TRAFFIC PHASE II												
1) Restaurant	0	0	0	0	0	0	0	29	0	0	12	0
2) Offices	0	0	0	22	0	17	3	2	0	0	10	5
SUBTOTAL	0	0	0	22	0	17	3	31	0	0	22	5
2001 FUTURE "BUILD PHASE II"	303	0	215	75	0	59	41	764	86	184	920	52
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	77	0	0	80	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	77	0	0	80	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	303	0	215	75	0	59	41	841	86	184	1000	52

ALTERNATIVE B

	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC												
1) Offices	0	0	0	82	0	65	13	8	0	0	37	17
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	58	0	0	55	0
SUBTOTAL	0	0	0	82	0	65	13	66	0	0	92	17
2001 FUTURE "BUILD"	303	0	215	82	0	65	13	720	86	184	911	17
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	77	0	0	80	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	77	0	0	80	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	303	0	215	82	0	65	13	797	86	184	991	17

HEADRIVER LLC LUMBERYARD COMPLEX

DUNN ENGINEERING ASSOCIATES
66 MAIN STREET, WESTHAMPTON BEACH, NEW YORK 11978

TRAFFIC VOLUME SUMMARY

INTERSECTION: CR 58 & TANGER FACTORY OUTLET CENTER DRIVEWAY

TIME PERIOD: Sat

DONE BY: DEA/JMC

COUNT YEAR: 1999
EXISTING YEAR: 2000
HORIZON YEAR: 2001

APPROACH

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
1999 COUNT VOLUMES	326	0	267	0	0	0	0	926	142	164	797	0
GROWTH PER SEASON 0.00	326	0	267	0	0	0	0	926	142	164	797	0
GROWTH PER YEAR 3.00	336	0	275	0	0	0	0	954	146	169	821	0
2000 "EXISTING"	336	0	275	0	0	0	0	954	146	169	821	0
GROWTH PER YEAR 3.00	346	0	283	0	0	0	0	983	150	174	846	0
OTHER DEVELOPMENTS												
1) Applebee's Restaurant	0	0	0	0	0	0	0	68	0	0	49	0
2) Polo Store at Tanger	8	0	6	0	0	0	0	0	6	8	0	0
SUBTOTAL	8	0	6	0	0	0	0	68	6	8	49	0
2001 FUTURE "NO BUILD"	354	0	289	0	0	0	0	1051	156	182	895	0

ALTERNATIVE A

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC PHASE I												
1) Lumberyard	0	0	0	88	0	71	79	45	0	0	40	100
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	129	0	0	134	0
SUBTOTAL	0	0	0	88	0	71	79	174	0	0	174	100
2001 FUTURE "BUILD PHASE I"	354	0	289	88	0	71	79	1225	156	182	1069	100
PROJECT TRAFFIC PHASE II												
1) Restaurant	0	0	0	0	0	0	0	68	0	0	50	0
2) Offices	0	0	0	2	0	1	2	1	0	0	1	2
SUBTOTAL	0	0	0	2	0	1	2	69	0	0	51	2
2001 FUTURE "BUILD PHASE II"	354	0	289	90	0	72	81	1294	156	182	1120	102
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	124	0	0	118	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	124	0	0	118	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	354	0	289	90	0	72	81	1418	156	182	1238	102

ALTERNATIVE B

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC												
1) Offices	0	0	0	10	0	8	10	5	0	0	5	12
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	129	0	0	134	0
SUBTOTAL	0	0	0	10	0	8	10	134	0	0	139	12
2001 FUTURE "BUILD"	354	0	289	10	0	8	10	1185	156	182	1034	12
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	124	0	0	118	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	124	0	0	118	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	354	0	289	10	0	8	10	1309	156	182	1152	12

DUNN ENGINEERING ASSOCIATES
66 MAIN STREET, WESTHAMPTON BEACH, NEW YORK 11978

TRAFFIC VOLUME SUMMARY

INTERSECTION: CR 58 & KROEMER AVENUE

TIME PERIOD: AM

DONE BY: DEA/JMC

COUNT YEAR: 1999
EXISTING YEAR: 2000
HORIZON YEAR: 2001

APPROACH

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
1999 COUNT VOLUMES	6	0	56	0	0	0	0	794	20	27	542	0
GROWTH PER SEASON 0.00	6	0	56	0	0	0	0	794	20	27	542	0
GROWTH PER YEAR 3.00	6	0	58	0	0	0	0	818	21	28	558	0
2000 "EXISTING"	6	0	58	0	0	0	0	818	21	28	558	0
GROWTH PER YEAR 3.00	6	0	60	0	0	0	0	843	22	29	575	0
OTHER DEVELOPMENTS												
1) Applebee's Restaurant	0	0	0	0	0	0	0	0	0	0	0	0
2) Polo Store at Tanger	0	0	0	0	0	0	0	0	0	0	1	0
3) Adjustment for alignment of Adchem dwy w/ Kroemer Avenue	0	4	-4	3	0	3	13	-13	0	0	-3	7
SUBTOTAL	0	4	-4	3	0	3	13	-13	0	0	-2	7
2001 FUTURE "NO BUILD"	6	4	56	3	0	3	13	830	22	29	573	7

ALTERNATIVE A

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC PHASE I												
1) Lumberyard	0	24	0	45	20	11	13	23	0	0	28	53
2) 4 Take-Out Restaurants	0	4	0	50	3	73	110	0	0	0	0	76
SUBTOTAL	0	28	0	95	23	84	123	23	0	0	28	129
2001 FUTURE "BUILD PHASE I"	6	32	56	98	23	87	136	853	22	29	601	136
PROJECT TRAFFIC PHASE II												
1) Restaurant	0	0	0	0	0	0	0	0	0	0	0	0
2) Offices	0	15	0	5	2	1	8	2	0	0	18	33
SUBTOTAL	0	15	0	5	2	1	8	2	0	0	18	33
2001 FUTURE "BUILD PHASE II"	6	47	56	103	25	88	144	855	22	29	619	169
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	27	0	0	18	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	27	0	0	18	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	6	47	56	103	25	88	144	882	22	29	637	169

ALTERNATIVE B

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC												
1) Offices	0	79	0	24	11	6	42	12	0	0	93	117
2) 4 Take-Out Restaurants	0	4	0	50	3	73	110	0	0	0	0	76
SUBTOTAL	0	83	0	74	14	79	152	12	0	0	93	193
2001 FUTURE "BUILD"	6	87	56	77	14	82	165	842	22	29	666	200
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	27	0	0	18	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	27	0	0	18	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	6	87	56	77	14	82	165	869	22	29	684	200

DUNN ENGINEERING ASSOCIATES
66 MAIN STREET, WESTHAMPTON BEACH, NEW YORK 11978

TRAFFIC VOLUME SUMMARY

INTERSECTION: CR 58 & KROEMER AVENUE

TIME PERIOD: PM

DONE BY: DEA/JMC

COUNT YEAR: 1999
EXISTING YEAR: 2000
HORIZON YEAR: 2001

	APPROACH											
	NB			SB			EB			WB		
CONDITION	L	T	R	L	T	R	L	T	R	L	T	R
1999 COUNT VOLUMES	19	0	47	0	0	0	0	1033	26	61	1037	0
GROWTH PER SEASON 0.00	19	0	47	0	0	0	0	1033	26	61	1037	0
GROWTH PER YEAR 3.00	20	0	48	0	0	0	0	1064	27	63	1068	0
2000 "EXISTING"	20	0	48	0	0	0	0	1064	27	63	1068	0
GROWTH PER YEAR 3.00	21	0	49	0	0	0	0	1096	28	65	1100	0
OTHER DEVELOPMENTS												
1) Applebee's Restaurant	0	1	0	13	1	21	29	0	0	0	0	18
2) Polo Store at Tanger	0	0	0	0	0	0	0	2	0	0	4	0
3) Adjustment for alignment of Adchem dwy w/ Kroemer Avenue	0	0	0	0	0	3	0	0	0	0	-3	1
SUBTOTAL	0	1	0	13	1	24	29	2	0	0	1	19
2001 FUTURE "NO BUILD"	21	1	49	13	1	24	29	1098	28	65	1101	19

ALTERNATIVE A												
PROJECT TRAFFIC PHASE I												
1) Lumberyard	0	40	0	101	45	24	21	53	0	0	47	89
2) 4 Take-Out Restaurants	0	2	0	35	2	55	58	0	0	0	0	36
SUBTOTAL	0	42	0	136	47	79	79	53	0	0	47	125
2001 FUTURE "BUILD PHASE I"	21	43	49	149	48	103	108	1151	28	65	1148	144
PROJECT TRAFFIC PHASE II												
1) Restaurant	0	1	0	8	0	12	29	0	0	0	0	19
2) Offices	0	4	0	41	18	10	2	22	0	0	5	8
SUBTOTAL	0	5	0	49	18	22	31	22	0	0	5	27
2001 FUTURE "BUILD PHASE II"	21	48	49	198	66	125	139	1173	28	65	1153	171
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	77	0	0	80	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	77	0	0	80	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	21	48	49	198	66	125	139	1250	28	65	1233	171

ALTERNATIVE B												
PROJECT TRAFFIC												
1) Offices	0	14	0	155	70	37	8	82	0	0	17	32
2) 4 Take-Out Restaurants	0	2	0	35	2	55	58	0	0	0	0	36
SUBTOTAL	0	16	0	190	72	92	66	82	0	0	17	68
2001 FUTURE "BUILD"	21	17	49	203	73	116	95	1180	28	65	1118	87
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	77	0	0	80	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	77	0	0	80	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	21	17	49	203	73	116	95	1257	28	65	1198	87

DUNN ENGINEERING ASSOCIATES
66 MAIN STREET, WESTHAMPTON BEACH, NEW YORK 11978

TRAFFIC VOLUME SUMMARY

INTERSECTION: CR 58 & KROEMER AVENUE

TIME PERIOD: Sat

DONE BY: DEA/JMC

COUNT YEAR: 1999
EXISTING YEAR: 2000
HORIZON YEAR: 2001

	APPROACH											
	NB			SB			EB			WB		
CONDITION	L	T	R	L	T	R	L	T	R	L	T	R
1999 COUNT VOLUMES	15	0	40	0	0	0	0	1242	49	48	894	0
GROWTH PER SEASON 0.00	15	0	40	0	0	0	0	1242	49	48	894	0
GROWTH PER YEAR 3.00	15	0	41	0	0	0	0	1279	50	49	921	0
2000 "EXISTING"	15	0	41	0	0	0	0	1279	50	49	921	0
GROWTH PER YEAR 3.00	15	0	42	0	0	0	0	1317	52	50	949	0
OTHER DEVELOPMENTS												
1) Applebee's Restaurant	0	2	0	23	1	49	68	0	0	0	0	31
2) Polo Store at Tanger	0	0	0	0	0	0	0	6	0	0	8	0
3) Adjustment for alignment of Adchem dwy w/ Kroemer Avenue	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	2	0	23	1	49	68	6	0	0	8	31
2001 FUTURE "NO BUILD"	15	2	42	23	1	49	68	1323	52	50	957	31

ALTERNATIVE A												
PROJECT TRAFFIC PHASE I												
1) Lumberyard	0	85	0	168	75	40	45	88	0	0	100	189
2) 4 Take-Out Restaurants	0	4	0	62	4	134	129	0	0	0	0	59
SUBTOTAL	0	89	0	230	79	174	174	88	0	0	100	248
2001 FUTURE "BUILD PHASE I"	15	91	42	253	80	223	242	1411	52	50	1057	279
PROJECT TRAFFIC PHASE II												
1) Restaurant	0	2	0	23	1	50	68	0	0	0	0	32
2) Offices	0	2	0	3	2	1	1	2	0	0	2	4
SUBTOTAL	0	4	0	26	3	51	69	2	0	0	2	36
2001 FUTURE "BUILD PHASE II"	15	95	42	279	83	274	311	1413	52	50	1059	315
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	124	0	0	118	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	124	0	0	118	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	15	95	42	279	83	274	311	1537	52	50	1177	315

ALTERNATIVE B												
PROJECT TRAFFIC												
1) Offices	0	10	0	19	8	5	5	10	0	0	12	22
2) 4 Take-Out Restaurants	0	4	0	62	4	134	129	0	0	0	0	59
SUBTOTAL	0	14	0	81	12	139	134	10	0	0	12	81
2001 FUTURE "BUILD"	15	16	42	104	13	188	202	1333	52	50	969	112
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	124	0	0	118	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	124	0	0	118	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	15	16	42	104	13	188	202	1457	52	50	1087	112

HEADRIVER LLC LUMBERYARD COMPLEX

DUNN ENGINEERING ASSOCIATES
66 MAIN STREET, WESTHAMPTON BEACH, NEW YORK 11978

TRAFFIC VOLUME SUMMARY

INTERSECTION: CR 58 & MILL ROAD

TIME PERIOD: AM

DONE BY: DEA/JMC

COUNT YEAR: 1999
EXISTING YEAR: 2000
HORIZON YEAR: 2001

	APPROACH											
	NB			SB			EB			WB		
CONDITION	L	T	R	L	T	R	L	T	R	L	T	R
1999 COUNT VOLUMES	70	25	15	28	36	76	26	764	5	18	531	8
GROWTH PER SEASON 7.00	75	27	16	30	39	81	28	817	5	19	568	9
GROWTH PER YEAR 3.00	77	28	16	31	40	83	29	842	5	20	585	9
2000 "EXISTING"	77	28	16	31	40	83	29	842	5	20	585	9
GROWTH PER YEAR 3.00	79	29	16	32	41	85	30	867	5	21	603	9
OTHER DEVELOPMENTS												
1) Applebee's Restaurant	0	0	0	0	0	0	0	0	0	0	0	0
2) Polo Store at Tanger	0	0	0	0	0	0	0	0	0	0	1	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	1	0
2001 FUTURE "NO BUILD"	79	29	16	32	41	85	30	867	5	21	604	9

ALTERNATIVE A

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC PHASE I												
1) Lumberyard	0	0	0	0	0	0	0	68	0	0	81	0
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	50	0	0	76	0
SUBTOTAL	0	0	0	0	0	0	0	118	0	0	157	0
2001 FUTURE "BUILD PHASE I"	79	29	16	32	41	85	30	985	5	21	761	9
PROJECT TRAFFIC PHASE II												
1) Restaurant	0	0	0	0	0	0	0	0	0	0	0	0
2) Offices	0	0	0	0	0	0	0	7	0	0	51	0
SUBTOTAL	0	0	0	0	0	0	0	7	0	0	51	0
2001 FUTURE "BUILD PHASE II"	79	29	16	32	41	85	30	992	5	21	812	9
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	26	12	0	19	13	19	8	0	17	5	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	26	12	0	19	13	19	8	0	17	5	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	79	55	28	32	60	98	49	1000	5	38	817	9

ALTERNATIVE B

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC												
1) Offices	0	0	0	0	0	0	0	36	0	0	210	0
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	50	0	0	76	0
SUBTOTAL	0	0	0	0	0	0	0	86	0	0	286	0
2001 FUTURE "BUILD"	79	29	16	32	41	85	30	953	5	21	890	9
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	26	12	0	19	13	19	8	0	17	5	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	26	12	0	19	13	19	8	0	17	5	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	79	55	28	32	60	98	49	961	5	38	895	9

HEADRIVER LLC LUMBERYARD COMPLEX

DUNN ENGINEERING ASSOCIATES
66 MAIN STREET, WESTHAMPTON BEACH, NEW YORK 11978

TRAFFIC VOLUME SUMMARY

INTERSECTION: CR 58 & MILL ROAD

TIME PERIOD: PM

DONE BY: DEA/JMC

COUNT YEAR: 1999
EXISTING YEAR: 2000
HORIZON YEAR: 2001

	APPROACH											
	NB			SB			EB			WB		
CONDITION	L	T	R	L	T	R	L	T	R	L	T	R
1999 COUNT VOLUMES	196	107	9	17	32	56	71	754	5	34	820	21
GROWTH PER SEASON 7.00	210	114	10	18	34	60	76	807	5	36	877	22
GROWTH PER YEAR 3.00	216	117	10	19	35	62	78	831	5	37	903	23
2000 "EXISTING"	216	117	10	19	35	62	78	831	5	37	903	23
GROWTH PER YEAR 3.00	222	121	10	20	36	64	80	856	5	38	930	24
OTHER DEVELOPMENTS												
1) Applebee's Restaurant	0	0	0	0	0	0	0	13	0	0	18	0
2) Polo Store at Tanger	0	0	0	0	0	0	0	2	0	0	4	0
SUBTOTAL	0	0	0	0	0	0	0	15	0	0	22	0
2001 FUTURE "NO BUILD"	222	121	10	20	36	64	80	871	5	38	952	24

ALTERNATIVE A

	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC PHASE I												
1) Lumberyard	0	0	0	0	0	0	0	154	0	0	136	0
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	35	0	0	36	0
SUBTOTAL	0	0	0	0	0	0	0	189	0	0	172	0
2001 FUTURE "BUILD PHASE I"	222	121	10	20	36	64	80	1060	5	38	1124	24
PROJECT TRAFFIC PHASE II												
1) Restaurant	0	0	0	0	0	0	0	8	0	0	19	0
2) Offices	0	0	0	0	0	0	0	63	0	0	13	0
SUBTOTAL	0	0	0	0	0	0	0	71	0	0	32	0
2001 FUTURE "BUILD PHASE II"	222	121	10	20	36	64	80	1131	5	38	1156	24
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	77	34	0	80	58	56	21	0	72	22	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	77	34	0	80	58	56	21	0	72	22	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	222	198	44	20	116	122	136	1152	5	110	1178	24

ALTERNATIVE B

	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC												
1) Offices	0	0	0	0	0	0	0	237	0	0	49	0
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	35	0	0	36	0
SUBTOTAL	0	0	0	0	0	0	0	272	0	0	85	0
2001 FUTURE "BUILD"	222	121	10	20	36	64	80	1143	5	38	1037	24
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	77	34	0	80	58	56	21	0	72	22	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	77	34	0	80	58	56	21	0	72	22	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	222	198	44	20	116	122	136	1164	5	110	1059	24

HEADRIVER LLC LUMBERYARD COMPLEX

DUNN ENGINEERING ASSOCIATES
66 MAIN STREET, WESTHAMPTON BEACH, NEW YORK 11978

TRAFFIC VOLUME SUMMARY

INTERSECTION: CR 58 & MILL ROAD

TIME PERIOD: Sat

DONE BY: DEA/JMC

COUNT YEAR: 1999
EXISTING YEAR: 2000
HORIZON YEAR: 2001

APPROACH

CONDITION		NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
1999 COUNT VOLUMES		89	54	35	24	65	66	93	889	0	26	766	25
GROWTH PER SEASON	7.00	95	58	37	26	70	71	100	951	0	28	820	27
GROWTH PER YEAR	3.00	98	60	38	27	72	73	103	980	0	29	845	28
2000 "EXISTING"		98	60	38	27	72	73	103	980	0	29	845	28
GROWTH PER YEAR	3.00	101	62	39	28	74	75	106	1009	0	30	870	29
OTHER DEVELOPMENTS													
1) Applebee's Restaurant		0	0	0	0	0	0	0	23	0	0	31	0
2) Polo Store at Tanger		0	0	0	0	0	0	0	6	0	0	8	0
SUBTOTAL		0	0	0	0	0	0	0	29	0	0	39	0
2001 FUTURE "NO BUILD"		101	62	39	28	74	75	106	1038	0	30	909	29

ALTERNATIVE A

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC PHASE I												
1) Lumberyard	0	0	0	0	0	0	0	256	0	0	289	0
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	62	0	0	59	0
SUBTOTAL	0	0	0	0	0	0	0	318	0	0	348	0
2001 FUTURE "BUILD PHASE I"	101	62	39	28	74	75	106	1356	0	30	1257	29
PROJECT TRAFFIC PHASE II												
1) Restaurant	0	0	0	0	0	0	0	23	0	0	32	0
2) Offices	0	0	0	0	0	0	0	5	0	0	6	0
SUBTOTAL	0	0	0	0	0	0	0	28	0	0	38	0
2001 FUTURE "BUILD PHASE II"	101	62	39	28	74	75	106	1384	0	30	1295	29
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	124	56	0	117	85	90	34	0	104	33	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	124	56	0	117	85	90	34	0	104	33	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	101	186	95	28	191	160	196	1418	0	134	1328	29

ALTERNATIVE B

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC												
1) Offices	0	0	0	0	0	0	0	29	0	0	34	0
2) 4 Take-Out Restaurants	0	0	0	0	0	0	0	62	0	0	59	0
SUBTOTAL	0	0	0	0	0	0	0	91	0	0	93	0
2001 FUTURE "BUILD"	101	62	39	28	74	75	106	1129	0	30	1002	29
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	124	56	0	117	85	90	34	0	104	33	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	124	56	0	117	85	90	34	0	104	33	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	101	186	95	28	191	160	196	1163	0	134	1035	29

DUNN ENGINEERING ASSOCIATES
66 MAIN STREET, WESTHAMPTON BEACH, NEW YORK 11978

TRAFFIC VOLUME SUMMARY

INTERSECTION: NYS ROUTE 25 & KROEMER AVENUE/FORGE ROAD

TIME PERIOD: AM

DONE BY: DEA/JMC

COUNT YEAR: 2000
EXISTING YEAR: 2000
HORIZON YEAR: 2001

	APPROACH											
	NB			SB			EB			WB		
CONDITION	L	T	R	L	T	R	L	T	R	L	T	R
2000 COUNT VOLUMES	8	11	22	41	6	27	36	297	1	10	189	41
GROWTH PER SEASON 0.00	8	11	22	41	6	27	36	297	1	10	189	41
GROWTH PER YEAR 3.00	8	11	22	41	6	27	36	297	1	10	189	41
2000 "EXISTING"	8	11	22	41	6	27	36	297	1	10	189	41
GROWTH PER YEAR 3.00	8	11	23	42	6	28	37	306	1	10	195	42
OTHER DEVELOPMENTS												
1) Applebee's Restaurant	0	0	0	0	0	0	0	0	0	0	0	0
2) Polo Store at Tanger	0	0	0	0	0	0	0	1	0	0	3	0
SUBTOTAL	0	0	0	0	0	0	0	1	0	0	3	0
2001 FUTURE "NO BUILD"	8	11	23	42	6	28	37	307	1	10	198	42

ALTERNATIVE A												
PROJECT TRAFFIC PHASE I												
1) Lumberyard	0	0	0	20	0	0	0	0	0	0	0	24
2) 4 Take-Out Restaurants	0	0	0	3	0	0	0	0	0	0	0	4
SUBTOTAL	0	0	0	23	0	0	0	0	0	0	0	28
2001 FUTURE "BUILD PHASE I"	8	11	23	65	6	28	37	307	1	10	198	70
PROJECT TRAFFIC PHASE II												
1) Restaurant	0	0	0	0	0	0	0	0	0	0	0	0
2) Offices	0	0	0	2	0	0	0	0	0	0	0	15
SUBTOTAL	0	0	0	2	0	0	0	0	0	0	0	15
2001 FUTURE "BUILD PHASE II"	8	11	23	67	6	28	37	307	1	10	198	85
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	0	0	0	0	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	8	11	23	67	6	28	37	307	1	10	198	85

ALTERNATIVE B												
PROJECT TRAFFIC												
1) Offices	0	0	0	11	0	0	0	0	0	0	0	79
2) 4 Take-Out Restaurants	0	0	0	3	0	0	0	0	0	0	0	4
SUBTOTAL	0	0	0	14	0	0	0	0	0	0	0	83
2001 FUTURE "BUILD"	8	11	23	56	6	28	37	307	1	10	198	125
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	0	0	0	0	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	8	11	23	56	6	28	37	307	1	10	198	125

DUNN ENGINEERING ASSOCIATES
66 MAIN STREET, WESTHAMPTON BEACH, NEW YORK 11978

TRAFFIC VOLUME SUMMARY

INTERSECTION: NYS ROUTE 25 & KROEMER AVENUE/FORGE ROAD

TIME PERIOD: PM

DONE BY: DEA/JMC

COUNT YEAR: 2000
EXISTING YEAR: 2000
HORIZON YEAR: 2001

APPROACH

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
2000 COUNT VOLUMES	4	12	28	39	30	35	20	360	4	47	485	37
GROWTH PER SEASON 0.00	4	12	28	39	30	35	20	360	4	47	485	37
GROWTH PER YEAR 3.00	4	12	28	39	30	35	20	360	4	47	485	37
2000 "EXISTING"	4	12	28	39	30	35	20	360	4	47	485	37
GROWTH PER YEAR 3.00	4	12	29	40	31	36	21	371	4	48	500	38
OTHER DEVELOPMENTS												
1) Applebee's Restaurant	0	0	0	1	0	0	0	0	0	0	0	1
2) Polo Store at Tanger	0	0	0	0	0	0	0	9	0	0	8	0
SUBTOTAL	0	0	0	1	0	0	0	9	0	0	8	1
2001 FUTURE "NO BUILD"	4	12	29	41	31	36	21	380	4	48	508	39

ALTERNATIVE A

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC PHASE I												
1) Lumberyard	0	0	0	45	0	0	0	0	0	0	0	40
2) 4 Take-Out Restaurants	0	0	0	2	0	0	0	0	0	0	0	2
SUBTOTAL	0	0	0	47	0	0	0	0	0	0	0	42
2001 FUTURE "BUILD PHASE I"	4	12	29	88	31	36	21	380	4	48	508	81
PROJECT TRAFFIC PHASE II												
1) Restaurant	0	0	0	0	0	0	0	0	0	0	0	1
2) Offices	0	0	0	18	0	0	0	0	0	0	0	4
SUBTOTAL	0	0	0	18	0	0	0	0	0	0	0	5
2001 FUTURE "BUILD PHASE II"	4	12	29	106	31	36	21	380	4	48	508	86
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	0	0	0	0	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	4	12	29	106	31	36	21	380	4	48	508	86

ALTERNATIVE B

CONDITION	NB L	NB T	NB R	SB L	SB T	SB R	EB L	EB T	EB R	WB L	WB T	WB R
PROJECT TRAFFIC												
1) Offices	0	0	0	70	0	0	0	0	0	0	0	14
2) 4 Take-Out Restaurants	0	0	0	2	0	0	0	0	0	0	0	2
SUBTOTAL	0	0	0	72	0	0	0	0	0	0	0	16
2001 FUTURE "BUILD"	4	12	29	113	31	36	21	380	4	48	508	55
OTHER DEVELOPMENTS												
1) Riverhead Centre	0	0	0	0	0	0	0	0	0	0	0	0
2) 2 Restaurants at Tanger	0	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0	0
2001 FUTURE "BUILD WITH OTHER DEVELOPMENTS"	4	12	29	113	31	36	21	380	4	48	508	55

Intersection Capacity Analyses

Dunn2/Riverhead Industrial-98124
File: July2000\Dividers.wp

C.R. 58 at the Tanger Factory Outlet Center II Driveway

2000 Existing

Note 1: Includes 1999 or 2000 traffic volume counts collected during peak summer months or adjusted to reflect traffic volumes during peak summer months. Also includes an increase in 1999 count volumes of 3% per year to reflect normal background traffic growth.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/8/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2000 AM Existing
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	2	1	1	2	0	2	0	0	0	0	0
LGConfig		T	R	L	T		L					
Volume		909	26	19	465		1					
Lane Width		11.0	12.0	10.0	11.0		12.0					
RTOR Vol			0									

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left	A			
Thru		P				Thru				
Right		P				Right				
Peds		X				Peds	X			
WB Left	A	P			SB	Left				
Thru	P	P				Thru				
Right						Right				
Peds	X	X				Peds	X			
NB Right					EB	Right				
SB Right					WB	Right				
Green	9.0	28.5					16.0			
Yellow	3.0	4.5					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 70.0 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								
T	1471	3490	0.69	0.421	17.0	B	16.8	B
R	681	1615	0.04	0.421	10.5	B		
Westbound								
L	383		0.05	0.621	3.6	A		
T	2169	3490	0.24	0.621	3.3	A	3.3	A
Northbound								
L	761	3133	0.00	0.243	20.1	C		
							20.1	C
Southbound								

Intersection Delay = 12.2 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.30
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.38

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/8/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2000 PM Existing
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	2	1	1	2	0	2	0	0	0	0	0
LGConfig		T	R	L	T		L					
Volume		607	82	175	775		290					
Lane Width		11.0	12.0	10.0	11.0		12.0					
RTOR Vol			0									

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left	A			
Thru		P				Thru				
Right		P				Right				
Peds		X				Peds	X			
WB Left	A	P			SB	Left				
Thru	P	P				Thru				
Right						Right				
Peds	X	X				Peds	X			
NB Right					EB	Right				
SB Right					WB	Right				
Green	15.0	28.5					20.0			
Yellow	3.0	4.5					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 80.0 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								
T	1287	3490	0.52	0.369	19.8	B	19.4	B
R	596	1615	0.15	0.369	16.2	B		
Westbound								
L	542		0.36	0.619	4.4	A		
T	2159	3490	0.40	0.619	4.6	A	4.6	A
Northbound								
L	822	3133	0.39	0.262	24.6	C	24.6	C
Southbound								

Intersection Delay = 12.9 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.41
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.51

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/8/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2000 Sat Existing
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	2	1	1	2	0	2	0	0	0	0	0
LGConfig		T	R	L	T		L					
Volume		954	146	169	821		336					
Lane Width		11.0	12.0	10.0	11.0		12.0					
RTOR Vol			0									

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left	A			
Thru		P				Thru				
Right		P				Right				
Peds		X				Peds	X			
WB Left	A	P			SB	Left				
Thru	P	P				Thru				
Right						Right				
Peds	X	X				Peds	X			
NB Right					EB	Right				
SB Right					WB	Right				
Green	15.0	28.5					20.0			
Yellow	3.0	4.5					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 80.0 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								
T	1287	3490	0.82	0.369	27.6	C	26.3	C
R	596	1615	0.27	0.369	17.5	B		
Westbound								
L	438		0.43	0.619	6.3	A		
T	2159	3490	0.42	0.619	4.8	A	5.0	A
Northbound								
L	822	3133	0.45	0.262	25.1	C		
							25.1	C
Southbound								

Intersection Delay = 17.4 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.53

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.66

2001 No Build

Note 2: Includes Note 1, an increase in traffic of 3% per year to reflect normal background traffic growth, the traffic expected to be generated by the approved Applebee's restaurant on Parcel B, and the traffic expected to be generated by the Ralph Lauren Polo Store to be constructed at Tanger Factory Outlet Center II. Also includes the roadway improvements necessary to accommodate the traffic generated by the approved Applebee's and Polo store.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2000 AM No Build
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	2	1	1	2	0	2	0	0	0	0	0
LGConfig		T	R	L	T		L					
Volume		936	29	21	479		2					
Lane Width		11.0	12.0	10.0	11.0		12.0					
RTOR Vol			0									

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	A			
	Thru		P				Thru				
	Right		P				Right				
	Peds		X				Peds	X			
WB	Left	A	P			SB	Left				
	Thru	P	P				Thru				
	Right						Right				
	Peds	X	X				Peds	X			
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		9.0	28.5					16.0			
Yellow		3.0	4.5					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 70.0 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								
T	1471	3490	0.71	0.421	17.5	B	17.3	B
R	681	1615	0.05	0.421	10.5	B		
Westbound								
L	374		0.06	0.621	3.7	A		
T	2169	3490	0.25	0.621	3.4	A	3.4	A
Northbound								
L	761	3133	0.00	0.243	20.1	C	20.1	C
Southbound								

Intersection Delay = 12.5 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.31
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.40

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM No Build
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	2	1	1	2	0	2	0	0	0	0	0
LGConfig		T	R	L	T		L					
Volume		654	86	184	819		303					
Lane Width		11.0	12.0	10.0	11.0		12.0					
RTOR Vol			0									

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left	A			
Thru		P				Thru				
Right		P				Right				
Peds		X				Peds	X			
WB Left	A	P			SB	Left				
Thru	P	P				Thru				
Right						Right				
Peds	X	X				Peds	X			
NB Right					EB	Right				
SB Right					WB	Right				
Green	15.0	28.5					20.0			
Yellow	3.0	4.5					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 80.0 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								
T	1287	3490	0.56	0.369	20.5	C	20.0-	B
R	596	1615	0.16	0.369	16.3	B		
Westbound								
L	522		0.39	0.619	4.7	A		
T	2159	3490	0.42	0.619	4.8	A	4.7	A
Northbound								
L	822	3133	0.41	0.262	24.7	C	24.7	C
Southbound								

Intersection Delay = 13.2 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.44
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.54

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat No Build
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	1	1	2	0	2	0	0	0	0	0
LGConfig		T	R	L	T		L					
Volume		1051	156	182	895		354					
Lane Width		11.0	12.0	10.0	11.0		12.0					
RTOR Vol			0									

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	A			
	Thru		P				Thru				
	Right		P				Right				
	Peds		X				Peds	X			
WB	Left	A	P			SB	Left				
	Thru	P	P				Thru				
	Right						Right				
	Peds	X	X				Peds	X			
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		15.0	28.5					20.0			
Yellow		3.0	4.5					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 80.0 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								
T	1287	3490	0.91	0.369	34.9	C	32.7	C
R	596	1615	0.29	0.369	17.8	B		
Westbound								
L	438		0.46	0.619	7.0	A		
T	2159	3490	0.46	0.619	5.0	A	5.3	A
Northbound								
L	822	3133	0.48	0.262	25.3	C		
							25.3	C
Southbound								

Intersection Delay = 20.6 (sec/veh) Intersection LOS = C

Sum (v/s) critical = 0.58

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.71

C.R. 58 at Kroemer Avenue

2000 Existing

Note 1: Includes 1999 or 2000 traffic volume counts collected during peak summer months or adjusted to reflect traffic volumes during peak summer months. Also includes an increase in 1999 count volumes of 3% per year to reflect normal background traffic growth.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2000 AM Existing
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	2	0	1	1	0	1	0	1	0	0	0
LGConfig		TR		L	T		L		R			
Volume		818	21	28	558		6		58			
Lane Width		12.0		10.0	12.0		12.0		12.0			
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	A			
	Thru		P				Thru				
	Right		P				Right	A			
	Peds						Peds	X			
WB	Left	A	P			SB	Left				
	Thru	P	P				Thru				
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0	35.0					11.5			
Yellow		3.0	3.0					4.5			
All Red		2.0	2.0					2.0			

Cycle Length: 70.0 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								
TR	1850	3597	0.50	0.514	9.3	A	9.3	A
Westbound								
L	473		0.07	0.686	1.3	A		
T	1303	1900	0.48	0.686	2.9	A	2.8	A
Northbound								
L	322	1805	0.02	0.179	23.7	C	24.9	C
R	288	1615	0.22	0.179	25.0	C		
Southbound								

Intersection Delay = 7.4 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.37
Lost Time/Cycle, L = 9.50 sec Critical v/c(X) = 0.42

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2000 PM Existing
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	2	0	1	1	0	1	0	1	0	0	0
LGConfig		TR		L	T		L		R			
Volume		1064	27	63	1068		20		48			
Lane Width		12.0		10.0	12.0		12.0		12.0			
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left	A			
Thru		P				Thru				
Right		P				Right	A			
Peds						Peds	X			
WB Left	A	P			SB	Left				
Thru	P	P				Thru				
Right						Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	8.0	45.0					10.5			
Yellow	3.0	3.0					4.5			
All Red	2.0	2.0					2.0			

Cycle Length: 80.0 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								
TR	2068	3597	0.59	0.575	8.1	A	8.1	A
Westbound								
L	438		0.16	0.738	0.4	A		
T	1401	1900	0.85	0.738	7.5	A	7.1	A
Northbound								
L	259	1805	0.08	0.144	29.8	C	31.2	C
R	212	1615	0.25	0.131	31.8	C		
Southbound								

Intersection Delay = 8.3 (sec/veh) Intersection LOS = A

Sum (v/s) critical = 0.66

Lost Time/Cycle, L = 10.50 sec Critical v/c(X) = 0.76

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2000 Sat Existing
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	2	0	1	1	0	1	0	1	0	0	0
LGConfig		TR		L	T		L		R			
Volume		1279	50	49	921		15		41			
Lane Width		12.0		10.0	12.0		12.0		12.0			
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left					NB	Left	A			
Thru		P				Thru				
Right		P				Right	A			
Peds						Peds	X			
WB Left	A	P			SB	Left				
Thru	P	P				Thru				
Right						Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	8.0	45.0					10.5			
Yellow	3.0	3.0					4.5			
All Red	2.0	2.0					2.0			

Cycle Length: 80.0 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								
TR	2064	3589	0.72	0.575	9.9	A	9.9	A
Westbound								
L	384		0.14	0.738	0.4	A		
T	1401	1900	0.73	0.738	3.9	A	3.7	A
Northbound								
L	259	1805	0.07	0.144	29.7	C	30.4	C
R	232	1615	0.20	0.144	30.6	C		
Southbound								

Intersection Delay = 7.9 (sec/veh) Intersection LOS = A

Sum (v/s) critical = 0.57

Lost Time/Cycle, L = 9.50 sec Critical v/c(X) = 0.64

2001 No Build

Note 2: Includes Note 1, an increase in traffic of 3% per year to reflect normal background traffic growth, the traffic expected to be generated by the approved Applebee's restaurant on Parcel B, and the traffic expected to be generated by the Ralph Lauren Polo Store to be constructed at Tanger Factory Outlet Center II. Also includes the roadway improvements necessary to accommodate the traffic generated by the approved Applebee's and Polo store.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM No Build
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	13	830	22	29	573	7	6	4	56	3	1	3
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Peds	X			
WB Left	A	P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	7.0	53.0					25.0			
Yellow	3.0	3.0					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 100.0 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	526		0.03	0.660	2.5	A		
TR	1909	3536	0.50	0.540	11.0	B	10.9	B
Westbound								
L	404		0.08	0.660	2.8	A		
T	1885	3490	0.34	0.540	9.5	A	9.2	A
R	901	1669	0.01	0.540	7.5	A		
Northbound								
L	374	1439	0.02	0.260	27.5	C		
TR	410	1578	0.16	0.260	28.8	C	28.6	C
Southbound								
L	353	1357	0.01	0.260	27.5	C		
T	494	1900	0.00	0.260	27.4	C	27.4	C
R	420	1615	0.01	0.260	27.4	C		

Intersection Delay = 11.1 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.33

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.37

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM No Build
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	29	1098	28	65	1101	19	21	1	49	13	1	24
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A	P			NB Left	A			
Thru		P			Thru	A			
Right		P			Right	A			
Peds					Peds	X			
WB Left	A	P			SB Left	A			
Thru		P			Thru	A			
Right		P			Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	7.0	53.0				25.0			
Yellow	3.0	3.0				3.0			
All Red	2.0	2.0				2.0			

Cycle Length: 100.0 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	319		0.10	0.660	3.3	A		
TR	1910	3537	0.65	0.540	13.2	B	13.0	B
Westbound								
L	311		0.23	0.660	3.8	A		
T	1885	3490	0.65	0.540	13.2	B	12.6	B
R	901	1669	0.02	0.540	7.5	A		
Northbound								
L	374	1439	0.06	0.260	27.9	C		
TR	407	1566	0.14	0.260	28.5	C	28.3	C
Southbound								
L	356	1370	0.04	0.260	27.7	C		
T	494	1900	0.00	0.260	27.4	C	27.8	C
R	420	1615	0.06	0.260	27.9	C		

Intersection Delay = 13.5 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.43
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.49

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat No Build
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	68	1323	52	50	957	31	15	2	42	23	1	49
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0	53.0					25.0			
Yellow		3.0	3.0					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 100.0 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	366		0.21	0.660	3.3	A		
TR	1906	3530	0.80	0.540	16.8	B	16.2	B
Westbound								
L	244		0.23	0.660	5.3	A		
T	1885	3490	0.56	0.540	11.9	B	11.4	B
R	901	1669	0.04	0.540	7.6	A		
Northbound								
L	374	1439	0.05	0.260	27.8	C		
TR	409	1572	0.12	0.260	28.4	C	28.2	C
Southbound								
L	358	1378	0.07	0.260	28.0	C		
T	494	1900	0.00	0.260	27.4	C	28.3	C
R	420	1615	0.13	0.260	28.5	C		

Intersection Delay = 14.9 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.51

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.58

C.R. 58 at Mill Road

2000 Existing

Note 1: Includes 1999 or 2000 traffic volume counts collected during peak summer months or adjusted to reflect traffic volumes during peak summer months. Also includes an increase in 1999 count volumes of 3% per year to reflect normal background traffic growth.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2000 AM Existing
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	0	1	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	29	842		20	585		77	28		31	40	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	P				NB Left	A			
Thru	P				Thru	A			
Right					Right				
Peds					Peds	X			
WB Left	P				SB Left	A			
Thru	P				Thru	A			
Right					Right				
Peds	X				Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	48.5					8.5			
Yellow	4.5					4.5			
All Red	2.0					2.0			

Cycle Length: 70.0 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	524	741	0.06	0.707	0.9	A		
T	1348	1906	0.69	0.707	4.3	A	4.2	A
Westbound								
L	401	567	0.05	0.707	1.0	A		
T	1326	1875	0.49	0.707	2.3	A	2.3	A
Northbound								
LT	217	1598	0.54	0.136	30.9	C	30.9	C
Southbound								
LT	218	1605	0.36	0.136	28.5	C	28.5	C

Intersection Delay = 6.3 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.56
Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 0.67

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2000 PM Existing
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	0	1	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	78	831		37	903		216	117		19	35	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	P				NB Left	A			
Thru	P				Thru	A			
Right					Right				
Peds					Peds	X			
WB Left	P				SB Left	A			
Thru	P				Thru	A			
Right					Right				
Peds	X				Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	55.5					11.5			
Yellow	4.5					4.5			
All Red	2.0					2.0			

Cycle Length: 80.0 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	376	533	0.23	0.706	2.4	A		
T	1346	1906	0.69	0.706	4.4	A	4.3	A
Westbound								
L	405	574	0.10	0.706	1.3	A		
T	1324	1875	0.76	0.706	5.9	A	5.7	A
Northbound								
LT	258	1653	1.43	0.156	837.6	F	837.6	F
Southbound								
LT	255	1629	0.24	0.156	30.0	C	30.0	C

Intersection Delay = 129.6 (sec/veh) Intersection LOS = F
Sum (v/s) critical = 0.76
Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 0.88

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2000 Sat Existing
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	0	1	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	103	980		29	845		98	60		27	72	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds	X			
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	55.5						11.5			
Yellow	4.5						4.5			
All Red	2.0						2.0			

Cycle Length: 80.0 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	400	566	0.28	0.706	2.8	A		
T	1346	1906	0.81	0.706	7.4	A	7.0	A
Westbound								
L	347	491	0.09	0.706	1.4	A		
T	1324	1875	0.71	0.706	4.9	A	4.8	A
Northbound								
LT	259	1660	0.68	0.156	39.1	D	39.1	D
Southbound								
LT	257	1646	0.43	0.156	31.7	C	31.7	C

Intersection Delay = 9.5 (sec/veh) Intersection LOS = A

Sum (v/s) critical = 0.68

Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 0.79

2001 No Build

Note 2: Includes Note 1, an increase in traffic of 3% per year to reflect normal background traffic growth, the traffic expected to be generated by the approved Applebee's restaurant on Parcel B, and the traffic expected to be generated by the Ralph Lauren Polo Store to be constructed at Tanger Factory Outlet Center II. Also includes the roadway improvements necessary to accommodate the traffic generated by the approved Applebee's and Polo store.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM No Build
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	0	1	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	30	867		21	604		79	29		32	41	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds	X			
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	48.5						8.5			
Yellow	4.5						4.5			
All Red	2.0						2.0			

Cycle Length: 70.0 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	514	727	0.06	0.707	0.9	A		
T	1348	1906	0.71	0.707	4.7	A	4.6	A
Westbound								
L	391	553	0.06	0.707	1.0	A		
T	1326	1875	0.51	0.707	2.4	A	2.4	A
Northbound								
LT	218	1608	0.55	0.136	31.3	C	31.3	C
Southbound								
LT	217	1601	0.38	0.136	28.7	C	28.7	C

Intersection Delay = 6.5 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.58
Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 0.69

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM No Build
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	0	1	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	80	871		38	952		222	121		20	36	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	P				NB Left	A			
Thru	P				Thru	A			
Right					Right				
Peds					Peds	X			
WB Left	P				SB Left	A			
Thru	P				Thru	A			
Right					Right				
Peds	X				Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	55.5					11.5			
Yellow	4.5					4.5			
All Red	2.0					2.0			

Cycle Length: 80.0 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	357	506	0.25	0.706	2.6	A		
T	1346	1906	0.72	0.706	5.0	A	4.8	A
Westbound								
L	388	550	0.11	0.706	1.4	A		
T	1324	1875	0.80	0.706	7.1	A	6.9	A
Northbound								
LT	258	1651	1.48	0.156	913.0	F	913.0	F
Southbound								
LT	254	1623	0.24	0.156	30.1	C	30.1	C

Intersection Delay = 139.4 (sec/veh) Intersection LOS = F
Sum (v/s) critical = 0.80
Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 0.92

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat No Build
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	0	1	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	106	1038		30	909		101	62		28	74	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A			
	Thru	P					Thru	A			
	Right						Right				
	Peds						Peds	X			
WB	Left	P				SB	Left	A			
	Thru	P					Thru	A			
	Right						Right				
	Peds	X					Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		55.5						11.5			
Yellow		4.5						4.5			
All Red		2.0						2.0			

Cycle Length: 80.0 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	374	529	0.32	0.706	3.2	A		
T	1346	1906	0.86	0.706	9.8	A	9.1	A
Westbound								
L	326	462	0.10	0.706	1.5	A		
T	1324	1875	0.76	0.706	6.0	A	5.9	A
Northbound								
LT	258	1648	0.70	0.156	40.6	D	40.6	D
Southbound								
LT	256	1640	0.44	0.156	31.8	C	31.8	C

Intersection Delay = 11.0 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.71
Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 0.83

N.Y.S. Route 25 at Kroemer Avenue/Forge Road

2000 Existing

Note 1: Includes 1999 or 2000 traffic volume counts collected during peak summer months or adjusted to reflect traffic volumes during peak summer months. Also includes an increase in 1999 count volumes of 3% per year to reflect normal background traffic growth.

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: DEA/jmc
Intersection: NYS Route 25 & Kroemer Avenue
Count Date: 7/14/00
Time Period: 2000AM Existing

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	3	4	5	6	7	8	9	10	11	12
Volume:	36	297	1	10	189	41	8	11	22	41	6	27
HFR:	40	330	1	11	210	46	9	12	24	46	7	30
PHF:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHV:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:

Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Lane usage for movements 7,8&9 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	297	189
Shared ln volume, major rt vehicles:	1	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Length of study period, hrs: 0.25

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	4	7	8	9	10	11	12
t c,base	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t c,hv	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c,g			0.2	0.2	0.1	0.2	0.2	0.1
G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t 3,lt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
t c,T: 1 stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c 1 stage	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2

Follow Up Time Calculations:

Movement	1	4	7	8	9	10	11	12
t f,base	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3
t f,HV	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t f	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	331	233
Potential Capacity	716	811
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	716	811
Probability of Queue free St.	0.97	0.96

Step 2: LT from Major St.	4	1
Conflicting Flows	331	210
Potential Capacity	1240	1373
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1240	1373
Probability of Queue free St.	0.99	0.97
Maj. L Shared ln. Prob. Queue Free St.	0.99	0.96

Step 3: TH from Minor St.	8	11
Conflicting Flows	643	666
Potential Capacity	395	383
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.95	0.95
Movement Capacity	377	365
Probability of Queue free St.	0.97	0.98

Step 4: LT from Minor St.	7	10
Conflicting Flows	669	684
Potential Capacity	374	365
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.94	0.92
Maj. L, Min T Adj. Imp Factor.	0.95	0.94
Cap. Adj. factor due to Impeding mvmnt	0.92	0.91
Movement Capacity	343	332

Worksheet 8 Shared Lane Calculations

Shared Lane Calculations

```
|-----------------||------------     |
|                 ||           |
|                 ||           |
```

Movement	7	8	9	10	11	12
v(vph)	9	12	24	46	7	30
Movement Capacity	343	377	716	332	365	811
Shared Lane Capacity	492			336		

Worksheet 10 delay,queue length, and LOS

```
|-----------------||------------     |
|                 ||           |
|                 ||           |
```

Movement	1	4	7	8	9	10	11	12
v(vph)	40	11	46			52		
C m(vph)	1373	1240	492			336		
v/c	0.03	0.01	0.09			0.16		
95% queue length								
Control Delay	7.7	7.9	13.1			17.7		
LOS	A	A	B			C		
Approach Delay				13.1			17.7	
Approach LOS				B			C	

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.97	0.99
V i1	297	189
V i2	1	0
S i1	1700	1700
S i2	1700	1700
P* 0j	0.96	0.99
D maj left	7.7	7.9
N number major st lanes	1	1
Delay, rank 1 mvmts	0.3	0.1

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: DEA/jmc
Intersection: NYS Route 25 & Kroemer Avenue
Count Date: 7/14/00
Time Period: 2000PM Existing

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	3	4	5	6	7	8	9	10	11	12
Volume:	20	360	4	47	485	37	4	12	28	39	30	35
HFR:	22	400	4	52	539	41	4	13	31	43	33	39
PHF:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHV:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:

Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Lane usage for movements 7,8&9 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	360	485
Shared ln volume, major rt vehicles:	4	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Length of study period, hrs: 0.25

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	4	7	8	9	10	11	12
t c,base	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t c,hv	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c,g			0.2	0.2	0.1	0.2	0.2	0.1
G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t 3,lt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
t c,T:								
1 stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c								
1 stage	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2

Follow Up Time Calculations:

Movement	1	4	7	8	9	10	11	12
t f,base	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3
t f,HV	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t f	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	402	559
Potential Capacity	652	532
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	652	532
Probability of Queue free St.	0.95	0.93

Step 2: LT from Major St.	4	1
Conflicting Flows	404	539
Potential Capacity	1165	1040
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1165	1040
Probability of Queue free St.	0.96	0.98
Maj. L Shared ln. Prob. Queue Free St.	0.94	0.97

Step 3: TH from Minor St.	8	11
Conflicting Flows	1090	1113
Potential Capacity	217	210
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.91	0.91
Movement Capacity	198	192
Probability of Queue free St.	0.93	0.83

Step 4: LT from Minor St.	7	10
Conflicting Flows	1127	1133
Potential Capacity	183	182
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.75	0.85
Maj. L, Min T Adj. Imp Factor.	0.81	0.89
Cap. Adj. factor due to Impeding mvmnt	0.75	0.84
Movement Capacity	138	153

Worksheet 8 Shared Lane Calculations

```
Shared Lane Calculations
Movement                       7    8    9   10   11   12
-----------------------------------------------------------------
                     |-----------------||------------    |
                     |                 ||            |
                     |                 ||            |
v(vph)                    4    13   31   43   33   39
Movement Capacity              138  198  652  153  192  532
Shared Lane Capacity           332            168
-----------------------------------------------------------------
```

Worksheet 10 delay,queue length, and LOS

```
Movement                  1    4    7    8    9   10   11   12
-----------------------------------------------------------------
                     |-----------------||------------    |
                     |                 ||            |
                     |                 ||            |
v(vph)                22   52   49             77
C m(vph)              1040 1165 332            168
v/c                 0.02 0.04 0.15            0.46
95% queue length
Control Delay         8.5  8.2  17.7            43.3
LOS                   A    A    C             E
Approach Delay                  17.7               43.3
Approach LOS                     C                 E
-----------------------------------------------------------------
```

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.98	0.96
V i1	360	485
V i2	4	0
S i1	1700	1700
S i2	1700	1700
P* 0j	0.97	0.94
D maj left	8.5	8.2
N number major st lanes	1	1
Delay, rank 1 mvmts	0.2	0.5

2001 No Build

Note 2: Includes Note 1, an increase in traffic of 3% per year to reflect normal background traffic growth, the traffic expected to be generated by the approved Applebee's restaurant on Parcel B, and the traffic expected to be generated by the Ralph Lauren Polo Store to be constructed at Tanger Factory Outlet Center II. Also includes the roadway improvements necessary to accommodate the traffic generated by the approved Applebee's and Polo store.

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

nalyst: DEA/jmc
ntersection: NYS Route 25 & Kroemer Avenue
Count Date: 7/14/00
ime Period: 2001 AM NoBuild

ntersection Orientation: East-West Major St.

/ehicle Volume Data:

Movements:	1	2	3	4	5	6	7	8	9	10	11	12
/olume:	37	307	1	10	198	42	8	11	22	42	6	28
HFR:	41	341	1	11	220	47	9	12	24	47	7	31
PHF:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHV:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:

Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Lane usage for movements 7,8&9 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	307	198
Shared ln volume, major rt vehicles:	1	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Length of study period, hrs: 0.25

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	4	7	8	9	10	11	12
t c,base	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t c,hv	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c,g			0.2	0.2	0.1	0.2	0.2	0.1
G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t 3,lt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
t c,T:								
1 stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c								
1 stage	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2

Follow Up Time Calculations:

Movement	1	4	7	8	9	10	11	12
t f,base	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3
t f,HV	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t f	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	342	243
Potential Capacity	705	800
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	705	800
Probability of Queue free St.	0.97	0.96

tep 2: LT from Major St.	4	1
onflicting Flows	342	220
otential Capacity	1228	1361
edestrian Impedance Factor	1.00	1.00
lovement Capacity	1228	1361
robability of Queue free St.	0.99	0.97
laj. L Shared ln. Prob. Queue Free St.	0.99	0.96

tep 3: TH from Minor St.	8	11
onflicting Flows	666	690
otential Capacity	383	371
edestrian Impedance Factor	1.00	1.00
ap. Adj. factor due to Impeding mvmnt	0.95	0.95
lovement Capacity	365	353
robability of Queue free St.	0.97	0.98

tep 4: LT from Minor St.	7	10
onflicting Flows	693	708
otential Capacity	361	352
edestrian Impedance Factor	1.00	1.00
laj. L, Min T Impedance factor	0.94	0.92
laj. L, Min T Adj. Imp Factor.	0.95	0.94
ap. Adj. factor due to Impeding mvmnt	0.91	0.91
lovement Capacity	329	320

Vorksheet 8 Shared Lane Calculations

```
hared Lane Calculations
lovement                      7    8    9    10    11    12
--------------------------------------------------------------------
                         |--------------||----------     |
                         |              ||          |
                         |              ||          |
v(vph)                      9    12   24    47    7    31
Movement Capacity                329  365   705   320   353   800
Shared Lane Capacity             479              323
--------------------------------------------------------------------
```

Worksheet 10 delay,queue length, and LOS

```
Movement               1     4     7     8     9    10    11    12
--------------------------------------------------------------------
                         |--------------||----------     |
                         |              ||          |
                         |              ||          |
v(vph)                41    11    46               53
C m(vph)              1361  1228  479                   323
v/c                 0.03  0.01  0.10              0.16
95% queue length
Control Delay          7.7   8.0  13.3               18.3
LOS                    A     A     B              C
Approach Delay                      13.3                 18.3
Approach LOS                         B                   C
--------------------------------------------------------------------
```

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

ovement	2	5	
oj	0.97	0.99	
i1	307	198	
i2	1	0	
i1	1700	1700	
i2	1700	1700	
* 0j	0.96	0.99	
maj left	7.7	8.0	
number major st lanes		1	1
elay, rank 1 mvmts		0.3	0.1

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: DEA/jmc
Intersection: NYS Route 25 & Kroemer Avenue
Count Date: 7/14/00
Time Period: 2001 PM NoBuild

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	3	4	5	6	7	8	9	10	11	12
Volume:	21	380	4	48	508	39	4	12	29	41	31	36
HFR:	23	422	4	53	564	43	4	13	32	46	34	40
PHF:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHV:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:

Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Lane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	380	508
Shared ln volume, major rt vehicles:	4	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Length of study period, hrs: 0.25

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	4	7	8	9	10	11	12
t c,base	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t c,hv	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c,g			0.2	0.2	0.1	0.2	0.2	0.1
G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t 3,lt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
t c,T:								
1 stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c								
1 stage	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2

Follow Up Time Calculations:

Movement	1	4	7	8	9	10	11	12
t f,base	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3
t f,HV	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t f	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	424	586
Potential Capacity	634	514
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	634	514
Probability of Queue free St.	0.95	0.92

tep 2: LT from Major St.

	4	1
Conflicting Flows	427	564
otential Capacity	1143	1017
edestrian Impedance Factor	1.00	1.00
lovement Capacity	1143	1017
robability of Queue free St.	0.95	0.98
laj. L Shared ln. Prob. Queue Free St.	0.93	0.97

Step 3: TH from Minor St.

	8	11
Conflicting Flows	1142	1166
otential Capacity	202	196
edestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.91	0.91
lovement Capacity	183	177
robability of Queue free St.	0.93	0.81

Step 4: LT from Minor St.

	7	10
Conflicting Flows	1181	1187
otential Capacity	168	167
edestrian Impedance Factor	1.00	1.00
laj. L, Min T Impedance factor	0.73	0.84
laj. L, Min T Adj. Imp Factor.	0.79	0.88
Cap. Adj. factor due to Impeding mvmnt	0.73	0.83
Movement Capacity	123	139

Worksheet 8 Shared Lane Calculations

Shared Lane Calculations

Movement	7	8	9	10	11	12
v(vph)	4	13	32	46	34	40
Movement Capacity	123	183	634	139	177	514
Shared Lane Capacity		313			153	

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	23	53	50			80		
C m(vph)	1017	1143	313			153		
v/c	0.02	0.05	0.16			0.52		
95% queue length								
Control Delay	8.6	8.3	18.7			51.7		
LOS	A	A	C			F		
Approach Delay				18.7			51.7	
Approach LOS				C			F	

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.98	0.95
V i1	380	508
V i2	4	0
S i1	1700	1700
S i2	1700	1700
P* 0j	0.97	0.93
D maj left	8.6	8.3
N number major st lanes	1	1
Delay, rank 1 mvmts	0.3	0.6

Alternative A
Proposed Lumberyard Complex

C.R. 58 at the Tanger Factory Outlet Center II Driveway

2001 Build Phase I

Note 3: Includes Note 2, an increase in traffic of 3% per year to reflect normal background traffic growth, the traffic expected to be generated by the lumberyard on Parcel A of the proposed development, and the traffic expected to be generated by the four take-out restaurants on Parcel B of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM Build Phase I
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	22	1059	29	21	563	28	2	1		23	1	19
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right				
	Peds		X				Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds	X	X				Peds	X			
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		9.0	28.5					16.0			
Yellow		3.0	4.5					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 70.0 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	310	735	0.08	0.421	11.0	B		
T	1471	3490	0.80	0.421	20.2	C	19.8	B
R	681	1615	0.05	0.421	10.5	B		
Westbound								
L	356		0.06	0.621	4.2	A		
T	2169	3490	0.29	0.621	3.5	A	3.5	A
R	1004	1615	0.03	0.621	2.7	A		
Northbound								
L	343	1412	0.01	0.243	20.1	C		
LT	461	1900	0.00	0.243	20.1	C	20.1	C
Southbound								
L	349	1439	0.07	0.243	20.5	C		
TR	395	1628	0.06	0.243	20.4	C	20.5	C

Intersection Delay = 14.2 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.37
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.47

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM Build Phase I
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	38	733	86	184	898	47	303	1		53	1	42
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		P			NB Left	A			
Thru		P			Thru	A			
Right		P			Right				
Peds		X			Peds	X			
WB Left	A	P			SB Left	A			
Thru	P	P			Thru	A			
Right	P	P			Right	A			
Peds	X	X			Peds	X			
NB Right					EB Right				
SB Right					WB Right				
Green	15.0	28.5				20.0			
Yellow	3.0	4.5				3.0			
All Red	2.0	2.0				2.0			

Cycle Length: 80.0 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	188	509	0.22	0.369	18.8	B		
T	1287	3490	0.63	0.369	21.6	C	21.0	C
R	596	1615	0.16	0.369	16.3	B		
Westbound								
L	492		0.41	0.619	5.1	A		
T	2159	3490	0.46	0.619	5.0	A	4.9	A
R	999	1615	0.05	0.619	3.3	A		
Northbound								
L	362	1379	0.93	0.262	72.9	E		
LT	499	1900	0.00	0.262	21.8	C	72.8	E
Southbound								
L	378	1439	0.16	0.262	22.9	C		
TR	426	1621	0.11	0.262	22.5	C	22.7	C

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

Sum (v/s) critical = 0.60

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.74

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat Build Phase I
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	79	1225	156	182	1069	100	354	1		88	1	71
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		P			NB	Left	A			
Thru		P				Thru	A			
Right		P				Right				
Peds		X				Peds	X			
WB Left	A	P			SB	Left	A			
Thru	P	P				Thru	A			
Right	P	P				Right	A			
Peds	X	X				Peds	X			
NB Right					EB	Right				
SB Right					WB	Right				
Green	15.0	28.5					20.0			
Yellow	3.0	4.5					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 80.0 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	155	421	0.57	0.369	33.6	C		
T	1287	3490	1.06	0.369	148.2	F	128.1	F
R	596	1615	0.29	0.369	17.8	B		
Westbound								
L	438		0.46	0.619	15.9	B		
T	2159	3490	0.55	0.619	5.7	A	6.9	A
R	999	1615	0.11	0.619	3.5	A		
Northbound								
L	351	1339	1.12	0.262	285.3	F		
LT	499	1900	0.00	0.262	21.8	C	284.6	F
Southbound								
L	378	1439	0.26	0.262	23.7	C		
TR	425	1619	0.19	0.262	23.1	C	23.4	C

Intersection Delay = 90.5 (sec/veh) Intersection LOS = F

Sum (v/s) critical = 0.80

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.99

2001 Build with Modifications
Phase I

Note 4: Includes Note 3 and the roadway improvements necessary to accommodate the traffic expected to be generated by the lumberyard on Parcel A of the proposed development and by the four take-out restaurants on Parcel B of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildMod Phase I
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	22	1059	29	21	563	28	2	1		23	1	19
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		P			NB	Left	A	A		
	Thru		P				Thru	A	A		
	Right		P				Right				
	Peds		X				Peds	X	X		
WB	Left	A	P			SB	Left		A		
	Thru	P	P				Thru		A		
	Right	P	P				Right		A		
	Peds	X	X				Peds		X		
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	53.5					4.0	17.0		
Yellow		3.0	4.5					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	401	735	0.06	0.545	7.7	A		
T	1902	3490	0.62	0.545	12.3	B	12.1	B
R	880	1615	0.04	0.545	7.4	A		
Westbound								
L	266		0.09	0.635	4.2	A		
T	2216	3490	0.28	0.635	4.2	A	4.2	A
R	1026	1615	0.03	0.635	3.3	A		
Northbound								
L	394		0.01	0.270	26.7	C		
LT	513	1900	0.00	0.270	26.7	C	26.7	C
Southbound								
L	259	1439	0.10	0.180	34.4	C		
TR	293	1628	0.08	0.180	34.2	C	34.3	C

Intersection Delay = 9.9 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.37
Lost Time/Cycle, L = 19.00 sec Critical v/c(X) = 0.46

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildMod Phase I
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	38	733	86	184	898	47	303	1		53	1	42
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		P			NB	Left	A	A		
Thru		P				Thru	A	A		
Right		P				Right				
Peds		X				Peds	X	X		
WB Left	A	P			SB	Left		A		
Thru	P	P				Thru		A		
Right	P	P				Right		A		
Peds	X	X				Peds		X		
NB Right					EB	Right				
SB Right					WB	Right				
Green	4.0	46.5					4.0	24.0		
Yellow	3.0	4.5					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	242	509	0.17	0.475	13.6	B		
T	1658	3490	0.49	0.475	15.5	B	15.1	B
R	767	1615	0.13	0.475	12.1	B		
Westbound								
L	327		0.62	0.565	15.9	B		
T	1972	3490	0.51	0.565	9.6	A	10.5	B
R	912	1615	0.06	0.565	6.5	A		
Northbound								
L	470		0.72	0.340	33.4	C		
LT	646	1900	0.00	0.340	21.8	C	33.4	C
Southbound								
L	360	1439	0.16	0.250	29.5	C		
TR	405	1621	0.12	0.250	29.1	C	29.4	C

Intersection Delay = 15.8 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.53

Lost Time/Cycle, L = 9.50 sec Critical v/c(X) = 0.59

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildMod Phase I
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	79	1225	156	182	1069	100	354	1		88	1	71
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		P			NB	Left	A	A		
Thru		P				Thru	A	A		
Right		P				Right				
Peds		X				Peds	X	X		
WB Left	A	P			SB	Left		A		
Thru	P	P				Thru		A		
Right	P	P				Right		A		
Peds	X	X				Peds		X		
NB Right					EB	Right				
SB Right					WB	Right				
Green	9.0	41.5					13.0	15.0		
Yellow	3.0	4.5					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	179	421	0.49	0.425	27.7	C		
T	1483	3490	0.92	0.425	36.0	D	33.5	C
R	686	1615	0.25	0.425	16.9	B		
Westbound								
L	249		0.81	0.565	37.1	D		
T	1972	3490	0.60	0.565	10.7	B	14.0	B
R	912	1615	0.12	0.565	6.9	A		
Northbound								
L	478		0.82	0.340	41.8	D		
LT	646	1900	0.00	0.340	21.8	C	41.8	D
Southbound								
L	230	1439	0.43	0.160	39.1	D		
TR	259	1619	0.31	0.160	37.8	D	38.5	D

Intersection Delay = 26.7 (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.75
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.89

2001 Build Phase II

Note 5: Includes Note 4 and the traffic expected to be generated by the restaurant and offices on Parcel A of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM Build Phase II
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	36	1067	29	21	564	46	2	1		25	1	21
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		P			NB	Left	A	A		
	Thru		P				Thru	A	A		
	Right		P				Right				
	Peds		X				Peds	X	X		
WB	Left	A	P			SB	Left		A		
	Thru	P	P				Thru		A		
	Right	P	P				Right		A		
	Peds	X	X				Peds		X		
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	53.5					4.0	17.0		
Yellow		3.0	4.5					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	400	734	0.10	0.545	8.1	A		
T	1902	3490	0.62	0.545	12.4	B	12.1	B
R	880	1615	0.04	0.545	7.4	A		
Westbound								
L	264		0.09	0.635	4.2	A		
T	2216	3490	0.28	0.635	4.2	A	4.2	A
R	1026	1615	0.05	0.635	3.4	A		
Northbound								
L	392		0.01	0.270	26.7	C		
LT	513	1900	0.00	0.270	26.7	C	26.7	C
Southbound								
L	259	1439	0.11	0.180	34.5	C		
TR	293	1627	0.08	0.180	34.2	C	34.4	C

Intersection Delay = 10.0- (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.37
Lost Time/Cycle, L = 19.00 sec Critical v/c(X) = 0.46

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM Build Phase II
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	41	764	86	184	920	52	303	1		75	1	59
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		P			NB	Left	A	A		
	Thru		P				Thru	A	A		
	Right		P				Right				
	Peds		X				Peds	X	X		
WB	Left	A	P			SB	Left		A		
	Thru	P	P				Thru		A		
	Right	P	P				Right		A		
	Peds	X	X				Peds		X		
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	46.5					4.0	24.0		
Yellow		3.0	4.5					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	236	497	0.19	0.475	14.0	B		
T	1658	3490	0.51	0.475	15.8	B	15.3	B
R	767	1615	0.13	0.475	12.1	B		
Westbound								
L	314		0.65	0.565	17.6	B		
T	1972	3490	0.52	0.565	9.7	A	10.8	B
R	912	1615	0.06	0.565	6.5	A		
Northbound								
L	453		0.74	0.340	35.4	D		
LT	646	1900	0.00	0.340	21.8	C	35.3	D
Southbound								
L	360	1439	0.23	0.250	30.2	C		
TR	405	1619	0.17	0.250	29.5	C	29.9	C

Intersection Delay = 16.5 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.56
Lost Time/Cycle, L = 9.50 sec Critical v/c(X) = 0.61

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat Build Phase II
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	81	1294	156	182	1120	102	354	1		90	1	72
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		P			NB	Left	A	A		
	Thru		P				Thru	A	A		
	Right		P				Right				
	Peds		X				Peds	X	X		
WB	Left	A	P			SB	Left		A		
	Thru	P	P				Thru		A		
	Right	P	P				Right		A		
	Peds	X	X				Peds		X		
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		9.0	41.5					13.0	15.0		
Yellow		3.0	4.5					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	169	398	0.53	0.425	30.5	C		
T	1483	3490	0.97	0.425	50.6	D	46.1	D
R	686	1615	0.25	0.425	16.9	B		
Westbound								
L	249		0.81	0.565	37.6	D		
T	1972	3490	0.63	0.565	11.1	B	14.3	B
R	912	1615	0.12	0.565	6.9	A		
Northbound								
L	477		0.82	0.340	42.1	D		
LT	646	1900	0.00	0.340	21.8	C	42.0	D
Southbound								
L	230	1439	0.43	0.160	39.2	D		
TR	259	1619	0.31	0.160	37.8	D	38.6	D

Intersection Delay = 32.4 (sec/veh) Intersection LOS = C

Sum (v/s) critical = 0.78

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.91

2001 Build with Modifications
Phase II

Note 6: Includes Note 5 and the roadway improvements necessary to accommodate the traffic expected to be generated by the restaurant and offices on Parcel A of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildMod Phase II
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	41	764	86	184	920	52	303	1		75	1	59
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4
EB	Left		P		
	Thru		P		
	Right		P		
	Peds		X		
WB	Left	A	P		
	Thru	P	P		
	Right	P	P		
	Peds	X	X		
NB	Right				
SB	Right				
Green		4.0	45.5		
Yellow		3.0	4.5		
All Red		2.0	2.0		

		5	6	7	8
NB	Left	A	A		
	Thru	A	A		
	Right				
	Peds	X	X		
SB	Left		A		
	Thru		A		
	Right		A		
	Peds		X		
EB	Right				
WB	Right				
Green		4.0	25.0		
Yellow		3.0	3.0		
All Red		2.0	2.0		

Cycle Length: 100.0 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	231	497	0.20	0.465	14.8	B		
T	1623	3490	0.52	0.465	16.7	B	16.2	B
R	751	1615	0.13	0.465	12.8	B		
Westbound								
L	305		0.67	0.555	19.6	B		
T	1937	3490	0.53	0.555	10.4	B	11.7	B
R	896	1615	0.06	0.555	7.0	A		
Northbound								
L	467		0.72	0.350	33.3	C		
LT	665	1900	0.00	0.350	21.1	C	33.2	C
Southbound								
L	374	1439	0.22	0.260	29.4	C		
TR	421	1619	0.16	0.260	28.7	C	29.1	C

Intersection Delay = 16.9 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.56
Lost Time/Cycle, L = 9.50 sec Critical v/c(X) = 0.62

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildMod Phase II
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	81	1294	156	182	1120	102	354	1		90	1	72
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		P			NB	Left	A	A		
	Thru		P				Thru	A	A		
	Right		P				Right				
	Peds		X				Peds	X	X		
WB	Left	A	P			SB	Left		A		
	Thru	P	P				Thru		A		
	Right	P	P				Right		A		
	Peds	X	X				Peds		X		
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		9.0	42.5					14.0	13.0		
Yellow		3.0	4.5					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	v/c	g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	173	398	0.52	0.435	28.8	C		
T	1518	3490	0.95	0.435	41.1	D	37.9	D
R	703	1615	0.25	0.435	16.1	B		
Westbound								
L	249		0.81	0.575	37.0	D		
T	2007	3490	0.62	0.575	10.3	B	13.5	B
R	929	1615	0.12	0.575	6.4	A		
Northbound								
L	467		0.84	0.330	45.3	D		
LT	627	1900	0.00	0.330	22.5	C	45.2	D
Southbound								
L	201	1439	0.50	0.140	41.7	D		
TR	227	1619	0.36	0.140	39.9	D	40.9	D

Intersection Delay = 28.9 (sec/veh) Intersection LOS = C

Sum (v/s) critical = 0.77

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.91

2001 Build with Other Developments

Note 7: Includes Note 6, the traffic expected to be generated by the proposed Riverhead Centre shopping center to be located on C.R. 58 at Mill Road, and the traffic expected to be generated by the two proposed restaurants in Tanger Factory Outlet Center II. Also includes the roadway improvements to be made by the developers of Riverhead Centre and the Tanger restaurants.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildOther Alt A
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	36	1094	29	21	582	46	2	1		25	1	21
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4
EB Left		P		
Thru		P		
Right		P		
Peds		X		
WB Left	A	P		
Thru	P	P		
Right	P	P		
Peds	X	X		
NB Right				
SB Right				
Green	4.0	53.5		
Yellow	3.0	4.5		
All Red	2.0	2.0		

	5	6	7	8
NB Left	A	A		
Thru	A	A		
Right				
Peds	X	X		
SB Left		A		
Thru		A		
Right		A		
Peds		X		
EB Right				
WB Right				
Green	4.0	17.0		
Yellow	3.0	3.0		
All Red	2.0	2.0		

Cycle Length: 100.0 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	392	720	0.10	0.545	8.1	A		
T	1902	3490	0.64	0.545	12.6	B	12.4	B
R	880	1615	0.04	0.545	7.4	A		
Westbound								
L	255		0.09	0.635	4.3	A		
T	2216	3490	0.29	0.635	4.3	A	4.2	A
R	1026	1615	0.05	0.635	3.4	A		
Northbound								
L	392		0.01	0.270	26.7	C		
LT	513	1900	0.00	0.270	26.7	C	26.7	C
Southbound								
L	259	1439	0.11	0.180	34.5	C		
TR	293	1627	0.08	0.180	34.2	C	34.4	C

Intersection Delay = 10.1 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.38
Lost Time/Cycle, L = 19.00 sec Critical v/c(X) = 0.47

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildOther Alt A
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	41	841	86	184	1000	52	303	1		75	1	59
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		P			NB	Left	A	A		
Thru		P				Thru	A	A		
Right		P				Right				
Peds		X				Peds	X	X		
WB Left	A	P			SB	Left		A		
Thru	P	P				Thru		A		
Right	P	P				Right		A		
Peds	X	X				Peds		X		
NB Right					EB	Right				
SB Right					WB	Right				
Green	4.0	45.5					4.0	25.0		
Yellow	3.0	4.5					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	210	451	0.22	0.465	15.4	B		
T	1623	3490	0.58	0.465	17.5	B	17.0	B
R	751	1615	0.13	0.465	12.8	B		
Westbound								
L	276		0.74	0.555	26.4	C		
T	1937	3490	0.57	0.555	11.0	B	13.1	B
R	896	1615	0.06	0.555	7.0	A		
Northbound								
L	467		0.72	0.350	33.3	C		
LT	665	1900	0.00	0.350	21.1	C	33.2	C
Southbound								
L	374	1439	0.22	0.260	29.4	C		
TR	421	1619	0.16	0.260	28.7	C	29.1	C

Intersection Delay = 17.7 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.60

Lost Time/Cycle, L = 9.50 sec Critical v/c(X) = 0.66

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildOther Alt A
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	81	1418	156	182	1238	102	354	1		90	1	72
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		P			NB	Left	A	A		
Thru		P				Thru	A	A		
Right		P				Right				
Peds		X				Peds	X	X		
WB Left	A	P			SB	Left		A		
Thru	P	P				Thru		A		
Right	P	P				Right		A		
Peds	X	X				Peds		X		
NB Right					EB	Right				
SB Right					WB	Right				
Green	9.0	42.5					14.0	13.0		
Yellow	3.0	4.5					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	149	343	0.60	0.435	36.5	D		
T	1518	3490	1.04	0.435	116.8	F	103.4	F
R	703	1615	0.25	0.435	16.1	B		
Westbound								
L	249		0.81	0.575	49.4	D		
T	2007	3490	0.69	0.575	11.4	B	15.6	B
R	929	1615	0.12	0.575	6.4	A		
Northbound								
L	467		0.84	0.330	45.3	D		
LT	627	1900	0.00	0.330	22.5	C	45.2	D
Southbound								
L	201	1439	0.50	0.140	41.7	D		
TR	227	1619	0.36	0.140	39.9	D	40.9	D

Intersection Delay = 58.9 (sec/veh) Intersection LOS = E

Sum (v/s) critical = 0.81

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.96

2001 Build with Modifications and Other Developments

Note 8: Includes Note 7 and additional roadway improvements needed to better accommodate the traffic expected to be generated by Riverhead Centre and the Tanger restaurants.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildModOther Alt A
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	81	1418	156	182	1238	102	354	1		90	1	72
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4
EB	Left		P		
	Thru		P		
	Right		P		
	Peds		X		
WB	Left	A	P		
	Thru	P	P		
	Right	P	P		
	Peds	X	X		
NB	Right				
SB	Right				
Green		8.0	45.5		
Yellow		3.0	4.5		
All Red		2.0	2.0		

		5	6	7	8
NB	Left	A	A		
	Thru	A	A		
	Right				
	Peds	X	X		
SB	Left		A		
	Thru		A		
	Right		A		
	Peds		X		
EB	Right				
WB	Right				
Green		15.0	10.0		
Yellow		3.0	3.0		
All Red		2.0	2.0		

Cycle Length: 100.0 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	162	349	0.56	0.465	29.4	C		
T	1623	3490	0.97	0.465	46.4	D	42.5	D
R	751	1615	0.23	0.465	13.8	B		
Westbound								
L	232		0.87	0.595	52.5	D		
T	2077	3490	0.66	0.595	9.6	A	14.5	B
R	961	1615	0.12	0.595	5.4	A		
Northbound								
L	443		0.89	0.310	56.1	E		
LT	589	1900	0.00	0.310	23.8	C	56.0	E
Southbound								
L	158	1439	0.63	0.110	50.9	D		
TR	178	1619	0.46	0.110	43.5	D	47.6	D

Intersection Delay = 32.5 (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.80
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.94

C.R. 58 at Kroemer Avenue

2001 Build Phase I

Note 3: Includes Note 2, an increase in traffic of 3% per year to reflect normal background traffic growth, the traffic expected to be generated by the lumberyard on Parcel A of the proposed development, and the traffic expected to be generated by the four take-out restaurants on Parcel B of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM Build Phase I
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	136	853	22	29	601	136	6	32	56	98	23	87
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0	53.0					25.0			
Yellow		3.0	3.0					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	g/C	Lane Group Delay	LOS	Approach Delay	LOS
Eastbound								
L	512		0.29	0.660	3.0	A		
TR	1910	3537	0.51	0.540	11.2	B	10.1	B
Westbound								
L	395		0.08	0.660	2.8	A		
T	1885	3490	0.35	0.540	9.7	A	9.2	A
R	901	1669	0.17	0.540	8.5	A		
Northbound								
L	366	1407	0.02	0.260	27.5	C		
TR	432	1662	0.23	0.260	29.4	C	29.2	C
Southbound								
L	339	1305	0.32	0.260	30.4	C		
T	494	1900	0.05	0.260	27.8	C	29.7	C
R	420	1615	0.23	0.260	29.4	C		

Intersection Delay = 12.6 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.45
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.51

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM Build Phase I
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	108	1151	28	65	1148	144	21	43	49	149	48	103
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0	53.0					25.0			
Yellow		3.0	3.0					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 100.0 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	305		0.39	0.660	4.6	A		
TR	1910	3537	0.69	0.540	13.8	B	13.0	B
Westbound								
L	296		0.24	0.660	4.1	A		
T	1885	3490	0.68	0.540	13.7	B	12.7	B
R	901	1669	0.18	0.540	8.6	A		
Northbound								
L	357	1373	0.06	0.260	27.9	C		
TR	440	1691	0.23	0.260	29.4	C	29.1	C
Southbound								
L	336	1291	0.49	0.260	32.6	C		
T	494	1900	0.11	0.260	28.3	C	30.9	C
R	420	1615	0.27	0.260	29.8	C		

Intersection Delay = 15.2 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.57
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.65

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat Build Phase I
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	242	1411	52	50	1057	279	15	91	42	253	80	223
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0	53.0					25.0			
Yellow		3.0	3.0					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 100.0 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	333		0.81	0.660	19.7	B		
TR	1907	3531	0.85	0.540	19.1	B	19.2	B
Westbound								
L	241		0.23	0.660	6.1	A		
T	1885	3490	0.62	0.540	12.7	B	12.0	B
R	901	1669	0.34	0.540	10.1	B		
Northbound								
L	346	1329	0.05	0.260	27.8	C		
TR	455	1749	0.33	0.260	30.3	C	30.1	C
Southbound								
L	294	1132	0.96	0.260	103.4	F		
T	494	1900	0.18	0.260	28.9	C	65.0	E
R	420	1615	0.59	0.260	34.6	C		

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

Sum (v/s) critical = 0.81

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.92

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildMod Phase I
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	136	853	22	29	601	136	6	32	56	98	23	87
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left		A		
	Thru	P	P				Thru		A		
	Right	P	P				Right		A		
	Peds						Peds		X		
WB	Left		P			SB	Left	A	A		
	Thru		P				Thru	A	A		
	Right		P				Right	A	A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	53.0					4.0	19.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	461		0.33	0.630	4.3	A		
TR	2228	3537	0.44	0.630	5.3	A	5.2	A
Westbound								
L	282	523	0.11	0.540	8.7	A		
T	1885	3490	0.35	0.540	9.7	A	9.4	A
R	901	1669	0.17	0.540	8.5	A		
Northbound								
L	281	1407	0.02	0.200	32.2	C		
TR	332	1662	0.30	0.200	34.5	C	34.4	C
Southbound								
L	355		0.31	0.290	27.4	C		
T	551	1900	0.05	0.290	25.6	C	27.1	C
R	468	1615	0.21	0.290	27.0	C		

Intersection Delay = 10.3 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.39
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.45

2001 Build with Modifications
Phase I

Note 4: Includes Note 3 and the roadway improvements necessary to accommodate the traffic expected to be generated by the lumberyard on Parcel A of the proposed development and by the four take-out restaurants on Parcel B of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildMod Phase I
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	108	1151	28	65	1148	144	21	43	49	149	48	103
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left		A		
Thru	P	P				Thru		A		
Right	P	P				Right		A		
Peds						Peds		X		
WB Left		P			SB	Left	A	A		
Thru		P				Thru	A	A		
Right		P				Right	A	A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	4.0	53.0					4.0	19.0		
Yellow	3.0	3.0					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	254		0.47	0.630	6.6	A		
TR	2228	3537	0.59	0.630	6.6	A	6.6	A
Westbound								
L	201	373	0.36	0.540	14.2	B		
T	1885	3490	0.68	0.540	13.7	B	13.2	B
R	901	1669	0.18	0.540	8.6	A		
Northbound								
L	275	1373	0.08	0.200	32.7	C		
TR	338	1691	0.30	0.200	34.6	C	34.2	C
Southbound								
L	352		0.47	0.290	29.9	C		
T	551	1900	0.10	0.290	26.0	C	28.4	C
R	468	1615	0.24	0.290	27.4	C		

Intersection Delay = 12.7 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.57
Lost Time/Cycle, L = 16.00 sec Critical v/c(X) = 0.67

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildMod Phase I
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	242	1411	52	50	1057	279	15	91	42	253	80	223
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4
EB	Left	A	P		
	Thru	P	P		
	Right	P	P		
	Peds				
WB	Left		P		
	Thru		P		
	Right		P		
	Peds				
NB	Right				
SB	Right				
Green		9.0	46.0		
Yellow		3.0	3.0		
All Red		2.0	2.0		

		5	6	7	8
NB	Left		A		
	Thru		A		
	Right		A		
	Peds		X		
SB	Left	A	A		
	Thru	A	A		
	Right	A	A		
	Peds				
EB	Right				
WB	Right				
Green		10.0	15.0		
Yellow		3.0	3.0		
All Red		2.0	2.0		

Cycle Length: 100.0 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	310		0.87	0.610	38.2	D		
TR	2154	3531	0.75	0.610	10.3	B	14.3	B
Westbound								
L	110	235	0.51	0.470	31.6	C		
T	1640	3490	0.72	0.470	19.9	B	19.4	B
R	784	1669	0.40	0.470	15.5	B		
Northbound								
L	213	1329	0.08	0.160	35.9	D		
TR	280	1749	0.53	0.160	40.4	D	40.0	D
Southbound								
L	367		0.77	0.310	38.5	D		
T	589	1900	0.15	0.310	25.1	C	32.7	C
R	501	1615	0.50	0.310	28.9	C		

Intersection Delay = 19.9 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.68

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.77

2001 Build Phase II

Note 5: Includes Note 4 and the traffic expected to be generated by the restaurant and offices on Parcel A of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM Build Phase II
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	144	855	22	29	619	169	6	47	56	103	25	88
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left		A		
Thru	P	P				Thru		A		
Right	P	P				Right		A		
Peds						Peds		X		
WB Left		P			SB	Left	A	A		
Thru		P				Thru	A	A		
Right		P				Right	A	A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	4.0	53.0					4.0	19.0		
Yellow	3.0	3.0					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	452		0.35	0.630	4.4	A		
TR	2228	3537	0.44	0.630	5.3	A	5.2	A
Westbound								
L	282	522	0.11	0.540	8.7	A		
T	1885	3490	0.36	0.540	9.8	A	9.5	A
R	901	1669	0.21	0.540	8.9	A		
Northbound								
L	281	1404	0.02	0.200	32.2	C		
TR	337	1687	0.34	0.200	34.9	C	34.8	C
Southbound								
L	341		0.33	0.290	27.6	C		
T	551	1900	0.05	0.290	25.6	C	27.2	C
R	468	1615	0.21	0.290	27.1	C		

Intersection Delay = 10.5 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.41
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.46

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM Build Phase II
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	139	1173	28	65	1153	171	21	48	49	198	66	125
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left		A		
Thru	P	P				Thru		A		
Right	P	P				Right		A		
Peds						Peds		X		
WB Left		P			SB	Left	A	A		
Thru		P				Thru	A	A		
Right		P				Right	A	A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	4.0	53.0					4.0	19.0		
Yellow	3.0	3.0					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	252		0.61	0.630	10.0-	A		
TR	2228	3537	0.60	0.630	6.7	A	7.0	A
Westbound								
L	197	364	0.37	0.540	14.5	B		
T	1885	3490	0.68	0.540	13.7	B	13.2	B
R	901	1669	0.21	0.540	8.9	A		
Northbound								
L	270	1348	0.09	0.200	32.7	C		
TR	340	1698	0.31	0.200	34.7	C	34.3	C
Southbound								
L	348		0.63	0.290	34.2	C		
T	551	1900	0.13	0.290	26.3	C	30.9	C
R	468	1615	0.30	0.290	27.9	C		

Intersection Delay = 13.5 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.60

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.68

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat Build Phase II
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	311	1413	52	50	1059	315	15	95	42	279	83	274
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left		A		
Thru	P	P				Thru		A		
Right	P	P				Right		A		
Peds						Peds		X		
WB Left		P			SB	Left	A	A		
Thru		P				Thru	A	A		
Right		P				Right	A	A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	9.0	46.0					10.0	15.0		
Yellow	3.0	3.0					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	310		1.12	0.610	268.0	F		
TR	2154	3531	0.76	0.610	10.3	B	55.5	E
Westbound								
L	110	234	0.51	0.470	31.6	C		
T	1640	3490	0.72	0.470	19.9	B	19.5	B
R	784	1669	0.45	0.470	16.2	B		
Northbound								
L	212	1325	0.08	0.160	35.9	D		
TR	280	1752	0.55	0.160	40.9	D	40.4	D
Southbound								
L	363		0.85	0.310	52.8	D		
T	589	1900	0.16	0.310	25.1	C	40.0	D
R	501	1615	0.61	0.310	31.5	C		

Intersection Delay = 39.6 (sec/veh) Intersection LOS = D
Sum (v/s) critical = 1.01
Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 1.10

2001 Build with Modifications
Phase II

Note 6: Includes Note 5 and the roadway improvements necessary to accommodate the traffic expected to be generated by the restaurant and offices on Parcel A of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildMod Phase II
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	311	1413	52	50	1059	315	15	95	42	279	83	274
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A	P			NB Left		A		
Thru	P	P			Thru		A		
Right	P	P			Right		A		
Peds					Peds		X		
WB Left		P			SB Left	A	A		
Thru		P			Thru	A	A		
Right		P			Right	A	A		
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	16.0	39.0				12.0	13.0		
Yellow	3.0	3.0				3.0	3.0		
All Red	2.0	2.0				2.0	2.0		

Cycle Length: 100.0 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	392		0.88	0.610	40.8	D		
TR	2154	3531	0.76	0.610	10.3	B	15.7	B
Westbound								
L	108	270	0.52	0.400	37.9	D		
T	1396	3490	0.84	0.400	31.1	C	29.6	C
R	668	1669	0.52	0.400	23.3	C		
Northbound								
L	186	1325	0.09	0.140	37.7	D		
TR	245	1752	0.62	0.140	45.5	D	44.8	D
Southbound								
L	371		0.84	0.310	46.5	D		
T	589	1900	0.16	0.310	25.1	C	37.2	D
R	501	1615	0.61	0.310	31.5	C		

Intersection Delay = 25.2 (sec/veh) Intersection LOS = C

Sum (v/s) critical = 0.76

Lost Time/Cycle, L = 16.00 sec Critical v/c(X) = 0.91

2001 Build with Other Developments

Note 7: Includes Note 6, the traffic expected to be generated by the proposed Riverhead Centre shopping center to be located on C.R. 58 at Mill Road, and the traffic expected to be generated by the two proposed restaurants in Tanger Factory Outlet Center II. Also includes the roadway improvements to be made by the developers of Riverhead Centre and the Tanger restaurants.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildOther Alt A
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	144	882	22	29	637	169	6	47	56	103	25	88
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left		A		
	Thru	P	P				Thru		A		
	Right	P	P				Right		A		
	Peds						Peds		X		
WB	Left		P			SB	Left	A	A		
	Thru		P				Thru	A	A		
	Right		P				Right	A	A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	53.0					4.0	19.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	443		0.36	0.630	4.5	A		
TR	2228	3537	0.45	0.630	5.4	A	5.3	A
Westbound								
L	273	506	0.12	0.540	8.8	A		
T	1885	3490	0.38	0.540	9.9	A	9.6	A
R	901	1669	0.21	0.540	8.9	A		
Northbound								
L	281	1404	0.02	0.200	32.2	C		
TR	337	1687	0.34	0.200	34.9	C	34.8	C
Southbound								
L	341		0.33	0.290	27.6	C		
T	551	1900	0.05	0.290	25.6	C	27.2	C
R	468	1615	0.21	0.290	27.1	C		

Intersection Delay = 10.5 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.41
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.47

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildOther Alt A
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	139	1250	28	65	1233	171	21	48	49	198	66	125
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left		A		
Thru	P	P				Thru		A		
Right	P	P				Right		A		
Peds						Peds		X		
WB Left		P			SB	Left	A	A		
Thru		P				Thru	A	A		
Right		P				Right	A	A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	4.0	53.0					4.0	19.0		
Yellow	3.0	3.0					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	230		0.67	0.630	13.9	B		
TR	2229	3538	0.64	0.630	7.1	A	7.8	A
Westbound								
L	174	322	0.41	0.540	16.8	B		
T	1885	3490	0.73	0.540	14.7	B	14.1	B
R	901	1669	0.21	0.540	8.9	A		
Northbound								
L	270	1348	0.09	0.200	32.7	C		
TR	340	1698	0.31	0.200	34.7	C	34.3	C
Southbound								
L	348		0.63	0.290	34.2	C		
T	551	1900	0.13	0.290	26.3	C	30.9	C
R	468	1615	0.30	0.290	27.9	C		

Intersection Delay = 14.1 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.63

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.71

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildOther Alt A
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	311	1537	52	50	1177	315	15	95	42	279	83	274
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left		A		
Thru	P	P				Thru		A		
Right	P	P				Right		A		
Peds						Peds		X		
WB Left		P			SB	Left	A	A		
Thru		P				Thru	A	A		
Right		P				Right	A	A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	16.0	39.0					12.0	13.0		
Yellow	3.0	3.0					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	392		0.88	0.610	41.1	D		
TR	2155	3532	0.82	0.610	12.1	B	16.9	B
Westbound								
L	80	200	0.70	0.400	70.6	E		
T	1396	3490	0.94	0.400	42.5	D	39.5	D
R	668	1669	0.52	0.400	23.3	C		
Northbound								
L	186	1325	0.09	0.140	37.7	D		
TR	245	1752	0.62	0.140	45.5	D	44.8	D
Southbound								
L	371		0.84	0.310	46.5	D		
T	589	1900	0.16	0.310	25.1	C	37.2	D
R	501	1615	0.61	0.310	31.5	C		

Intersection Delay = 29.2 (sec/veh) Intersection LOS = C

Sum (v/s) critical = 0.80

Lost Time/Cycle, L = 16.00 sec Critical v/c(X) = 0.95

2001 Build with Modifications and Other Developments

Note 8: Includes Note 7 and additional roadway improvements needed to better accommodate the traffic expected to be generated by Riverhead Centre and the Tanger restaurants.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildModOther Alt A
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	311	1537	52	50	1177	315	15	95	42	279	83	274
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left		A		
Thru	P	P				Thru		A		
Right	P	P				Right		A		
Peds						Peds		X		
WB Left		P			SB	Left	A	A		
Thru		P				Thru	A	A		
Right		P				Right	A	A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	15.0	42.0					13.0	10.0		
Yellow	3.0	3.0					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	375		0.92	0.630	54.0	D		
TR	2225	3532	0.79	0.630	9.9	A	17.1	B
Westbound								
L	95	221	0.59	0.430	45.0	D		
T	1501	3490	0.87	0.430	30.2	C	28.6	C
R	718	1669	0.49	0.430	20.1	C		
Northbound								
L	146	1325	0.12	0.110	40.5	D		
TR	193	1752	0.79	0.110	66.1	E	63.6	E
Southbound								
L	365		0.85	0.290	50.7	D		
T	551	1900	0.17	0.290	26.6	C	40.5	D
R	468	1615	0.65	0.290	34.3	C		

Intersection Delay = 26.5 (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.80
Lost Time/Cycle, L = 16.00 sec Critical v/c(X) = 0.95

C.R. 58 at Mill Road

Dunn2/Riverhead Industrial-98124
File: July2000\Dividers.wp

2001 Build Phase I

Note 3: Includes Note 2, an increase in traffic of 3% per year to reflect normal background traffic growth, the traffic expected to be generated by the lumberyard on Parcel A of the proposed development, and the traffic expected to be generated by the four take-out restaurants on Parcel B of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM Build Phase I
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	0	1	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	30	985		21	761		79	29		32	41	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds	X			
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	48.5						8.5			
Yellow	4.5						4.5			
All Red	2.0						2.0			

Cycle Length: 70.0 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	436	617	0.08	0.707	1.0	A		
T	1348	1906	0.81	0.707	7.2	A	7.1	A
Westbound								
L	346	489	0.07	0.707	1.1	A		
T	1326	1875	0.64	0.707	3.6	A	3.5	A
Northbound								
LT	218	1608	0.55	0.136	31.3	C	31.3	C
Southbound								
LT	217	1601	0.38	0.136	28.7	C	28.7	C

Intersection Delay = 7.8 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.65
Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 0.77

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/6/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM Build Phase I
N/S St: Mill 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	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	80	1060		38	1124		222	121		20	36	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	P				NB Left	A			
Thru	P				Thru	A			
Right					Right				
Peds					Peds	X			
WB Left	P				SB Left	A			
Thru	P				Thru	A			
Right					Right				
Peds	X				Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	55.5					11.5			
Yellow	4.5					4.5			
All Red	2.0					2.0			

Cycle Length: 80.0 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	298	422	0.30	0.706	3.6	A		
T	1346	1906	0.88	0.706	11.1	B	10.6	B
Westbound								
L	319	451	0.13	0.706	1.7	A		
T	1324	1875	0.94	0.706	21.4	C	20.8	C
Northbound								
LT	258	1651	1.48	0.156	913.0	F	913.0	F
Southbound								
LT	254	1623	0.24	0.156	30.1	C	30.1	C

Intersection Delay = 129.9 (sec/veh) Intersection LOS = F
Sum (v/s) critical = 0.90
Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 1.04

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat Build Phase I
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	0	1	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	106	1356		30	1257		101	62		28	74	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds	X			
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	55.5						11.5			
Yellow	4.5						4.5			
All Red	2.0						2.0			

Cycle Length: 80.0 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	258	366	0.46	0.706	7.0	A		
T	1346	1906	1.12	0.706	229.9	F	213.7	F
Westbound								
L	233	330	0.14	0.706	2.1	A		
T	1324	1875	1.06	0.706	123.3	F	120.5	F
Northbound								
LT	258	1648	0.70	0.156	40.6	D	40.6	D
Southbound								
LT	256	1640	0.44	0.156	31.8	C	31.8	C

Intersection Delay = 158.4 (sec/veh) Intersection LOS = F
Sum (v/s) critical = 0.90
Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 1.04

2001 Build with Modifications
Phase I

Note 4: Includes Note 3 and the roadway improvements necessary to accommodate the traffic expected to be generated by the lumberyard on Parcel A of the proposed development and by the four take-out restaurants on Parcel B of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildMod Phase I
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	1	0	1	1	0	1	1	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	30	985		21	761		79	29		32	41	
Lane Width	10.0	11.5		10.0	11.6		12.0	12.0		12.0	12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A	A		
Thru	P					Thru	A	A		
Right						Right				
Peds						Peds	X	X		
WB Left	P				SB	Left		A		
Thru	P					Thru		A		
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	64.0						4.0	17.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						2.0	2.0		

Cycle Length: 100.0 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	386	594	0.09	0.650	3.3	A		
T	2307	3550	0.47	0.650	4.6	A	4.5	A
Westbound								
L	297	457	0.08	0.650	3.3	A		
T	1219	1875	0.69	0.650	8.2	A	8.1	A
Northbound								
L	336		0.26	0.270	28.6	C		
T	513	1900	0.06	0.270	27.2	C	28.2	C
Southbound								
L	252	1399	0.14	0.180	34.8	C		
T	342	1900	0.13	0.180	34.6	C	34.7	C

Intersection Delay = 8.4 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.53
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.60

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildMod Phase I
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	1	0	1	1	0	1	1	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	80	1060		38	1124		222	121		20	36	
Lane Width	10.0	11.5		10.0	11.6		12.0	12.0		12.0	12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A	A		
	Thru	P					Thru	A	A		
	Right						Right				
	Peds						Peds	X	X		
WB	Left	P				SB	Left		A		
	Thru	P					Thru		A		
	Right						Right				
	Peds	X					Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		67.0						13.0	7.0		
Yellow		3.0						3.0	3.0		
All Red		2.0						0.0	2.0		

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	g/C	Lane Group Delay	LOS	Approach Delay	LOS
Eastbound								
L	279	410	0.32	0.680	5.2	A		
T	2414	3550	0.49	0.680	3.3	A	3.4	A
Westbound								
L	289	425	0.15	0.680	3.0	A		
T	1275	1875	0.98	0.680	40.0	D	38.7	D
Northbound								
L	329		0.75	0.240	43.5	D		
T	456	1900	0.29	0.240	31.4	C	39.2	D
Southbound								
L	102	1275	0.22	0.080	44.1	D		
T	152	1900	0.26	0.080	44.2	D	44.1	D

Intersection Delay = 24.0 (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.82
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.94

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildMod Phase I
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	1	0	1	1	0	1	1	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	106	1365		30	1257		101	62		28	74	
Lane Width	10.0	11.5		10.0	11.6		12.0	12.0		12.0	12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A	A		
Thru	P					Thru	A	A		
Right						Right				
Peds						Peds	X	X		
WB Left	P				SB	Left		A		
Thru	P					Thru		A		
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	75.0						4.0	8.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						0.0	2.0		

Cycle Length: 100.0 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	278	366	0.42	0.760	4.8	A		
T	2698	3550	0.56	0.760	0.9	A	1.1	A
Westbound								
L	230	302	0.14	0.760	1.3	A		
T	1425	1875	0.98	0.760	32.7	C	32.0	C
Northbound								
L	166		0.67	0.160	48.3	D		
T	304	1900	0.23	0.160	37.0	D	44.0	D
Southbound								
L	122	1353	0.25	0.090	43.5	D		
T	171	1900	0.48	0.090	45.4	D	44.9	D

Intersection Delay = 18.1 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.84
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.95

2001 Build Phase II

Note 5: Includes Note 4 and the traffic expected to be generated by the restaurant and offices on Parcel A of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM Build Phase II
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	1	0	1	1	0	1	1	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	30	992		21	812		79	29		32	41	
Lane Width	10.0	11.5		10.0	11.6		12.0	12.0		12.0	12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	P				NB Left	A	A		
Thru	P				Thru	A	A		
Right					Right				
Peds					Peds	X	X		
WB Left	P				SB Left		A		
Thru	P				Thru		A		
Right					Right				
Peds	X				Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	64.0					4.0	17.0		
Yellow	3.0					3.0	3.0		
All Red	2.0					2.0	2.0		

Cycle Length: 100.0 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	365	561	0.09	0.650	3.3	A		
T	2307	3550	0.48	0.650	4.6	A	4.6	A
Westbound								
L	294	453	0.08	0.650	3.3	A		
T	1219	1875	0.74	0.650	9.3	A	9.2	A
Northbound								
L	336		0.26	0.270	28.6	C		
T	513	1900	0.06	0.270	27.2	C	28.2	C
Southbound								
L	252	1399	0.14	0.180	34.8	C		
T	342	1900	0.13	0.180	34.6	C	34.7	C

Intersection Delay = 8.8 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.56
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.63

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM Build Phase II
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	1	0	1	1	0	1	1	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	80	1131		38	1156		222	121		20	36	
Lane Width	10.0	11.5		10.0	11.6		12.0	12.0		12.0	12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A	A		
Thru	P					Thru	A	A		
Right						Right				
Peds						Peds	X	X		
WB Left	P				SB	Left		A		
Thru	P					Thru		A		
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	67.0						13.0	7.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						0.0	2.0		

Cycle Length: 100.0 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	269	396	0.33	0.680	5.5	A		
T	2414	3550	0.52	0.680	3.5	A	3.6	A
Westbound								
L	267	393	0.16	0.680	3.2	A		
T	1275	1875	1.01	0.680	62.7	E	60.8	E
Northbound								
L	329		0.75	0.240	43.5	D		
T	456	1900	0.29	0.240	31.4	C	39.2	D
Southbound								
L	102	1275	0.22	0.080	44.1	D		
T	152	1900	0.26	0.080	44.2	D	44.1	D

Intersection Delay = 33.1 (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.84
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.96

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat Build Phase II
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	1	0	1	1	0	1	1	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	106	1384		30	1295		101	62		28	74	
Lane Width	10.0	11.5		10.0	11.6		12.0	12.0		12.0	12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A	A		
Thru	P					Thru	A	A		
Right						Right				
Peds						Peds	X	X		
WB Left	P				SB	Left		A		
Thru	P					Thru		A		
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	75.0						4.0	8.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						0.0	2.0		

Cycle Length: 100.0 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	268	352	0.44	0.760	5.3	A		
T	2698	3550	0.57	0.760	0.9	A	1.2	A
Westbound								
L	225	296	0.15	0.760	1.4	A		
T	1425	1875	1.01	0.760	57.6	E	56.3	E
Northbound								
L	166		0.67	0.160	48.3	D		
T	304	1900	0.23	0.160	37.0	D	44.0	D
Southbound								
L	122	1353	0.25	0.090	43.5	D		
T	171	1900	0.48	0.090	45.4	D	44.9	D

Intersection Delay = 28.6 (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.86
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.98

2001 Build with Modifications
Phase II

Note 6: Includes Note 5 and the roadway improvements necessary to accommodate the traffic expected to be generated by the restaurant and offices on Parcel A of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/10/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildMod Phase II
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	1	0	1	1	0	1	1	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	80	1131		38	1156		222	121		20	36	
Lane Width	10.0	11.5		10.0	11.6		12.0	12.0		12.0	12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A	A		
Thru	P					Thru	A	A		
Right						Right				
Peds						Peds	X	X		
WB Left	P				SB	Left		A		
Thru	P					Thru		A		
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	69.0						13.0	5.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						0.0	2.0		

Cycle Length: 100.0 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	285	407	0.31	0.700	4.3	A		
T	2485	3550	0.51	0.700	2.5	A	2.6	A
Westbound								
L	275	393	0.15	0.700	2.5	A		
T	1312	1875	0.98	0.700	37.2	D	36.1	D
Northbound								
L	329		0.75	0.220	45.2	D		
T	418	1900	0.32	0.220	33.2	C	41.0	D
Southbound								
L	76	1275	0.29	0.060	47.1	D		
T	114	1900	0.35	0.060	47.0	D	47.0	D

Intersection Delay = 22.5 (sec/veh) Intersection LOS = C

Sum (v/s) critical = 0.84

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.96

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildMod Phase II
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	1	0	1	1	0	1	1	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	106	1384		30	1295		101	62		28	74	
Lane Width	10.0	11.5		10.0	11.6		12.0	12.0		12.0	12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A	A		
Thru	P					Thru	A	A		
Right						Right				
Peds						Peds	X	X		
WB Left	P				SB	Left		A		
Thru	P					Thru		A		
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	77.0						4.0	6.0		
Yellow	3.0						3.0	3.0		
All Red	2.0						0.0	2.0		

Cycle Length: 100.0 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	275	352	0.43	0.780	4.9	A		
T	2769	3550	0.56	0.780	0.8	A	1.1	A
Westbound								
L	231	296	0.14	0.780	1.3	A		
T	1462	1875	0.98	0.780	34.6	C	33.9	C
Northbound								
L	166		0.67	0.140	50.0	D		
T	266	1900	0.26	0.140	38.9	D	45.8	D
Southbound								
L	95	1353	0.33	0.070	46.3	D		
T	133	1900	0.62	0.070	53.8	D	51.8	D

Intersection Delay = 19.2 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.86
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.98

2001 Build with Other Developments

Note 7: Includes Note 6, the traffic expected to be generated by the proposed Riverhead Centre shopping center to be located on C.R. 58 at Mill Road, and the traffic expected to be generated by the two proposed restaurants in Tanger Factory Outlet Center II. Also includes the roadway improvements to be made by the developers of Riverhead Centre and the Tanger restaurants.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildOther Alt A
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	T		L	T	R	L	T	
Volume	49	1000	5	38	817		79	55	28	32	60	
Lane Width	10.0	11.5	12.0	10.0	11.0		10.0	12.0	10.0	10.0	12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB	Left	A	P		NB	Left	A	A		
	Thru		P			Thru		A		
	Right		P			Right		A		
	Peds					Peds		X		
WB	Left	A	P		SB	Left	A	A		
	Thru		P			Thru		A		
	Right					Right				
	Peds					Peds				
NB	Right				EB	Right				
SB	Right				WB	Right				
Green		4.0	55.0				4.0	17.0		
Yellow		3.0	3.0				3.0	3.0		
All Red		2.0	2.0				2.0	2.0		

Cycle Length: 100.0 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	383		0.14	0.650	3.2	A		
T	1988	3550	0.56	0.560	10.5	B	10.1	B
R	904	1615	0.01	0.560	6.4	A		
Westbound								
L	316		0.13	0.650	3.5	A		
T	1954	3490	0.46	0.560	9.5	A	9.2	A
Northbound								
L	331		0.27	0.270	28.6	C		
T	342	1900	0.18	0.180	35.0-	C	31.8	C
R	271	1507	0.11	0.180	34.5	C		
Southbound								
L	336		0.11	0.270	27.4	C		
T	342	1900	0.20	0.180	35.1	D	32.4	C

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

Sum (v/s) critical = 0.43

Lost Time/Cycle, L = 16.00 sec Critical v/c(X) = 0.51

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildOther Alt A
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	T		L	T	R	L	T	
Volume	136	1152	5	110	1178		222	198	44	20	116	
Lane Width	10.0	11.5	12.0	10.0	11.0		10.0	12.0	10.0	10.0	12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A	A		
	Thru		P				Thru		A		
	Right		P				Right		A		
	Peds						Peds		X		
WB	Left	A	P			SB	Left	A	A		
	Thru		P				Thru		A		
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	50.0					4.0	22.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	222		0.68	0.600	16.6	B		
T	1810	3550	0.71	0.510	16.5	B	16.5	B
R	824	1615	0.01	0.510	9.1	A		
Westbound								
L	230		0.53	0.600	9.7	A		
T	1780	3490	0.74	0.510	17.2	B	16.6	B
Northbound								
L	346		0.71	0.320	36.9	D		
T	437	1900	0.50	0.230	34.5	C	35.3	D
R	347	1507	0.14	0.230	30.8	C		
Southbound								
L	275		0.08	0.320	24.1	C		
T	437	1900	0.30	0.230	32.2	C	31.0	C

Intersection Delay = 19.9 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.66
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.75

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/7/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildOther Alt A
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	T		L	T	R	L	T	
Volume	196	1418	0	134	1328		101	186	95	28	191	
Lane Width	10.0	11.5	12.0	10.0	11.0		10.0	12.0	10.0	10.0	12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A	A		
	Thru		P				Thru		A		
	Right		P				Right		A		
	Peds						Peds		X		
WB	Left	A	P			SB	Left	A	A		
	Thru		P				Thru		A		
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	50.0					4.0	22.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	190		1.15	0.600	340.6	F		
T	1810	3550	0.87	0.510	22.7	C	61.4	E
R	824	1615	0.00	0.510	9.0	A		
Westbound								
L	190		0.78	0.600	34.1	C		
T	1780	3490	0.83	0.510	20.5	C	21.7	C
Northbound								
L	281		0.40	0.320	26.3	C		
T	437	1900	0.47	0.230	34.1	C	31.6	C
R	347	1507	0.31	0.230	32.4	C		
Southbound								
L	285		0.11	0.320	24.2	C		
T	437	1900	0.49	0.230	34.2	C	32.9	C

Intersection Delay = 40.8 (sec/veh) Intersection LOS = D
Sum (v/s) critical = 0.99
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 1.13

2001 Build with Modifications and Other Developments

Note 8: Includes Note 7 and additional roadway improvements needed to better accommodate the traffic expected to be generated by Riverhead Centre and the Tanger restaurants.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildModOther Alt A
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	T		L	T	R	L	T	
Volume	49	1000	5	38	817		79	55	28	32	60	
Lane Width	10.0	11.5	12.0	10.0	11.0		10.0	12.0	10.0	10.0	12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A	A		
	Thru		P				Thru		A		
	Right		P				Right		A		
	Peds						Peds		X		
WB	Left	A	P			SB	Left	A	A		
	Thru		P				Thru		A		
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	54.0					4.0	18.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	374		0.14	0.640	3.6	A		
T	1953	3550	0.57	0.550	11.3	B	10.9	B
R	888	1615	0.01	0.550	6.9	A		
Westbound								
L	308		0.14	0.640	3.9	A		
T	1920	3490	0.47	0.550	10.2	B	9.9	A
Northbound								
L	344		0.26	0.280	27.8	C		
T	361	1900	0.17	0.190	34.1	C	30.9	C
R	286	1507	0.11	0.190	33.7	C		
Southbound								
L	349		0.10	0.280	26.7	C		
T	361	1900	0.19	0.190	34.3	C	31.6	C

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

Sum (v/s) critical = 0.43

Lost Time/Cycle, L = 16.00 sec Critical v/c(X) = 0.51

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildModOther Alt A
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	T		L	T	R	L	T	
Volume	136	1152	5	110	1178		222	198	44	20	116	
Lane Width	10.0	11.5	12.0	10.0	11.0		10.0	12.0	10.0	10.0	12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A	A		
	Thru		P				Thru		A		
	Right		P				Right		A		
	Peds						Peds		X		
WB	Left	A	P			SB	Left	A	A		
	Thru		P				Thru		A		
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	49.0					4.0	23.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	215		0.70	0.590	19.3	B		
T	1775	3550	0.72	0.500	17.6	B	17.7	B
R	808	1615	0.01	0.500	9.6	A		
Westbound								
L	222		0.55	0.590	11.1	B		
T	1745	3490	0.75	0.500	18.4	B	17.8	B
Northbound								
L	359		0.69	0.330	34.5	C		
T	456	1900	0.48	0.240	33.5	C	33.6	C
R	362	1507	0.14	0.240	30.0	C		
Southbound								
L	288		0.08	0.330	23.4	C		
T	456	1900	0.28	0.240	31.3	C	30.2	C

Intersection Delay = 20.6 (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.65
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.74

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildModOther Alt A
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	T		L	T	R	L	T	
Volume	196	1418	0	134	1328		101	186	95	28	191	
Lane Width	10.0	11.5	12.0	10.0	11.0		10.0	12.0	10.0	10.0	12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A	A		
	Thru		P				Thru		A		
	Right		P				Right		A		
	Peds						Peds		X		
WB	Left	A	P			SB	Left	A	A		
	Thru		P				Thru		A		
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		9.0	47.0					4.0	20.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	g/C	Lane Group Delay	LOS	Approach Delay	LOS
Eastbound								
L	274		0.80	0.620	30.5	C		
T	1704	3550	0.92	0.480	31.3	C	31.2	C
R	775	1615	0.00	0.480	10.8	B		
Westbound								
L	274		0.54	0.620	12.6	B		
T	1675	3490	0.88	0.480	26.3	C	25.1	C
Northbound								
L	256		0.44	0.300	28.1	C		
T	399	1900	0.52	0.210	36.2	D	33.6	C
R	316	1507	0.34	0.210	34.2	C		
Southbound								
L	260		0.12	0.300	25.7	C		
T	399	1900	0.53	0.210	36.5	D	35.1	D

Intersection Delay = 29.3 (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.74
Lost Time/Cycle, L = 16.00 sec Critical v/c(X) = 0.88

N.Y.S. Route 25 at Kroemer Avenue/Forge Road

2001 Build Phase I

Note 3: Includes Note 2, an increase in traffic of 3% per year to reflect normal background traffic growth, the traffic expected to be generated by the lumberyard on Parcel A of the proposed development, and the traffic expected to be generated by the four take-out restaurants on Parcel B of the proposed development.

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: DEA/jmc
Intersection: NYS Route 25 & Kroemer Avenue
Count Date: 7/14/00
Time Period: 2001AM BuildPhI

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	3	4	5	6	7	8	9	10	11	12
Volume:	37	307	1	10	198	70	8	11	23	65	6	28
HFR:	41	341	1	11	220	78	9	12	26	72	7	31
PHF:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHV:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:

Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Lane usage for movements 7,8&9 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	307	198
Shared ln volume, major rt vehicles:	1	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Length of study period, hrs: 0.25

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	4	7	8	9	10	11	12
t c,base	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t c,hv	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c,g			0.2	0.2	0.1	0.2	0.2	0.1
G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t 3,lt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
t c,T:								
1 stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c								
1 stage	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2

Follow Up Time Calculations:

Movement	1	4	7	8	9	10	11	12
t f,base	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3
t f,HV	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t f	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	342	259
Potential Capacity	705	785
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	705	785
Probability of Queue free St.	0.96	0.96

Step 2: LT from Major St.	4	1
Conflicting Flows	342	220
Potential Capacity	1228	1361
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1228	1361
Probability of Queue free St.	0.99	0.97
Maj. L Shared ln. Prob. Queue Free St.	0.99	0.96

Step 3: TH from Minor St.	8	11
Conflicting Flows	666	706
Potential Capacity	383	363
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.95	0.95
Movement Capacity	365	346
Probability of Queue free St.	0.97	0.98

Step 4: LT from Minor St.	7	10
Conflicting Flows	708	724
Potential Capacity	352	344
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.93	0.92
Maj. L, Min T Adj. Imp Factor.	0.95	0.94
Cap. Adj. factor due to Impeding mvmnt	0.91	0.91
Movement Capacity	321	311

Worksheet 8 Shared Lane Calculations

Shared Lane Calculations

```
Movement                  7    8    9    10   11   12
-----------------------------------------------------
                    |--------------||----------   |
                    |              ||          |
                    |              ||          |
v(vph)                 9   12   26   72    7   31
Movement Capacity         321  365  705  311  346  785
Shared Lane Capacity      479            314
-----------------------------------------------------
```

Worksheet 10 delay,queue length, and LOS

```
Movement             1     4     7     8     9    10    11    12
-----------------------------------------------------------------
                    |--------------||----------   |
                    |              ||          |
                    |              ||          |
v(vph)               41    11    47                79
C m(vph)             1361  1228  479               314
v/c                0.03  0.01  0.10              0.25
95% queue length
Control Delay        7.7   8.0   13.3              20.3
LOS                  A     A     B                 C
Approach Delay                        13.3               20.3
Approach LOS                          B                  C
-----------------------------------------------------------------
```

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.97	0.99
V i1	307	198
V i2	1	0
S i1	1700	1700
S i2	1700	1700
P* 0j	0.96	0.99
D maj left	7.7	8.0
N number major st lanes	1	1
Delay, rank 1 mvmts	0.3	0.1

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: DEA/jmc
Intersection: NYS Route 25 & Kroemer Avenue
Count Date: 7/14/00
Time Period: 2001PM BuildPhI

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	3	4	5	6	7	8	9	10	11	12
Volume:	21	380	4	48	508	81	4	12	29	88	31	36
HFR:	23	422	4	53	564	90	4	13	32	98	34	40
PHF:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHV:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:

Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Lane usage for movements 7,8&9 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	380	508
Shared ln volume, major rt vehicles:	4	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Length of study period, hrs: 0.25

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	4	7	8	9	10	11	12
t c,base	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t c,hv	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c,g			0.2	0.2	0.1	0.2	0.2	0.1
G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t 3,lt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
t c,T:								
1 stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c								
1 stage	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2

Follow Up Time Calculations:

Movement	1	4	7	8	9	10	11	12
t f,base	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3
t f,HV	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t f	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	424	609
Potential Capacity	634	498
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	634	498
Probability of Queue free St.	0.95	0.92

Step 2: LT from Major St.	4	1
Conflicting Flows	427	564
Potential Capacity	1143	1017
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1143	1017
Probability of Queue free St.	0.95	0.98
Maj. L Shared ln. Prob. Queue Free St.	0.93	0.97

Step 3: TH from Minor St.	8	11
Conflicting Flows	1142	1189
Potential Capacity	202	189
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.91	0.91
Movement Capacity	183	172
Probability of Queue free St.	0.93	0.80

Step 4: LT from Minor St.	7	10
Conflicting Flows	1204	1210
Potential Capacity	162	161
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.72	0.84
Maj. L, Min T Adj. Imp Factor.	0.79	0.88
Cap. Adj. factor due to Impeding mvmnt	0.72	0.83
Movement Capacity	117	134

Worksheet 8 Shared Lane Calculations

Shared Lane Calculations

```
              |-------------------||-------------    |
              |                    ||           |
              |                    ||           |
```

Movement	7	8	9	10	11	12
v(vph)	4	13	32	98	34	40
Movement Capacity	117	183	634	134	172	498
Shared Lane Capacity	310			142		

Worksheet 10 delay,queue length, and LOS

```
              |-------------------||-------------    |
              |                    ||           |
              |                    ||           |
```

Movement	1	4	7	8	9	10	11	12
v(vph)	23	53	50			132		
C m(vph)	1017	1143	310			142		
v/c	0.02	0.05	0.16			0.93		
95% queue length								
Control Delay	8.6	8.3	18.9			119.0		
LOS	A	A	C			F		
Approach Delay				18.9			119.0	
Approach LOS				C			F	

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.98	0.95
V i1	380	508
V i2	4	0
S i1	1700	1700
S i2	1700	1700
P* 0j	0.97	0.93
D maj left	8.6	8.3
N number major st lanes	1	1
Delay, rank 1 mvmts	0.3	0.6

2001 Build with Modifications
Phase I

Note 4: Includes Note 3 and the roadway improvements necessary to accommodate the traffic expected to be generated by the lumberyard on Parcel A of the proposed development and by the four take-out restaurants on Parcel B of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: NYS Route 25 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/14/00
E/W St: NYS Route 25

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildMod Phase I
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LT			LTR			LT	
Volume	37	307	1	10	198		8	11	23	65	6	
Lane Width		10.0			10.0			10.0			10.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right	P					Right	A			
Peds						Peds				
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	42.0						8.0			
Yellow	3.0						3.0			
All Red	2.0						2.0			

Cycle Length: 60.0 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	1092	1524	0.35	0.717	4.1	A	4.1	A
Westbound								
LT	1248	1742	0.19	0.717	3.1	A	3.1	A
Northbound								
LTR	205	1367	0.23	0.150	23.0	C	23.0	C
Southbound								
LT	189	1261	0.42	0.150	24.6	C	24.6	C

Intersection Delay = 7.2 (sec/veh) Intersection LOS = A

Sum (v/s) critical = 0.31

Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 0.36

HCS: Signalized Intersections Release 3.1c

Inter: NYS Route 25 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/14/00
E/W St: NYS Route 25

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildMod Phase I
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LT			LTR			LT	
Volume	21	380	4	48	508		4	12	29	88	31	
Lane Width		10.0			10.0			10.0			10.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right	P					Right	A			
Peds						Peds				
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	42.0						8.0			
Yellow	3.0						3.0			
All Red	2.0						2.0			

Cycle Length: 60.0 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	1101	1536	0.41	0.717	4.5	A	4.5	A
Westbound								
LT	1194	1666	0.52	0.717	5.4	A	5.4	A
Northbound								
LTR	210	1400	0.23	0.150	23.0	C	23.0	C
Southbound								
LT	200	1330	0.66	0.150	32.2	C	32.2	C

Intersection Delay = 8.6 (sec/veh) Intersection LOS = A

Sum (v/s) critical = 0.47

Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 0.54

2001 Build Phase II

Note 5: Includes Note 4 and the traffic expected to be generated by the restaurant and offices on Parcel A of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: NYS Route 25 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/14/00
E/W St: NYS Route 25

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM Build Phase II
N/S St: Kroemer Avenue

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			LT			LTR			LT	
Volume	37	307	1	10	198		8	11	23	67	6	
Lane Width		10.0			10.0			10.0			10.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right	P					Right	A			
Peds						Peds				
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	42.0						8.0			
Yellow	3.0						3.0			
All Red	2.0						2.0			

Cycle Length: 60.0 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	1092	1524	0.35	0.717	4.1	A	4.1	A
Westbound								
LT	1248	1742	0.19	0.717	3.1	A	3.1	A
Northbound								
LTR	205	1367	0.23	0.150	23.0	C	23.0	C
Southbound								
LT	189	1260	0.43	0.150	24.7	C	24.7	C

Intersection Delay = 7.2 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.32
Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 0.36

HCS: Signalized Intersections Release 3.1c

Inter: NYS Route 25 & Kroemer Avenue   City/St: Riverhead, NY
Analyst: DEA/jmc   Proj #: 98124
Date: 7/14/00   Period: 2001 PM Build Phase II
E/W St: NYS Route 25   N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LT			LTR			LT	
Volume	21	380	4	48	508		4	12	29	106	31	
Lane Width		10.0			10.0			10.0			10.0	
RTOR Vol			0						0			

Duration 1.00   Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	P				NB Left	A			
Thru	P				Thru	A			
Right	P				Right	A			
Peds					Peds				
WB Left	P				SB Left	A			
Thru	P				Thru	A			
Right					Right				
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	42.0					8.0			
Yellow	3.0					3.0			
All Red	2.0					2.0			

Cycle Length: 60.0 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	1101	1536	0.41	0.717	4.5	A	4.5	A
Westbound								
LT	1194	1666	0.52	0.717	5.4	A	5.4	A
Northbound								
LTR	211	1405	0.23	0.150	23.0	C	23.0	C
Southbound								
LT	197	1315	0.77	0.150	43.5	D	43.5	D

Intersection Delay = 10.4 (sec/veh)   Intersection LOS = B
Sum (v/s) critical = 0.49
Lost Time/Cycle, L = 8.00 sec   Critical v/c(X) = 0.56

2001 Build with Modifications
Phase II

Note 6: Includes Note 5 and the roadway improvements necessary to accommodate the traffic expected to be generated by the restaurant and offices on Parcel A of the proposed development.

HCS: Signalized Intersections Release 3.1c

Inter: NYS Route 25 & Kroemer Avenue City/St: Riverhead, NY
Analyst: DEA/jmc Proj #: 98124
Date: 7/14/00 Period: 2001 AM BuildMod Phase II
E/W St: NYS Route 25 N/S St: Kroemer Avenue

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			LT			LTR			LT	
Volume	37	307	1	10	198		8	11	23	67	6	
Lane Width		10.0			10.0			10.0			10.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right	P					Right	A			
Peds						Peds				
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	41.0						9.0			
Yellow	3.0						3.0			
All Red	2.0						2.0			

Cycle Length: 60.0 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	1067	1524	0.36	0.700	4.5	A	4.5	A
Westbound								
LT	1219	1742	0.19	0.700	3.5	A	3.5	A
Northbound								
LTR	229	1373	0.21	0.167	22.0	C	22.0	C
Southbound								
LT	210	1260	0.39	0.167	23.4	C	23.4	C

Intersection Delay = 7.4 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.32
Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 0.36

Alternative B
Build-Out Including 369,000+ S.F. of Office Space on Parcel A

C.R. 58 at the Tanger Factory Outlet Center II Driveway

2001 Build

Note 9: Includes Note 2, the traffic expected to be generated by 369,000+ square feet of office space on Parcel A, and the traffic expected to be generated by four take-out restaurants on Parcel B.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM Build Alt B
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	74	1088	29	21	558	93	2	1		12	1	10
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		P			NB	Left	A			
Thru		P				Thru	A			
Right		P				Right				
Peds		X				Peds	X			
WB Left	A	P			SB	Left	A			
Thru	P	P				Thru	A			
Right	P	P				Right	A			
Peds	X	X				Peds	X			
NB Right					EB	Right				
SB Right					WB	Right				
Green	9.0	28.5					16.0			
Yellow	3.0	4.5					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 70.0 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	311	739	0.26	0.421	13.5	B		
T	1471	3490	0.82	0.421	21.2	C	20.4	C
R	681	1615	0.05	0.421	10.5	B		
Westbound								
L	356		0.06	0.621	4.4	A		
T	2169	3490	0.29	0.621	3.5	A	3.5	A
R	1004	1615	0.10	0.621	3.0	A		
Northbound								
L	346	1424	0.01	0.243	20.1	C		
LT	461	1900	0.00	0.243	20.1	C	20.1	C
Southbound								
L	349	1439	0.04	0.243	20.3	C		
TR	398	1639	0.03	0.243	20.2	C	20.3	C

Intersection Delay = 14.4 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.37
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.47

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM Build Alt B
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	13	720	86	184	911	17	303	1		82	1	65
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right				
	Peds		X				Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds	X	X				Peds	X			
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		15.0	28.5					20.0			
Yellow		3.0	4.5					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 80.0 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	185	502	0.08	0.369	16.0	B		
T	1287	3490	0.62	0.369	21.4	C	20.8	C
R	596	1615	0.16	0.369	16.3	B		
Westbound								
L	496		0.41	0.619	5.0	A		
T	2159	3490	0.47	0.619	5.1	A	5.0	A
R	999	1615	0.02	0.619	3.1	A		
Northbound								
L	354	1348	0.95	0.262	85.4	F		
LT	499	1900	0.00	0.262	21.8	C	85.2	F
Southbound								
L	378	1439	0.24	0.262	23.6	C		
TR	425	1619	0.17	0.262	23.0	C	23.3	C

Intersection Delay = 21.8 (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.60
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.74

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat Build Alt B
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	10	1185	156	182	1034	12	354	1		10	1	8
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		P			NB	Left	A			
Thru		P				Thru	A			
Right		P				Right				
Peds		X				Peds	X			
WB Left	A	P			SB	Left	A			
Thru	P	P				Thru	A			
Right	P	P				Right	A			
Peds	X	X				Peds	X			
NB Right					EB	Right				
SB Right					WB	Right				
Green	15.0	28.5					20.0			
Yellow	3.0	4.5					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 80.0 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	162	438	0.07	0.369	15.9	B		
T	1287	3490	1.02	0.369	99.3	F	89.3	F
R	596	1615	0.29	0.369	17.8	B		
Westbound								
L	438		0.46	0.619	7.8	A		
T	2159	3490	0.53	0.619	5.5	A	5.8	A
R	999	1615	0.01	0.619	3.1	A		
Northbound								
L	375	1427	1.05	0.262	177.2	F		
LT	499	1900	0.00	0.262	21.8	C	176.8	F
Southbound								
L	378	1439	0.03	0.262	22.0	C		
TR	432	1644	0.02	0.262	21.9	C	21.9	C

Intersection Delay = 64.7 (sec/veh) Intersection LOS = E
Sum (v/s) critical = 0.77
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.95

2001 Build with Modifications

Note 10: Includes Note 9 and the roadway improvements necessary to accommodate the traffic expected to be generated by 369,000+ square feet of office space on Parcel A and four take-out restaurants on Parcel B.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildMod Alt B
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	74	1088	29	21	558	93	2	1		12	1	10
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		P			NB	Left	A			
Thru		P				Thru	A			
Right		P				Right				
Peds		X				Peds	X			
WB Left	A	P			SB	Left	A			
Thru	P	P				Thru	A			
Right	P	P				Right	A			
Peds	X	X				Peds	X			
NB Right					EB	Right				
SB Right					WB	Right				
Green	4.0	63.5					16.0			
Yellow	3.0	4.5					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 100.0 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	477	739	0.17	0.645	4.0	A		
T	2251	3490	0.54	0.645	5.3	A	5.2	A
R	1042	1615	0.03	0.645	3.0	A		
Westbound								
L	335		0.07	0.735	0.4	A		
T	2565	3490	0.24	0.735	0.6	A	0.6	A
R	1187	1615	0.09	0.735	0.5	A		
Northbound								
L	242	1424	0.01	0.170	34.5	C		
LT	323	1900	0.00	0.170	34.5	C	34.5	C
Southbound								
L	245	1439	0.05	0.170	34.8	C		
TR	279	1639	0.04	0.170	34.8	C	34.8	C

Intersection Delay = 3.9 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.37
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.43

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildMod Alt B
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	13	720	86	184	911	17	303	1		82	1	65
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4
EB	Left		P		
	Thru		P		
	Right		P		
	Peds		X		
WB	Left	A	P		
	Thru	P	P		
	Right	P	P		
	Peds	X	X		
NB	Right				
SB	Right				
Green		4.0	45.5		
Yellow		3.0	4.5		
All Red		2.0	2.0		

		5	6	7	8
NB	Left	A			
	Thru	A			
	Right				
	Peds	X			
SB	Left	A			
	Thru	A			
	Right	A			
	Peds	X			
EB	Right				
WB	Right				
Green		34.0			
Yellow		3.0			
All Red		2.0			

Cycle Length: 100.0 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	233	502	0.06	0.465	12.5	B		
T	1623	3490	0.49	0.465	16.2	B	15.8	B
R	751	1615	0.13	0.465	12.8	B		
Westbound								
L	323		0.63	0.555	17.1	B		
T	1937	3490	0.52	0.555	10.4	B	11.4	B
R	896	1615	0.02	0.555	6.8	A		
Northbound								
L	472	1348	0.71	0.350	33.4	C		
LT	665	1900	0.00	0.350	21.1	C	33.3	C
Southbound								
L	504	1439	0.18	0.350	22.7	C		
TR	567	1619	0.13	0.350	22.2	C	22.5	C

Intersection Delay = 16.4 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.55
Lost Time/Cycle, L = 9.50 sec Critical v/c(X) = 0.60

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat Build Alt B
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	10	1185	156	182	1034	12	354	1		10	1	8
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		P			NB	Left	A			
Thru		P				Thru	A			
Right		P				Right				
Peds		X				Peds	X			
WB Left	A	P			SB	Left	A			
Thru	P	P				Thru	A			
Right	P	P				Right	A			
Peds	X	X				Peds	X			
NB Right					EB	Right				
SB Right					WB	Right				
Green	9.0	41.5					33.0			
Yellow	3.0	4.5					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 100.0 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	186	438	0.06	0.425	15.3	B		
T	1483	3490	0.89	0.425	32.2	C	30.3	C
R	686	1615	0.25	0.425	16.9	B		
Westbound								
L	249		0.81	0.565	36.8	D		
T	1972	3490	0.58	0.565	10.5	B	14.3	B
R	912	1615	0.01	0.565	6.2	A		
Northbound								
L	485	1427	0.81	0.340	40.9	D		
LT	646	1900	0.00	0.340	21.8	C	40.8	D
Southbound								
L	489	1439	0.02	0.340	22.0	C		
TR	559	1644	0.02	0.340	21.9	C	21.9	C

Intersection Delay = 24.9 (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.76
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.89

2001 Build with Other Developments

Note 11: Includes Note 10, the traffic expected to be generated by the proposed Riverhead Centre Shopping Center to be located on C.R. 58 at Mill Road, and the traffic expected to be generated by the two proposed restaurants in Tanger Factory Outlet Center II. Also includes the roadway improvements to be made by the developers of Riverhead Centre and the Tanger restaurants.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildOther Alt B
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	74	1115	29	21	576	93	2	1		12	1	10
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right				
	Peds		X				Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds	X	X				Peds	X			
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	63.5					16.0			
Yellow		3.0	4.5					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 100.0 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	468	725	0.18	0.645	4.0	A		
T	2251	3490	0.55	0.645	5.4	A	5.3	A
R	1042	1615	0.03	0.645	3.0	A		
Westbound								
L	326		0.07	0.735	0.4	A		
T	2565	3490	0.25	0.735	0.6	A	0.6	A
R	1187	1615	0.09	0.735	0.5	A		
Northbound								
L	242	1424	0.01	0.170	34.5	C		
LT	323	1900	0.00	0.170	34.5	C	34.5	C
Southbound								
L	245	1439	0.05	0.170	34.8	C		
TR	279	1639	0.04	0.170	34.8	C	34.8	C

Intersection Delay = 4.0 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.38
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.44

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildOther Alt B
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	13	797	86	184	991	17	303	1		82	1	65
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4
EB	Left		P		
	Thru		P		
	Right		P		
	Peds		X		
WB	Left	A	P		
	Thru	P	P		
	Right	P	P		
	Peds	X	X		
NB	Right				
SB	Right				
Green		4.0	45.5		
Yellow		3.0	4.5		
All Red		2.0	2.0		

		5	6	7	8
NB	Left	A			
	Thru	A			
	Right				
	Peds	X			
SB	Left	A			
	Thru	A			
	Right	A			
	Peds	X			
EB	Right				
WB	Right				
Green		34.0			
Yellow		3.0			
All Red		2.0			

Cycle Length: 100.0 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	213	458	0.07	0.465	12.7	B		
T	1623	3490	0.55	0.465	17.0	B	16.5	B
R	751	1615	0.13	0.465	12.8	B		
Westbound								
L	292		0.70	0.555	22.1	C		
T	1937	3490	0.57	0.555	10.9	B	12.6	B
R	896	1615	0.02	0.555	6.8	A		
Northbound								
L	472	1348	0.71	0.350	33.4	C		
LT	665	1900	0.00	0.350	21.1	C	33.3	C
Southbound								
L	504	1439	0.18	0.350	22.7	C		
TR	567	1619	0.13	0.350	22.2	C	22.5	C

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

Sum (v/s) critical = 0.58

Lost Time/Cycle, L = 9.50 sec Critical v/c(X) = 0.65

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildOther Alt B
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	10	1309	156	182	1152	12	354	1		10	1	8
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right				
	Peds		X				Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru	P	P				Thru	A			
	Right	P	P				Right	A			
	Peds	X	X				Peds	X			
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		9.0	41.5					33.0			
Yellow		3.0	4.5					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 100.0 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	163	384	0.07	0.425	15.5	B		
T	1483	3490	0.98	0.425	56.5	E	52.0	D
R	686	1615	0.25	0.425	16.9	B		
Westbound								
L	249		0.81	0.565	37.8	D		
T	1972	3490	0.65	0.565	11.4	B	14.9	B
R	912	1615	0.01	0.565	6.2	A		
Northbound								
L	485	1427	0.81	0.340	40.9	D		
LT	646	1900	0.00	0.340	21.8	C	40.8	D
Southbound								
L	489	1439	0.02	0.340	22.0	C		
TR	559	1644	0.02	0.340	21.9	C	21.9	C

Intersection Delay = 35.0- (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.80
Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.94

2001 Build with Modifications and Other Developments

Note 12: Includes Note 11 and additional roadway improvements needed to better accommodate the traffic expected to be generated by the Riverhead Centre and the Tanger restaurants.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Tanger Driveway
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildModOther Alt B
N/S St: Tanger Driveway

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	1	1	1	0	1	1	0
LGConfig	L	T	R	L	T	R	L	LT		L	TR	
Volume	10	1309	156	182	1152	12	354	1		10	1	8
Lane Width	10.0	11.0	12.0	10.0	11.0	12.0	12.0	12.0		12.0	12.0	
RTOR Vol			0			0						0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left		P			NB Left	A			
Thru		P			Thru	A			
Right		P			Right				
Peds		X			Peds	X			
WB Left	A	P			SB Left	A			
Thru	P	P			Thru	A			
Right	P	P			Right	A			
Peds	X	X			Peds	X			
NB Right					EB Right				
SB Right					WB Right				
Green	9.0	43.5				31.0			
Yellow	3.0	4.5				3.0			
All Red	2.0	2.0				2.0			

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	g/C	Lane Group Delay	LOS	Approach Delay	LOS
Eastbound								
L	171	384	0.06	0.445	14.1	B		
T	1553	3490	0.94	0.445	37.3	D	34.8	C
R	719	1615	0.24	0.445	15.3	B		
Westbound								
L	249		0.81	0.585	36.5	D		
T	2042	3490	0.63	0.585	9.8	A	13.3	B
R	945	1615	0.01	0.585	5.3	A		
Northbound								
L	457	1427	0.86	0.320	49.6	D		
LT	608	1900	0.00	0.320	23.1	C	49.5	D
Southbound								
L	460	1439	0.02	0.320	23.3	C		
TR	526	1644	0.02	0.320	23.3	C	23.3	C

Intersection Delay = 27.3 (sec/veh) Intersection LOS = C

Sum (v/s) critical = 0.80

Lost Time/Cycle, L = 15.00 sec Critical v/c(X) = 0.94

C.R. 58 at Kroemer Avenue

WHB\Riverhead Industrial-98124
File: July2000\Dividers.wp

2001 Build

Note 9: Includes Note 2, the traffic expected to be generated by 369,000+ square feet of office space on Parcel A, and the traffic expected to be generated by four take-out restaurants on Parcel B.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM Build Alt B
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	165	842	22	29	666	200	6	87	56	77	14	82
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0	53.0					25.0			
Yellow		3.0	3.0					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 100.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	g/C	Lane Group Delay	LOS	Approach Delay	LOS
Eastbound								
L	481		0.38	0.660	3.3	A		
TR	1910	3537	0.50	0.540	11.1	B	9.9	A
Westbound								
L	399		0.08	0.660	2.8	A		
T	1885	3490	0.39	0.540	10.0+	B	9.6	A
R	901	1669	0.25	0.540	9.2	A		
Northbound								
L	369	1419	0.02	0.260	27.5	C		
TR	450	1729	0.35	0.260	30.6	C	30.5	C
Southbound								
L	285	1095	0.30	0.260	30.3	C		
T	494	1900	0.03	0.260	27.6	C	29.6	C
R	420	1615	0.22	0.260	29.3	C		

Intersection Delay = 12.7 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.46

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.53

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM Build Alt B
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	95	1180	28	65	1118	87	21	17	49	203	73	116
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		7.0	53.0					25.0			
Yellow		3.0	3.0					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 100.0 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	314		0.34	0.660	4.2	A		
TR	1911	3538	0.70	0.540	14.1	B	13.4	B
Westbound								
L	288		0.25	0.660	4.3	A		
T	1885	3490	0.66	0.540	13.3	B	12.5	B
R	901	1669	0.11	0.540	8.1	A		
Northbound								
L	348	1338	0.07	0.260	27.9	C		
TR	425	1633	0.17	0.260	28.9	C	28.6	C
Southbound								
L	350	1348	0.65	0.260	37.1	D		
T	494	1900	0.16	0.260	28.8	C	33.5	C
R	420	1615	0.31	0.260	30.2	C		

Intersection Delay = 16.1 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.61

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.69

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat Build Alt B
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	202	1333	52	50	969	112	15	16	42	104	13	188
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Peds	X			
WB Left	A	P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	7.0	53.0					25.0			
Yellow	3.0	3.0					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 100.0 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	361		0.62	0.660	6.9	A		
TR	1906	3530	0.81	0.540	17.0	B	15.8	B
Westbound								
L	241		0.23	0.660	5.4	A		
T	1885	3490	0.57	0.540	12.0	B	11.3	B
R	901	1669	0.14	0.540	8.3	A		
Northbound								
L	370	1422	0.05	0.260	27.8	C		
TR	426	1637	0.15	0.260	28.7	C	28.5	C
Southbound								
L	353	1358	0.33	0.260	30.5	C		
T	494	1900	0.03	0.260	27.6	C	31.5	C
R	420	1615	0.50	0.260	32.4	C		

Intersection Delay = 16.0 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.67
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.76

2001 Build with Modifications

Note 10: Includes Note 9 and the roadway improvements necessary to accommodate the traffic expected to be generated by 369,000+ square feet of office space on Parcel A of the proposed development and four take-out restaurants on Parcel B.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildMod Alt B
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	95	1180	28	65	1118	87	21	17	49	203	73	116
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4
EB	Left	A	P		
	Thru		P		
	Right		P		
	Peds				
WB	Left	A	P		
	Thru		P		
	Right		P		
	Peds				
NB	Right				
SB	Right				
Green		4.0	54.0		
Yellow		3.0	3.0		
All Red		2.0	2.0		

		5	6	7	8
NB	Left	A			
	Thru	A			
	Right	A			
	Peds	X			
SB	Left	A			
	Thru	A			
	Right	A			
	Peds				
EB	Right				
WB	Right				
Green		27.0			
Yellow		3.0			
All Red		2.0			

Cycle Length: 100.0 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	271		0.39	0.640	5.3	A		
TR	1946	3538	0.69	0.550	13.2	B	12.6	B
Westbound								
L	245		0.29	0.640	5.3	A		
T	1920	3490	0.65	0.550	12.4	B	11.7	B
R	918	1669	0.11	0.550	7.6	A		
Northbound								
L	375	1338	0.06	0.280	26.4	C		
TR	457	1633	0.16	0.280	27.3	C	27.1	C
Southbound								
L	377	1348	0.60	0.280	33.8	C		
T	532	1900	0.15	0.280	27.2	C	31.0	C
R	452	1615	0.29	0.280	28.5	C		

Intersection Delay = 15.0 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.61

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.69

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildMod Alt B
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	202	1333	52	50	969	112	15	16	42	104	13	188
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	58.0					23.0			
Yellow		3.0	3.0					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 100.0 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	350		0.64	0.680	6.4	A		
TR	2083	3530	0.74	0.590	11.3	B	10.7	B
Westbound								
L	227		0.25	0.680	3.5	A		
T	2059	3490	0.52	0.590	8.2	A	7.8	A
R	985	1669	0.13	0.590	5.7	A		
Northbound								
L	341	1422	0.05	0.240	29.3	C		
TR	393	1637	0.17	0.240	30.3	C	30.1	C
Southbound								
L	326	1358	0.36	0.240	32.2	C		
T	456	1900	0.03	0.240	29.1	C	33.6	C
R	388	1615	0.54	0.240	34.7	C		

Intersection Delay = 12.4 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.64

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.72

2001 Build with Other Developments

Note 11: Includes Note 10, the traffic expected to be generated by the proposed Riverhead Centre Shopping Center to be located on C.R. 58 at Mill Road, and the traffic expected to be generated by the two proposed restaurants in Tanger Factory Outlet Center II. Also includes the roadway improvements to be made by the developers of Riverhead Centre and the Tanger restaurants.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildOther Alt B
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	165	869	22	29	684	200	6	87	56	77	14	82
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	60.0					21.0			
Yellow		3.0	3.0					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 100.0 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	486		0.38	0.700	1.8	A		
TR	2158	3537	0.46	0.610	6.5	A	5.8	A
Westbound								
L	396		0.08	0.700	1.4	A		
T	2129	3490	0.36	0.610	5.8	A	5.6	A
R	1018	1669	0.22	0.610	5.3	A		
Northbound								
L	312	1419	0.02	0.220	30.6	C		
TR	380	1729	0.42	0.220	34.3	C	34.1	C
Southbound								
L	230	1045	0.37	0.220	34.2	C		
T	418	1900	0.04	0.220	30.7	C	33.2	C
R	355	1615	0.26	0.220	32.6	C		

Intersection Delay = 9.6 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.44
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.50

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildOther Alt B
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	95	1257	28	65	1198	51	21	17	49	203	73	116
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds	X			
WB	Left	A	P			SB	Left	A			
	Thru		P				Thru	A			
	Right		P				Right	A			
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	54.0					27.0			
Yellow		3.0	3.0					3.0			
All Red		2.0	2.0					2.0			

Cycle Length: 100.0 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	247		0.43	0.640	6.0	A		
TR	1946	3538	0.73	0.550	14.1	B	13.5	B
Westbound								
L	223		0.32	0.640	5.9	A		
T	1920	3490	0.69	0.550	13.3	B	12.7	B
R	918	1669	0.06	0.550	7.3	A		
Northbound								
L	375	1338	0.06	0.280	26.4	C		
TR	457	1633	0.16	0.280	27.3	C	27.1	C
Southbound								
L	377	1348	0.60	0.280	33.8	C		
T	532	1900	0.15	0.280	27.2	C	31.0	C
R	452	1615	0.29	0.280	28.5	C		

Intersection Delay = 15.7 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.63
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.72

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildOther Alt B
N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	1	2	1	1	1	0	1	1	1
LGConfig	L	TR		L	T	R	L	TR		L	T	R
Volume	202	1457	52	50	1087	112	15	16	42	104	13	188
Lane Width	10.0	11.5		10.0	11.0	13.0	12.0	11.0		12.0	12.0	12.0
RTOR Vol			0			0			0			0

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Peds	X			
WB Left	A	P			SB	Left	A			
Thru		P				Thru	A			
Right		P				Right	A			
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	4.0	58.0					23.0			
Yellow	3.0	3.0					3.0			
All Red	2.0	2.0					2.0			

Cycle Length: 100.0 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	311		0.72	0.680	11.0	B		
TR	2083	3531	0.81	0.590	13.1	B	12.9	B
Westbound								
L	197		0.28	0.680	4.5	A		
T	2059	3490	0.59	0.590	8.9	A	8.5	A
R	985	1669	0.13	0.590	5.7	A		
Northbound								
L	341	1422	0.05	0.240	29.3	C		
TR	393	1637	0.17	0.240	30.3	C	30.1	C
Southbound								
L	326	1358	0.36	0.240	32.2	C		
T	456	1900	0.03	0.240	29.1	C	33.6	C
R	388	1615	0.54	0.240	34.7	C		

Intersection Delay = 13.5 (sec/veh) Intersection LOS = B

Sum (v/s) critical = 0.67

Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.77

C.R. 58 at Mill Road

2001 Build

Note 9: Includes Note 2, the traffic expected to be generated by 369,000+ square feet of office space on Parcel A, and the traffic expected to be generated by four take-out restaurants on Parcel B.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM Build Alt B
N/S St: Mill 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	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	30	953		21	890		79	29		32	41	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A			
	Thru	P					Thru	A			
	Right						Right				
	Peds						Peds	X			
WB	Left	P				SB	Left	A			
	Thru	P					Thru	A			
	Right						Right				
	Peds	X					Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		48.5						8.5			
Yellow		4.5						4.5			
All Red		2.0						2.0			

Cycle Length: 70.0 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	382	540	0.09	0.707	1.2	A		
T	1348	1906	0.79	0.707	6.3	A	6.2	A
Westbound								
L	357	505	0.06	0.707	1.1	A		
T	1326	1875	0.75	0.707	5.4	A	5.3	A
Northbound								
LT	218	1608	0.55	0.136	31.3	C	31.3	C
Southbound								
LT	217	1601	0.38	0.136	28.7	C	28.7	C

Intersection Delay = 7.9 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.63
Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 0.75

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM Build Alt B
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	0	1	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	80	1143		38	1037		222	121		20	36	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds	X			
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	55.5						11.5			
Yellow	4.5						4.5			
All Red	2.0						2.0			

Cycle Length: 80.0 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	327	463	0.27	0.706	3.0	A		
T	1346	1906	0.94	0.706	21.2	C	20.0+	C
Westbound								
L	292	414	0.14	0.706	1.9	A		
T	1324	1875	0.87	0.706	10.8	B	10.5	B
Northbound								
LT	258	1651	1.48	0.156	913.0	F	913.0	F
Southbound								
LT	254	1623	0.24	0.156	30.1	C	30.1	C

Intersection Delay = 130.0 (sec/veh) Intersection LOS = F

Sum (v/s) critical = 0.90

Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 1.04

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat Build Alt B
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	0	1	0	0	1	0
LGConfig	L	T		L	T			LT			LT	
Volume	106	1129		30	1002		101	62		28	74	
Lane Width	10.0	12.1		10.0	11.6			16.0			12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds	X			
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds	X					Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	55.5						11.5			
Yellow	4.5						4.5			
All Red	2.0						2.0			

Cycle Length: 80.0 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	339	480	0.35	0.706	3.9	A		
T	1346	1906	0.93	0.706	18.4	B	17.2	B
Westbound								
L	297	420	0.11	0.706	1.6	A		
T	1324	1875	0.84	0.706	8.9	A	8.7	A
Northbound								
LT	258	1648	0.70	0.156	40.6	D	40.6	D
Southbound								
LT	256	1640	0.44	0.156	31.8	C	31.8	C

Intersection Delay = 15.8 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.77
Lost Time/Cycle, L = 11.00 sec Critical v/c(X) = 0.89

2001 Build with Modifications

Note 10: Includes Note 9 and the roadway improvements necessary to accommodate the traffic expected to be generated by 369,000+ square feet of office space on Parcel A and four take-out restaurants on Parcel B.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildMod Alt B
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	1	1	0	1	1	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	30	953		21	890		79	29		32	41	
Lane Width	10.0	12.1		10.0	11.6		12.0	12.0		12.0	12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4
EB Left	P			
Thru	P			
Right				
Peds				
WB Left	P			
Thru	P			
Right				
Peds	X			
NB Right				
SB Right				
Green	71.0			
Yellow	3.0			
All Red	2.0			

	5	6	7	8
NB Left	A			
Thru	A			
Right				
Peds	X			
SB Left	A			
Thru	A			
Right				
Peds				
EB Right				
WB Right				
Green	19.0			
Yellow	3.0			
All Red	2.0			

Cycle Length: 100.0 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	389	540	0.08	0.720	1.1	A		
T	1372	1906	0.77	0.720	5.8	A	5.7	A
Westbound								
L	364	505	0.06	0.720	1.0	A		
T	1350	1875	0.73	0.720	5.0	A	4.9	A
Northbound								
L	267	1333	0.33	0.200	35.0-	C		
T	380	1900	0.08	0.200	32.6	C	34.4	C
Southbound								
L	280	1399	0.13	0.200	33.1	C		
T	380	1900	0.12	0.200	32.9	C	33.0	C

Intersection Delay = 7.8 (sec/veh) Intersection LOS = A

Sum (v/s) critical = 0.62

Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 0.68

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildMod Alt B
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	1	1	0	1	1	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	80	1143		38	1037		222	121		20	36	
Lane Width	10.0	12.1		10.0	11.6		12.0	12.0		12.0	12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	P				NB	Left	A			
	Thru	P					Thru	A			
	Right						Right				
	Peds						Peds	X			
WB	Left	P				SB	Left	A			
	Thru	P					Thru	A			
	Right						Right				
	Peds	X					Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		67.0						23.0			
Yellow		3.0						3.0			
All Red		2.0						2.0			

Cycle Length: 100.0 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	307	452	0.29	0.680	4.5	A		
T	1296	1906	0.98	0.680	39.8	D	37.5	D
Westbound								
L	273	401	0.15	0.680	3.1	A		
T	1275	1875	0.90	0.680	16.8	B	16.3	B
Northbound								
L	333	1389	0.74	0.240	44.2	D		
T	456	1900	0.29	0.240	31.4	C	39.7	D
Southbound								
L	229	954	0.10	0.240	29.7	C		
T	456	1900	0.09	0.240	29.6	C	29.6	C

Intersection Delay = 29.2 (sec/veh) Intersection LOS = C
Sum (v/s) critical = 0.84
Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 0.92

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildMod Alt B
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	1	0	1	1	0	1	1	0	1	1	0
LGConfig	L	T		L	T		L	T		L	T	
Volume	106	1129		30	1002		101	62		28	74	
Lane Width	10.0	12.1		10.0	11.6		12.0	12.0		12.0	12.0	
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	P				NB Left	A			
Thru	P				Thru	A			
Right					Right				
Peds					Peds	X			
WB Left	P				SB Left	A			
Thru	P				Thru	A			
Right					Right				
Peds	X				Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	69.0					21.0			
Yellow	3.0					3.0			
All Red	2.0					2.0			

Cycle Length: 100.0 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	336	480	0.35	0.700	4.4	A		
T	1334	1906	0.94	0.700	21.5	C	20.0+	C
Westbound								
L	293	419	0.11	0.700	2.0	A		
T	1312	1875	0.85	0.700	10.3	B	10.1	B
Northbound								
L	253	1148	0.44	0.220	34.9	C		
T	418	1900	0.17	0.220	31.8	C	33.7	C
Southbound								
L	267	1215	0.12	0.220	31.4	C		
T	418	1900	0.20	0.220	32.0	C	31.9	C

Intersection Delay = 17.3 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.76
Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 0.82

2001 Build with Other Developments

Note 11: Includes Note 10, the traffic expected to be generated by the proposed Riverhead Centre Shopping Center to be located on C.R. 58 at Mill Road, and the traffic expected to be generated by the two proposed restaurants in Tanger Factory Outlet Center II. Also includes the roadway improvements to be made by the developers of Riverhead Centre and the Tanger restaurants.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildOther Alt B
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	T		L	T	R	L	T	
Volume	49	961	5	38	895		79	55	28	32	60	
Lane Width	10.0	11.5	12.0	10.0	11.0		10.0	12.0	10.0	10.0	12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A	A		
	Thru		P				Thru		A		
	Right		P				Right		A		
	Peds						Peds				
WB	Left	A	P			SB	Left	A	A		
	Thru		P				Thru		A		
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	55.0					4.0	17.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	353		0.15	0.650	3.3	A		
T	1988	3550	0.54	0.560	10.2	B	9.9	A
R	904	1615	0.01	0.560	6.4	A		
Westbound								
L	329		0.13	0.650	3.4	A		
T	1954	3490	0.51	0.560	9.9	A	9.6	A
Northbound								
L	331		0.27	0.270	28.6	C		
T	342	1900	0.18	0.180	35.0-	C	31.8	C
R	271	1507	0.11	0.180	34.5	C		
Southbound								
L	336		0.11	0.270	27.4	C		
T	342	1900	0.20	0.180	35.1	D	32.4	C

Intersection Delay = 12.3 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.42
Lost Time/Cycle, L = 16.00 sec Critical v/c(X) = 0.50

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildOther Alt B
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	T		L	T	R	L	T	
Volume	136	1164	5	110	1059		222	198	44	20	116	
Lane Width	10.0	11.5	12.0	10.0	11.0		10.0	12.0	10.0	10.0	12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A	A		
	Thru		P				Thru		A		
	Right		P				Right		A		
	Peds						Peds				
WB	Left	A	P			SB	Left	A	A		
	Thru		P				Thru		A		
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	50.0					4.0	22.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	257		0.59	0.600	10.4	B		
T	1810	3550	0.71	0.510	16.7	B	16.0	B
R	824	1615	0.01	0.510	9.1	A		
Westbound								
L	227		0.54	0.600	10.0+	B		
T	1780	3490	0.66	0.510	15.6	B	15.1	B
Northbound								
L	346		0.71	0.320	36.9	D		
T	437	1900	0.50	0.230	34.5	C	35.3	D
R	347	1507	0.14	0.230	30.8	C		
Southbound								
L	275		0.08	0.320	24.1	C		
T	437	1900	0.30	0.230	32.2	C	31.0	C

Intersection Delay = 19.2 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.65
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.73

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 Sat BuildOther Alt B
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	T		L	T	R	L	T	
Volume	196	1163	0	134	1035		101	186	95	28	191	
Lane Width	10.0	11.5	12.0	10.0	11.0		10.0	12.0	10.0	10.0	12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A	P			NB	Left	A	A		
	Thru		P				Thru		A		
	Right		P				Right		A		
	Peds						Peds				
WB	Left	A	P			SB	Left	A	A		
	Thru		P				Thru		A		
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		4.0	50.0					4.0	22.0		
Yellow		3.0	3.0					3.0	3.0		
All Red		2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	265		0.82	0.600	28.8	C		
T	1810	3550	0.71	0.510	16.6	B	18.4	B
R	824	1615	0.00	0.510	9.0	A		
Westbound								
L	227		0.66	0.600	14.8	B		
T	1780	3490	0.65	0.510	15.3	B	15.2	B
Northbound								
L	281		0.40	0.320	26.3	C		
T	437	1900	0.47	0.230	34.1	C	31.6	C
R	347	1507	0.31	0.230	32.4	C		
Southbound								
L	285		0.11	0.320	24.2	C		
T	437	1900	0.49	0.230	34.2	C	32.9	C

Intersection Delay = 19.8 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.61
Lost Time/Cycle, L = 16.00 sec Critical v/c(X) = 0.73

2001 Build with Modifications and Other Developments

Note 12: Includes Note 11 and additional roadway improvements needed to better accommodate the traffic expected to be generated by the Riverhead Centre and the Tanger restaurants.

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/8/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 AM BuildModOther Alt B
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	T		L	T	R	L	T	
Volume	49	961	5	38	895		79	55	28	32	60	
Lane Width	10.0	11.5	12.0	10.0	11.0		10.0	12.0	10.0	10.0	12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A	A		
Thru		P				Thru		A		
Right		P				Right		A		
Peds						Peds				
WB Left	A	P			SB	Left	A	A		
Thru		P				Thru		A		
Right						Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	4.0	54.0					4.0	18.0		
Yellow	3.0	3.0					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	345		0.16	0.640	3.8	A		
T	1953	3550	0.55	0.550	11.0	B	10.6	B
R	888	1615	0.01	0.550	6.9	A		
Westbound								
L	321		0.13	0.640	3.8	A		
T	1920	3490	0.52	0.550	10.7	B	10.4	B
Northbound								
L	344		0.26	0.280	27.8	C		
T	361	1900	0.17	0.190	34.1	C	30.9	C
R	286	1507	0.11	0.190	33.7	C		
Southbound								
L	349		0.10	0.280	26.7	C		
T	361	1900	0.19	0.190	34.3	C	31.6	C

Intersection Delay = 12.9 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.42
Lost Time/Cycle, L = 16.00 sec Critical v/c(X) = 0.50

HCS: Signalized Intersections Release 3.1c

Inter: CR58 & Mill Road
Analyst: DEA/jmc
Date: 7/11/00
E/W St: CR58

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildModOther Alt B
N/S St: Mill Road

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	1	1	2	0	1	1	1	1	1	0
LGConfig	L	T	R	L	T		L	T	R	L	T	
Volume	136	1164	5	110	1059		222	198	44	20	116	
Lane Width	10.0	11.5	12.0	10.0	11.0		10.0	12.0	10.0	10.0	12.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	A	P			NB	Left	A	A		
Thru		P				Thru		A		
Right		P				Right		A		
Peds						Peds				
WB Left	A	P			SB	Left	A	A		
Thru		P				Thru		A		
Right						Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	4.0	49.0					4.0	23.0		
Yellow	3.0	3.0					3.0	3.0		
All Red	2.0	2.0					2.0	2.0		

Cycle Length: 100.0 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	249		0.61	0.590	11.9	B		
T	1775	3550	0.73	0.500	17.8	B	17.1	B
R	808	1615	0.01	0.500	9.6	A		
Westbound								
L	219		0.56	0.590	11.5	B		
T	1745	3490	0.67	0.500	16.6	B	16.1	B
Northbound								
L	359		0.69	0.330	34.5	C		
T	456	1900	0.48	0.240	33.5	C	33.6	C
R	362	1507	0.14	0.240	30.0	C		
Southbound								
L	288		0.08	0.330	23.4	C		
T	456	1900	0.28	0.240	31.3	C	30.2	C

Intersection Delay = 19.8 (sec/veh) Intersection LOS = B
Sum (v/s) critical = 0.64
Lost Time/Cycle, L = 12.00 sec Critical v/c(X) = 0.73

N.Y.S. Route 25 at Kroemer Avenue/Forge Road

2001 Build

Note 9: Includes Note 2, the traffic expected to be generated by 369,000+ square feet of office space on Parcel A of the proposed development, and the traffic expected to be generated by four take-out restaurants on Parcel B.

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: DEA/jmc
Intersection: NYS Route 25 & Kroemer Avenue
Count Date: 7/14/00
Time Period: 2001AMBuildAltB

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	3	4	5	6	7	8	9	10	11	12
Volume:	37	307	1	10	198	125	8	11	23	56	6	28
HFR:	41	341	1	11	220	139	9	12	26	62	7	31
PHF:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHV:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:

Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Lane usage for movements 7,8&9 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	307	198
Shared ln volume, major rt vehicles:	1	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Length of study period, hrs: 0.25

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	4	7	8	9	10	11	12
t c,base	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t c,hv	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c,g			0.2	0.2	0.1	0.2	0.2	0.1
G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t 3,lt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
t c,T:								
1 stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c								
1 stage	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2

Follow Up Time Calculations:

Movement	1	4	7	8	9	10	11	12
t f,base	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3
t f,HV	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t f	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	342	289
Potential Capacity	705	754
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	705	754
Probability of Queue free St.	0.96	0.96

Step 2: LT from Major St.	4	1
Conflicting Flows	342	220
Potential Capacity	1228	1361
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1228	1361
Probability of Queue free St.	0.99	0.97
Maj. L Shared ln. Prob. Queue Free St.	0.99	0.96

Step 3: TH from Minor St.	8	11
Conflicting Flows	666	736
Potential Capacity	383	349
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.95	0.95
Movement Capacity	365	333
Probability of Queue free St.	0.97	0.98

Step 4: LT from Minor St.	7	10
Conflicting Flows	739	754
Potential Capacity	336	328
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.93	0.92
Maj. L, Min T Adj. Imp Factor.	0.95	0.94
Cap. Adj. factor due to Impeding mvmnt	0.91	0.91
Movement Capacity	306	297

Worksheet 8 Shared Lane Calculations

Shared Lane Calculations

Movement	7	8	9	10	11	12
v(vph)	9	12	26	62	7	31
Movement Capacity	306	365	705	297	333	754
Shared Lane Capacity	472			300		

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	41	11	47			69		
C m(vph)	1361	1228	472			300		
v/c	0.03	0.01	0.10			0.23		
95% queue length								
Control Delay	7.7	8.0	13.5			20.5		
LOS	A	A	B			C		
Approach Delay				13.5			20.5	
Approach LOS				B			C	

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.97	0.99
V i1	307	198
V i2	1	0
S i1	1700	1700
S i2	1700	1700
P* 0j	0.96	0.99
D maj left	7.7	8.0
N number major st lanes	1	1
Delay, rank 1 mvmts	0.3	0.1

HCS: Unsignalized Intersections Release 3.1c

TWO-WAY STOP CONTROL(TWSC) ANALYSIS

Analyst: DEA/jmc
Intersection: NYS Route 25 & Kroemer Avenue
Count Date: 7/14/00
Time Period: 2001PMBuildAltB

Intersection Orientation: East-West Major St.

Vehicle Volume Data:

Movements:	1	2	3	4	5	6	7	8	9	10	11	12
Volume:	21	380	4	48	508	55	4	12	29	113	31	36
HFR:	23	422	4	53	564	61	4	13	32	126	34	40
PHF:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHV:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Pedestrian Volume Data:

Movements:

Flow:
Lane width:
Walk speed:
% Blockage:

Median Type: None
# of vehicles: 0

Flared approach Movements:

# of vehicles: Northbound 0
# of vehicles: Southbound 0

Lane usage for movements 1,2&3 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 4,5&6 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Lane usage for movements 7,8&9 approach:

	Lane 1			Lane 2			Lane 3	
L	T	R	L	T	R	L	T	R
Y	Y	Y	N	N	N	N	N	N

Channelized: N
Grade: 0.00

Lane usage for movements 10,11&12 approach:

Lane 1			Lane 2			Lane 3		
L	T	R	L	T	R	L	T	R
Y	Y	N	N	N	N	N	N	N

Channelized: Y
Grade: 0.00

Data for Computing Effect of Delay to Major Street Vehicles:

	Eastbound	Westbound
Shared ln volume, major th vehicles:	380	508
Shared ln volume, major rt vehicles:	4	0
Sat flow rate, major th vehicles:	1700	1700
Sat flow rate, major rt vehicles:	1700	1700
Number of major street through lanes:	1	1

Length of study period, hrs: 0.25

Worksheet 4 Critical Gap and Follow-up time calculation.

Critical Gap Calculations:

Movement	1	4	7	8	9	10	11	12
t c,base	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2
t c,hv	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c,g			0.2	0.2	0.1	0.2	0.2	0.1
G	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t 3,lt	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
t c,T:								
1 stage	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t c								
1 stage	4.1	4.1	7.1	6.5	6.2	7.1	6.5	6.2

Follow Up Time Calculations:

Movement	1	4	7	8	9	10	11	12
t f,base	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3
t f,HV	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
P hv	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
t f	2.2	2.2	3.5	4.0	3.3	3.5	4.0	3.3

Worksheet 6 Impedance and capacity equations

Step 1: RT from Minor St.	9	12
Conflicting Flows	424	595
Potential Capacity	634	508
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	634	508
Probability of Queue free St.	0.95	0.92

Step 2: LT from Major St.	4	1
Conflicting Flows	427	564
Potential Capacity	1143	1017
Pedestrian Impedance Factor	1.00	1.00
Movement Capacity	1143	1017
Probability of Queue free St.	0.95	0.98
Maj. L Shared ln. Prob. Queue Free St.	0.93	0.97

Step 3: TH from Minor St.	8	11
Conflicting Flows	1142	1175
Potential Capacity	202	193
Pedestrian Impedance Factor	1.00	1.00
Cap. Adj. factor due to Impeding mvmnt	0.91	0.91
Movement Capacity	183	175
Probability of Queue free St.	0.93	0.80

Step 4: LT from Minor St.	7	10
Conflicting Flows	1190	1196
Potential Capacity	166	165
Pedestrian Impedance Factor	1.00	1.00
Maj. L, Min T Impedance factor	0.73	0.84
Maj. L, Min T Adj. Imp Factor.	0.79	0.88
Cap. Adj. factor due to Impeding mvmnt	0.73	0.83
Movement Capacity	121	137

Worksheet 8 Shared Lane Calculations

Shared Lane Calculations

Movement	7	8	9	10	11	12
v(vph)	4	13	32	126	34	40
Movement Capacity	121	183	634	137	175	508
Shared Lane Capacity	312			144		

Worksheet 10 delay,queue length, and LOS

Movement	1	4	7	8	9	10	11	12
v(vph)	23	53	50			160		
C m(vph)	1017	1143	312			144		
v/c	0.02	0.05	0.16			1.11		
95% queue length								
Control Delay	8.6	8.3	18.8			170.4		
LOS	A	A	C			F		
Approach Delay				18.8			170.4	
Approach LOS				C			F	

Worksheet 11 Shared Major LT Impedance and Delay

Rank 1 Delay Calculations

Movement	2	5
P oj	0.98	0.95
V i1	380	508
V i2	4	0
S i1	1700	1700
S i2	1700	1700
P* 0j	0.97	0.93
D maj left	8.6	8.3
N number major st lanes	1	1
Delay, rank 1 mvmts	0.3	0.6

2001 Build with Modifications

Note 10: Includes Note 9 and the roadway improvements necessary to accommodate the traffic expected to be generated by 369,000+ square feet of office space on Parcel A and four take-out restaurants on Parcel B.

HCS: Signalized Intersections Release 3.1c

Inter: NYS Route 25 & Kroemer Avenue City/St: Riverhead, NY
Analyst: DEA/jmc Proj #: 98124
Date: 7/14/00 Period: 2001 AM BuildMod Alt B
E/W St: NYS Route 25 N/S St: Kroemer Avenue

SIGNALIZED INTERSECTION SUMMARY

	Eastbound L	Eastbound T	Eastbound R	Westbound L	Westbound T	Westbound R	Northbound L	Northbound T	Northbound R	Southbound L	Southbound T	Southbound R
No. Lanes	0	1	0	0	1	0	0	1	0	0	1	0
LGConfig		LTR			LT			LTR			LT	
Volume	37	307	1	10	198		8	11	23	56	6	
Lane Width		10.0			10.0			10.0			10.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right	P					Right	A			
Peds						Peds				
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	40.0						10.0			
Yellow	3.0						3.0			
All Red	2.0						2.0			

Cycle Length: 60.0 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	1041	1524	0.37	0.683	5.0	A	5.0	A
Westbound								
LT	1190	1742	0.19	0.683	3.8	A	3.8	A
Northbound								
LTR	253	1382	0.19	0.183	21.1	C	21.1	C
Southbound								
LT	233	1273	0.30	0.183	21.9	C	21.9	C

Intersection Delay = 7.3 (sec/veh) Intersection LOS = A
Sum (v/s) critical = 0.31
Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 0.35

HCS: Signalized Intersections Release 3.1c

Inter: NYS Route 25 & Kroemer Avenue
Analyst: DEA/jmc
Date: 7/14/00
E/W St: NYS Route 25

City/St: Riverhead, NY
Proj #: 98124
Period: 2001 PM BuildMod Alt B
N/S St: Kroemer Avenue

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			LT			LTR			LT	
Volume	21	380	4	48	508		4	12	29	113	31	
Lane Width		10.0			10.0			10.0			10.0	
RTOR Vol			0						0			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left	P				NB	Left	A			
Thru	P					Thru	A			
Right	P					Right	A			
Peds						Peds				
WB Left	P				SB	Left	A			
Thru	P					Thru	A			
Right						Right				
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green	40.0						10.0			
Yellow	3.0						3.0			
All Red	2.0						2.0			

Cycle Length: 60.0 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	1050	1536	0.43	0.683	5.5	A	5.5	A
Westbound								
LT	1138	1666	0.54	0.683	6.6	A	6.6	A
Northbound								
LTR	256	1398	0.19	0.183	21.1	C	21.1	C
Southbound								
LT	240	1310	0.67	0.183	29.9	C	29.9	C

Intersection Delay = 9.7 (sec/veh) Intersection LOS = A

Sum (v/s) critical = 0.49

Lost Time/Cycle, L = 8.00 sec Critical v/c(X) = 0.57

APPENDIX A

SEQRA-RELATED DOCUMENTATION

Appendix A-1
Environmental Assessment Form (EAF) Part I

November 19, 1999

617.21
Appendix A
State Environmental Quality Review

FULL ENVIRONMENTAL ASSESSMENT FORM

ose: The full EAF is designed to help applicants and agencies determine, in an orderly manner, whether a project tion may be significant. The question of whether an action may be significant is not always easy to answer. Frequent- ere are aspects of a project that are subjective or unmeasureable. It is also understood that those who determine ficance may have little or no formal knowledge of the environment or may be technically expert in environmental ysis. In addition, many who have knowledge in one particular area may not be aware of the broader concerns affecting question of significance.

The full EAF is intended to provide a method whereby applicants and agencies can be assured that the determination ess has been orderly, comprehensive in nature, yet flexible to allow introduction of information to fit a project or action.

EAF Components: The full EAF is comprised of three parts:

Part 1: Provides objective data and information about a given project and its site. By identifying basic project data, it assists a reviewer in the analysis that takes place in Parts 2 and 3.

Part 2: Focuses on identifying the range of possible impacts that may occur from a project or action. It provides guidance as to whether an impact is likely to be considered small to moderate or whether it is a potentially-large impact. The form also identifies whether an impact can be mitigated or reduced.

Part 3: If any impact in Part 2 is identified as potentially-large, then Part 3 is used to evaluate whether or not the impact is actually important.

DETERMINATION OF SIGNIFICANCE—Type 1 and Unlisted Actions

Identify the Portions of EAF completed for this project: ☐ Part 1 ☐ Part 2 ☐ Part 3

Upon review of the information recorded on this EAF (Parts 1 and 2 and 3 if appropriate), and any other supporting information, and considering both the magitude and importance of each impact, it is reasonably determined by the lead agency that:

☐ A. The project will not result in any large and important impact(s) and, therefore, is one which will not have a significant impact on the environment, therefore a **negative declaration will be prepared.**

☐ B. Although the project could have a significant effect on the environment, there will not be a significant effect for this Unlisted Action because the mitigation measures described in PART 3 have been required, therefore a **CONDITIONED negative declaration will be prepared.***

☐ C. The project may result in one or more large and important impacts that may have a significant impact on the environment, therefore a **positive declaration will be prepared.**

* A Conditioned Negative Declaration is only valid for Unlisted Actions

Name of Action

Name of Lead Agency

Print or Type Name of Responsible Officer in Lead Agency

Title of Responsible Officer

Signature of Responsible Officer in Lead Agency

Signature of Preparer (If different from responsible officer)

Date

?T 1—PROJECT INFORMATIO?

Prepared by Project Sponsor

OTICE: This document is designed to assist in determining whether the action proposed may have a significant effect n the environment. Please complete the entire form, Parts A through E. Answers to these questions will be considered s part of the application for approval and may be subject to further verification and public review. Provide any additional nformation you believe will be needed to complete Parts 2 and 3.

t is expected that completion of the full EAF will be dependent on information currently available and will not involve ew studies, research or investigation. If information requiring such additional work is unavailable, so indicate and specify ach instance.

NAME OF ACTION: Lumberyard Complex - Headriver LLC

LOCATION OF ACTION (Include Street Address, Municipality and County): North side of Old Country Road (C.R. 58) just East of Kroemer Avenue

NAME OF APPLICANT/SPONSOR: Young & Young ATTN: Thomas C. Wolpert, P.E.

BUSINESS TELEPHONE: (516) 727-2303

ADDRESS: 400 Ostrander Avenue

CITY/PO: Riverhead, STATE: NY ZIP CODE: 11901

NAME OF OWNER (If different): Lerner-Heidenberg c/o Allen M. Smith, Esq.

BUSINESS TELEPHONE: (516) 727-3947

ADDRESS: 737 Roanoke Avenue, P.O. Box 1240

CITY/PO. Riverhead, STATE: NY ZIP CODE: 11901

DESCRIPTION OF ACTION

Construct a retail shopping center to include one (1)- 115,000 sq. ft. lumberyard building, one (1)- 30,000 sq. ft. building, one (1)-6,000 sq. ft. building, one (1)-225 seat restaurant together with the associated water supply and sewage disposal systems, parking, drainage, landscaping, and lighting.

Please Complete Each Question—Indicate N.A. if not applicable

A. Site Description

Physical setting of overall project, both developed and undeveloped areas.

1. Present land use: ☐Urban ☐Industrial ☐Commercial ☐Residential (suburban) ☒Rural (non-farm) ☐Forest ☐Agriculture ☒Other Vacant, lightly wooded

2. Total acreage of project area: 21.2 acres.

APPROXIMATE ACREAGE	PRESENTLY	AFTER COMPLETION
Meadow or Brushland (Non-agricultural)	0 acres	0 acres
Forested (Light woods and brushland)	21.2 acres	0 acres
Agricultural (Includes orchards, cropland, pasture, etc.)	0 acres	0 acres
Wetland (Freshwater or tidal as per Articles 24, 25 or ECL)	0 acres	0 acres
Water Surface Area	0 acres	0 acres
Unvegetated (Rock, earth or fill)	0 acres	0.7 acres
Roads, buildings and other paved surfaces	0 acres	17.8 acres
Other (Indicate type) Lawn & landscaping	0 acres	2.7 acres

3. What is predominant soil type(s) on project site? PlB - Plymouth loamy sand, CpA - Carver and Plymouth sand
   a. Soil drainage: ☒Well drained 100 % of site ☒Moderately well drained 0 % of site
   ☒Poorly drained 0 % of site
   b. If any agricultural land is involved, how many acres of soil are classified within soil group 1 through 4 of the NYS Land Classification System? NA acres. (See 1 NYCRR 370).

4. Are there bedrock outcroppings on project site? ☐Yes ☒No

NA (in feet)

proximate percentage of proposed pr ct site with slopes: ☒0-10% 100 % ☐10-15% 0 %
☒15% or greater 0 %

project substantially contiguous to, or contain a building, site, or district, listed on the State or the National gisters of Historic Places? ☐Yes ☒No

project substantially contiguous to a site listed on the Register of National Natural Landmarks? ☐Yes ☒No

hat is the depth of the water table? 18'-28' (in feet)

site located over a primary, principal, or sole source aquifer? ☒Yes ☐No

Do hunting, fishing or shell fishing opportunities presently exist in the project area? ☐Yes ☒No

Does project site contain any species of plant or animal life that is identified as threatened or endangered?
☐Yes ☒No According to Young & Young
Identify each species

Are there any unique or unusual land forms on the project site? (i.e., cliffs, dunes, other geological formations)
☐Yes ☒No Describe

s the project site presently used by the community or neighborhood as an open space or recreation area?
☐Yes ☒No If yes, explain

Does the present site include scenic views known to be important to the community?
☐Yes ☒No

Streams within or contiguous to project area: NA
a. Name of Stream and name of River to which it is tributary

Lakes, ponds, wetland areas within or contiguous to project area: NA
a. Name b. Size (In acres)

Is the site served by existing public utilities? ☐Yes ☒No
a) If Yes, does sufficient capacity exist to allow connection? ☐Yes ☐No
b) If Yes, will improvements be necessary to allow connection? ☐Yes ☐No

Is the site located in an agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? ☐Yes ☒No

Is the site located in or substantially contiguous to a Critical Environmental Area designated pursuant to Article 8 of the ECL, and 6 NYCRR 617? ☐Yes ☒No

Has the site ever been used for the disposal of solid or hazardous wastes? ☐Yes ☒No

Project Description

Physical dimensions and scale of project (fill in dimensions as appropriate)

a. Total contiguous acreage owned or controlled by project sponsor 21.2 acres.
b. Project acreage to be developed: 21.2 acres initially; 21.2 acres ultimately.
c. Project acreage to remain undeveloped 0 acres.
d. Length of project, in miles: NA (If appropriate)
e. If the project is an expansion, indicate percent of expansion proposed NA %;
f. Number of off-street parking spaces existing 0 ; proposed 883 .
g. Maximum vehicular trips generated per hour 524 (upon completion of project)? (refer to Traffic Impact Study dated Oct., 1999 prepared by Dunn Engineering)
h. If residential: Number and type of housing units: NA

	One Family	Two Family	Multiple Family	Condominium
Initially				
Ultimately				

i. Dimensions (in feet) of largest proposed structure 35' height; 355' width; 475' length.

2. How much natural material (i.e., k, earth, etc.) will be removed from the ? 0 tons/cubic yards

3. Will disturbed areas be reclaimed? ☒Yes ☐No ☐N/A
   a. If yes, for what intended purpose is the site being reclaimed? Developed areas including Lawned & landscaped areas
   b. Will topsoil be stockpiled for reclamation? ☒Yes ☐No
   c. Will upper subsoil be stockpiled for reclamation? ☒Yes ☐No

4. How many acres of vegetation (trees, shrubs, ground covers) will be removed from site? 21.2 acres.

5. Will any mature forest (over 100 years old) or other locally-important vegetation be removed by this project?
   ☐Yes ☒No

6. If single phase project: Anticipated period of construction 24 months, (including demolition).

7. If multi-phased: NA
   a. Total number of phases anticipated ______ (number).
   b. Anticipated date of commencement phase 1 ______ month ______ year, (including demolition).
   c. Approximate completion date of final phase ______ month ______ year.
   d. Is phase 1 functionally dependent on subsequent phases? ☐Yes ☐No

8. Will blasting occur during construction? ☐Yes ☒No

9. Number of jobs generated: during construction 50; after project is complete 100.

10. Number of jobs eliminated by this project 0.

11. Will project require relocation of any projects or facilities? ☐Yes ☒No If yes, explain ______

12. Is surface liquid waste disposal involved? ☐Yes ☒No
   a. If yes, indicate type of waste (sewage, industrial, etc.) and amount ______
   b. Name of water body into which effluent will be discharged ______

13. Is subsurface liquid waste disposal involved? ☒Yes ☐No Type Sanitary

14. Will surface area of an existing water body increase or decrease by proposal? ☐Yes ☒No
   Explain ______

15. Is project or any portion of project located in a 100 year flood plain? ☐Yes ☒No

16. Will the project generate solid waste? ☒Yes ☐No
   a. If yes, what is the amount per month 3.0 tons
   b. If yes, will an existing solid waste facility be used? ☒Yes ☐No
   c. If yes, give name Unknown*; location Unknown*
   *commercial waste picked up and disposed by private haulers.
   d. Will any wastes not go into a sewage disposal system or into a sanitary landfill? ☐Yes ☒No
   e. If Yes, explain ______

17. Will the project involve the disposal of solid waste? ☐Yes ☒No
   a. If yes, what is the anticipated rate of disposal? ______ tons/month.
   b. If yes, what is the anticipated site life? ______ years.

18. Will project use herbicides or pesticides? ☒Yes ☐No ie. Lawn care

19. Will project routinely produce odors (more than one hour per day)? ☐Yes ☒No

20. Will project produce operating noise exceeding the local ambient noise levels? ☐Yes ☒No

21. Will project result in an increase in energy use? ☒Yes ☐No
   If yes, indicate type(s) Electric & fossil fuels

22. If water supply is from wells, indicate pumping capacity NA gallons/minute.

23. Total anticipated water usage per day 12,790 gallons/day.

24. Does project involve Local, State or Federal funding? ☐Yes ☒No
   If Yes, explain ______

. Approvals Required:

			Type	Submittal Date
~~XX~~ Town, ~~Village~~ Board	☒Yes	☐No	Special Permit & Site Plan	09/99
~~X~~, Town, ~~Village~~ Planning Board	☐Yes	☒No		
ty, Town Zoning Board	☐Yes	☒No		
~~ty~~, County Health Department	☒Yes	☐No	Water Supply & Sewage Disposal	10/99
ther Local Agencies	☐Yes	☒No		
ther Regional Agencies	☐Yes	☒No		
tate Agencies	☐Yes	☒No		
ederal Agencies	☐Yes	☒No		

. Zoning and Planning Information

. Does proposed action involve a planning or zoning decision? ☒Yes ☐No

If Yes, indicate decision required:

☐zoning amendment ☐zoning variance ☒special use permit ☐subdivision ☒site plan

☐new/revision of master plan ☐resource management plan ☐other ______

. What is the zoning classification(s)of the site? Industrial 'A'

. What is the maximum potential development of the site if developed as permitted by the present zoning?

NA

. What is the proposed zoning of the site? NA

. What is the maximum potential development of the site if developed as permitted by the proposed zoning?

NA

. Is the proposed action consistent with the recommended uses in adopted local land use plans? ☒Yes ☐No

. What are the predominant land use(s) and zoning classifications within a ¼ mile radius of proposed action?

Land uses: Commercial, vacant; Zoning: Industrial 'A', Agriculture 'A', Business

. Is the proposed action compatible with adjoining/surrounding land uses within a ¼ mile? ☒Yes ☐No

. If the proposed action is the subdivision of land, how many lots are proposed? NA

a. What is the minimum lot size proposed? ______

0. Will proposed action require any authorization(s) for the formation of sewer or water districts? ☐Yes ☒No

1. Will the proposed action create a demand for any community provided services (recreation, education, police, fire protection)? ☒Yes ☐No

a. If yes, is existing capacity sufficient to handle projected demand? ☒Yes ☐No

2. Will the proposed action result in the generation of traffic significantly above present levels? ☐Yes ☒No

a. If yes, is the existing road network adequate to handle the additional traffic? ☒Yes ☐No

). Informational Details

Attach any additional information as may be needed to clarify your project. If there are or may be any adverse mpacts associated with your proposal, please discuss such impacts and the measures which you propose to mitigate or void them.

. Verification

I certify that the information provided above is true to the best of my knowledge.

pplicant/Sponsor Name Young & Young ATTN: Thomas C. Wolpert Date 11/02/99

ignature *Thomas C. Wolpert* Title Professional Engineer

the action is in the Coastal Area, and you are a state agency, complete the Coastal Assessment Form before proceeding

Appendix A-2
Town Board Resolution #365 and Positive Declaration

Riverhead Town Board

April 18, 2000

Adopted

April 18, 2000

TOWN OF RIVERHEAD

Resolution # 365

DETERMINES ENVIRONMENTAL SIGNIFICANCE OF SPECIAL PERMIT PETITION OF HEADRIVER, LLC AND AUTHORIZES TOWN CLERK TO PUBLISH AND POST NOTICE OF SCOPING HEARING

COUNCILMAN KENT offered the following resolution which

was seconded by COUNCILMAN DENSIESKI

WHEREAS, the Riverhead Town Board is in receipt of a special permit petition from Robert Heidenberg pursuant to Sections 108-3 and 108-45 B(12) of the Town Code for the development of a commercial complex consisting of a 115,000 square foot home improvement superstore, a 225 seat, (6,500 square foot) restaurant and two other structures of 30,000 square feet and 6,000 square feet together with related site improvements to be located on 21.2 acres of land zoned Industrial 'A' and known specifically as SCTM No. 0600-119-1- p/o 1, and

WHEREAS, by resolution #216 of 2000, the Town Board did declare itself to be the Lead agency in this matter and did determine the petition to be a Type I action, and

WHEREAS, the Town Board did refer the petition to the Riverhead Planning Board for its report and recommendation; such Planning Board identifying a number of potentially significant impacts to the natural and social environment and recommending the preparation of an Environmental Impact Statement, and

WHEREAS, the Town Board is further in receipt of a special permit application from Robert Heidenberg to allow the construction of four (4) thirty-six (36) seat restaurants upon property contiguous with the instant petition which is expected to have potentially significant impacts with respect to the generation of motor vehicle traffic in and of itself with further impacts upon the subject petition, and

WHEREAS, the Town Board has carefully considered the merits of the petition, the SEQR record created to date, the report of the Planning Department, the report of the Planning Board, as well as all other relevant planning, zoning and environmental considerations, now

THEREFORE BE IT

RESOLVED, that in the matter of the special permit petition of Robert Heidenberg, the Riverhead Town Board hereby determines the action to have potentially significant impacts upon the natural and social environment and that a Draft Environmental Impact Statement be prepared in order to evaluate such impacts, and

BE IT FURTHER

RESOLVED, that the applicant submit a draft scope of issues to the Planning Department pursuant to 6NYCRR Part 617, and

BE IT FURTHER

RESOLVED, that the Town Clerk be authorized to publish and post the attached notice of scoping hearing for Headriver, LLC in the official newspaper of the Town of Riverhead.

THE VOTE

Densieski ✓ Yes ___ No Cardinale ✓ Yes ___ No
Kent ✓ Yes ___ No Lull ✓ Yes ___ No
Kozakiewicz ✓ Yes ___ No
THE RESOLUTION WAS X WAS NOT ___
THEREUPON DULY ADOPTED

TOWN OF RIVERHEAD
NOTICE OF SCOPING HEARING

PLEASE TAKE NOTICE, that a public hearing will be held on the 17th day of May, 2000 at 4:00 o'clock p.m. at Riverhead Town Hall, 200 Howell Avenue, Riverhead, New York to identify those significant environmental impacts to be addressed in the Draft Environmental Impact Statement to be prepared in support of the special permit petition of Robert Heidenberg to allow the construction of a commercial complex consisting of a 115,000 square foot lumberyard, a 225 seat restaurant, additional structures of 30,000 square feet and 6,000 square feet respectively upon real property located at Route 58, Riverhead, such real property more particularly described as Suffolk County Tax Map Parcel No. 06000-119-1-p/o 1.

DATED: April 18, 2000
Riverhead, New York

BY ORDER OF THE TOWN BOARD
OF THE TOWN OF RIVERHEAD

BARBARA GRATTAN, TOWN CLERK

State Environmental Quality Review

POSITIVE DECLARATION

Notice of Intent to Prepare a Draft EIS

Determination of Significance

April 18, 2000

This notice is issued pursuant to Part 617 of the implementing regulations pertaining to Article 8 (State Environmental Quality Review Act) of the Environmental Conservation Law.

The Town of Riverhead Town Board, as lead agency, has determined that the proposed action described below may have a significant effect on the environment and a Draft Environmental Impact Statement will be prepared.

Name of Action – Headriver, L.L.C.

SEQR Status – Type I

Description of Action – Applicant proposes to construct a 115,000 square foot lumberyard (home improvement superstore), a 6,500 square foot two hundred twenty-five (225) seat restaurant and 6,000 square foot and 30,000 square foot structures together with related site improvements on a 21.2 acre site zoned Industrial A.

Location - Northside Old Country Road (CR 58), at and just west of the northerly terminus of Kroemer Avenue, Riverhead Hamlet & Township, Suffolk County. SCTM 0600-119-1-p/o1.

Reasons Supporting This Document – The agency believes the potential exists for significant impact relative to land, water and transportation resources, on public health and on growth and community character issues. The agency will conduct scoping to properly focus the E.I.S..

For further information:
Contact Person: Mr. Richard Hanley
Town of Riverhead Planning Department
200 Howell Avenue
Riverhead, NY 11901
(516) 727-3200, Ext. 239

A copy of this Notice sent to: Supervisor, Town of Riverhead; Town Clerk of Town of Riverhead; Suffolk County Department of Public Works; Suffolk County Department of Health Services; Allen M. Smith, Esq. (for the applicant); Environmental Business Publications

Appendix A-3
Final Scoping Document

Riverhead Town Board

July 26, 2000

PLANNING DEPARTMENT

200 HOWELL AVENUE, RIVERHEAD, NEW YORK 11901-2596
(631) 727-3200, EXT. 267

July 26, 2000

Mr. Allen M. Smith
Attorney at Law
P. O. Box 1240
Riverhead, NY 11901

RE: Special permit Petition of Robert Heidenberger (Headriver, LLC)

Dear Mr. Smith:

Please find attached the final scope of issues as issued by the lead agency pursuant to 6NYCRR Part 617 for the above referenced project. As your are aware, the document must follow the format as required by law as well as addressing the significant environmental issues as identified by the lead agency.

The Town is in receipt of a number of comments upon the draft scope of issues, most of which highlighted confusion regarding the exact nature of the petition with regard to both uses and building areas. It is my view that the submission of a DEIS which adheres to the attached final scope of issues will properly assess the significant environmental issues associated with the proposed project and those identified alternatives.

Very truly yours,

Richard Hanley,
Planning Director

RH:js
cc: Charles Voorhis, Nelson, Pope & Voorhis

RECEIVED
JUL 27 2000
NELSON & POPE, LLP

FINAL SCOPE OF ISSUES IDENTIFIED PURSUANT TO 6NYCRR PART 617 – SPECIAL PERMIT PETITION OF Robert Heidenberg (Headriver, LLC)

July 26, 2000

I. Project Description:

Robert Heidenberg (Headriver, LLC) has petitioned the Riverhead Town Board for a special permit pursuant to Sections 108-45 (B)(12) and 108-3 of the Riverhead Zoning Ordinance to allow the construction of a 135,000 square foot lumberyard use upon real property owned by Riverhead Industrial Properties and located at County Route 58, Riverhead; such real property more particularly described as Suffolk County Tax Map Parcel No. 0600-119-1-p/o 1.

Upon a review of the Environmental Assessment Form ("EAF") attending the petition, the Riverhead Planning Department recommended that the action be classified as Type I pursuant to 6NYCRR Part 617 and that an Environmental Impact Statement be prepared. By resolution #365 of 2000, the Town Board declared itself to be the Lead Agency in the matter and determined the petition to be a Type I action with potential significant impacts upon the environment and that a Draft Environmental Impact Statement (DEIS) be prepared. Upon such determination, the petitioner submitted a draft scope of issues to be assessed in the DEIS. On May 17, 2000 the Riverhead town Board did hold a scoping hearing pursuant to 6NYCRR Part 617 to identify all issues to be addressed in the DEIS.

II. Potentially Significant Impacts:

A. Terrestrial:

The Environmental Assessment Form attending the petition indicated a construction schedule of more than one (1) year. Further, commentators have pointed out that the site may have been used industrially and that contaminants from past manufacturing activities may exist in either soils or groundwater.

B. Hydrological:

1. Groundwater:

   The project site lies within Hydrogeological Zone III as identified by the Suffolk County Health Department. This zone limits the discharge of sanitary wastewater to 300 gallons per day per acre, however, the proposed project is not expected to impact groundwater due to the proposed connection of the use to the appurtenances of the Riverhead Sewer District.

2. Surface Water:

   The sanitary wastewater generated by the proposed use will be collected and treated by sewer appurtenances and discharged into the Peconic Bay. In the event that sanitary flow exceeds that flow for the parcel as forecasted through the Riverhead commercial Sewer District expansion (Malcolm Pirnie, 1996), surface water could be impacted.

   The project site is upgradient of a Tiger Salamander breeding pond and preserve. The potential exists that recharged stormwater or spills could impact upon the integrity of the breeding pond.

C. Transportation:
The accompanying Environmental Assessment Form forecasts motor vehicle trip at a level which could create negative impacts upon the County highway and intersections of the County highway with Town highways and private driveways.

Both the Planning Department and commentators have suggested that motor vehicle congestion upon County Route 58 could be a potentially significant impact.

D. Community Growth and Character:
By resolution #464 of 2000, the Riverhead Town Board granted a special permit to East End Properties, LLC to allow for the construction of a 136,000 square foot lumberyard. The inability of the market to support 251,000 square feet of lumberyard use in the same general vicinity could have potentially significant impacts upon community growth and character.

III. Extent of Information Needed to Adequately Address Identified Impacts:

A. Terrestrial:
The DEIS shall contain a preliminary site assessment in order to determine if site soils or groundwater contain contaminants from past manufacturing activities. In the event that contaminants are discovered, mitigation measures should be offered to protect the public health and the habitat of rare and endangered species.

B. Hydrological:

1. The DEIS shall contain an assessment of the hydrogeologic relationship between the project site and the identified breeding pond and discuss the probability of contamination of the pond as a result of stormwater recharge or accidental spills. In the event that such contamination is possible, mitigation measures shall be advanced.
2. Surface Water:
The DEIS shall provide a forecast of wastewater flows for the proposed project, as well as all alternatives, and compare such flows with flows anticipated by the Riverhead Sewer District (Malcolm Pirnie, 1996). In the event that flows exceed that forecasted for the property, mitigation measures shall be proposed.

C. Transportation:
The DEIS shall contain a traditional motor vehicle impact analysis measuring the number of motor vehicle trip ends to be generated by the project, the impact upon the level of service of roadways and intersections and any improvements to be made in order to insure acceptable levels of service. This analysis shall be completed for all alternatives. In particular, the following intersections shall be studied:

i. C.R. 58 at the existing Tanger Factory outlet center (II) driveway;
ii. C.R. 58 at Kroemer Avenue;
iii. C.R. 58 at Mill Road
iv. New York State Route 25 and Kroemer Avenue.

Further, as part of the traffic analysis, the petitioner shall include traffic counts expected to be generated by the Applebee's use as well as the take-out restaurants (4) to be situated upon the property to the east.

D. Community Growth and Character:
Recognizing the existing special permit approval of the Home Depot as an element of the Riverhead Centre project, the DEIS shall contain an assessment of the ability of the County Route 58 customer catchment area to support the continued operation of both lumberyards and, in the alternative, re-use scenarios conforming with adopted land use policy in the event of business failure.

IV. Project Alternatives:
The DEIS shall study the following alternate actions:

i. the no action alternative;
ii. alternative A – full buildout (the proposed lumberyard buildout together with additional buildout to include a 6,500 square foot restaurant and a 45,500 square foot office space;

A. alternative B – alternative site use (the worst case buildout of the 21.2 acre parcel as of right pursuant to 108-45 (A) as 369,000 square feet of office use.

APPENDIX B

SOCIO-ECONOMIC IMPACT ANALYSIS

July, 2000

NP&V
NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

Socio-Economic Impact Analysis

HEADRIVER, LLC LUMBERYARD COMPLEX

Special Permit Application

North side of Suffolk County Route 58
opposite Kroemer Road

RIVERHEAD, TOWN OF RIVERHEAD
SUFFOLK COUNTY, NEW YORK

NP&V Project No. 98043

July, 2000

Socio-Economic Impact Analysis

Headriver, LLC Lumberyard Complex

Special Permit Application
Riverhead, New York

Prepared for:	Lerner-Heidenberg Properties 234 Closter Dock Road Closter, New Jersey 07624 (201) 768-1300 Contact: Stephen Lerner
For Submission to:	Town of Riverhead Town Board, Town Hall 200 Howell Avenue Riverhead, New York 11901 (631) 727-3200 Contact: Robert Kozakiewicz, Supervisor
Prepared by:	Nelson, Pope & Voorhis, LLC 572 Walt Whitman Road Melville, NY 11747 (631) 427-5665 Contact: Charles J. Voorhis, CEP, AICP

TABLE OF CONTENTS

I. INTRODUCTION

The purpose of this study is to analyze the need for this type of retail project in consideration of the existing lumberyard market in this particular vicinity; it is not intended nor required to address the potential impact on the business operations of any similar retail businesses in the vicinity, or what would be considered competition between businesses. As stated in **The SEQR Handbook** (NYSDEC, November 1992, pg. 60), such an analysis is not appropriate for analysis in an environmental impact statement:

> **Are there economic or social factors which are inappropriate for inclusion in an EIS?**
>
> The potential effects that a proposed project may have in drawing customers and profits away from established enterprises or in reducing property values in a community may not be considered under SEQR. Potential economic disadvantage caused by competition or speculative economic loss are not environmental factors.

This study has been prepared to analyze and describe the market impact of the proposed 135,200 square foot Headriver, LLC lumberyard complex on the existing retail establishments selling essentially the same product lines within its projected primary, secondary and tertiary market areas. This type of analysis is useful in gauging the existing and potential excess consumer demand to reach conclusions on how the proposed project will be absorbed into the market area. The analysis enables conclusions regarding the socio-economic impact of the project which could occur if a project results in wide spread business closures, vacancies or other such socio-economic repurcussions.

The primary established retail competitor within the market area is the 143,560 square foot Riverhead Building Supply, located on Pulaski Road in Riverhead. In addition to analyzing the impact of the project on existing market conditions, the study also looks at the capacity of the local economy to absorb an additional competitor, the planned 136,179 square foot Home Depot to be located on County Road 58, east of the project site. Smaller hardware stores with an established local customer base that offer personal service and neighborhood convenience are not generally found to directly compete with a regional lumberyard supplier. In the context of SEQRA, the potential competition between such uses would not be expected to cause socio-economic impacts.

The proposed location for the proposed project is on an approximately 21.2 acre parcel fronting on Old Country Road (County Road 58) at its intersection with Kroemer Avenue in Riverhead. These types of regional lumberyard/hardware facilities are planned to provide goods for customers generally within a five (5) to ten- (10) mile traveling distance. Beyond this distance, the availability of quality competitors will determine the extent of the market area.

More specifically, the intent of this analysis is to determine whether there is sufficient demand among the retail customer base within the subject market areas to support the proposed Headriver, LLC lumberyard complex and other facilities. It should be noted that this analysis will not incorporate commercial customers into the analysis, due to the fluctuations that occur in the demand within this sector of the economy.

II. METHODOLOGY

The analysis undertaken to determine the market demand for the proposed Headriver, LLC lumberyard complex was based on the following methodology. The first step was to determine the *market area* of the proposed project. This is the geographic area from which the majority of the customers or the total volume of business is expected to come from. The study identifies the number of people living in the *market area*, their purchasing potential and the projected growth trends.

The next step in the methodology was to estimate the expenditures for a variety of merchandise lines that are likely to be purchased by consumers within the defined market area. The expenditures for the retail merchandise correspond to the types of goods that will be available at the proposed project. The data on population size and relevant expenditures yielded an estimate of the *total demand available* for the various merchandise lines in the *market area.*

The last step in the methodology was to measure the amount of *Unsatisfied Retail Demand* in the market area, by the various potential merchandise lines. This was accomplished by comparing the total demand by merchandise line of customers (residents) in the market area to their total expenditures. This comparison would indicate if local residents are traveling out of the local market area to purchase goods that in effect could be offered at the proposed project. A *market capture* rate or percentage rate is utilized to determine the potential sales available to new entries into the market. The potential sales available to new market entries are analyzed in relation to the estimated total retail sales that are expected to be generated at the proposed project. The result will determine the capacity of the impacted market areas to accommodate additional lumberyard/hardware establishments.

III. DETERMINING THE MARKET AREA AND POPULATION

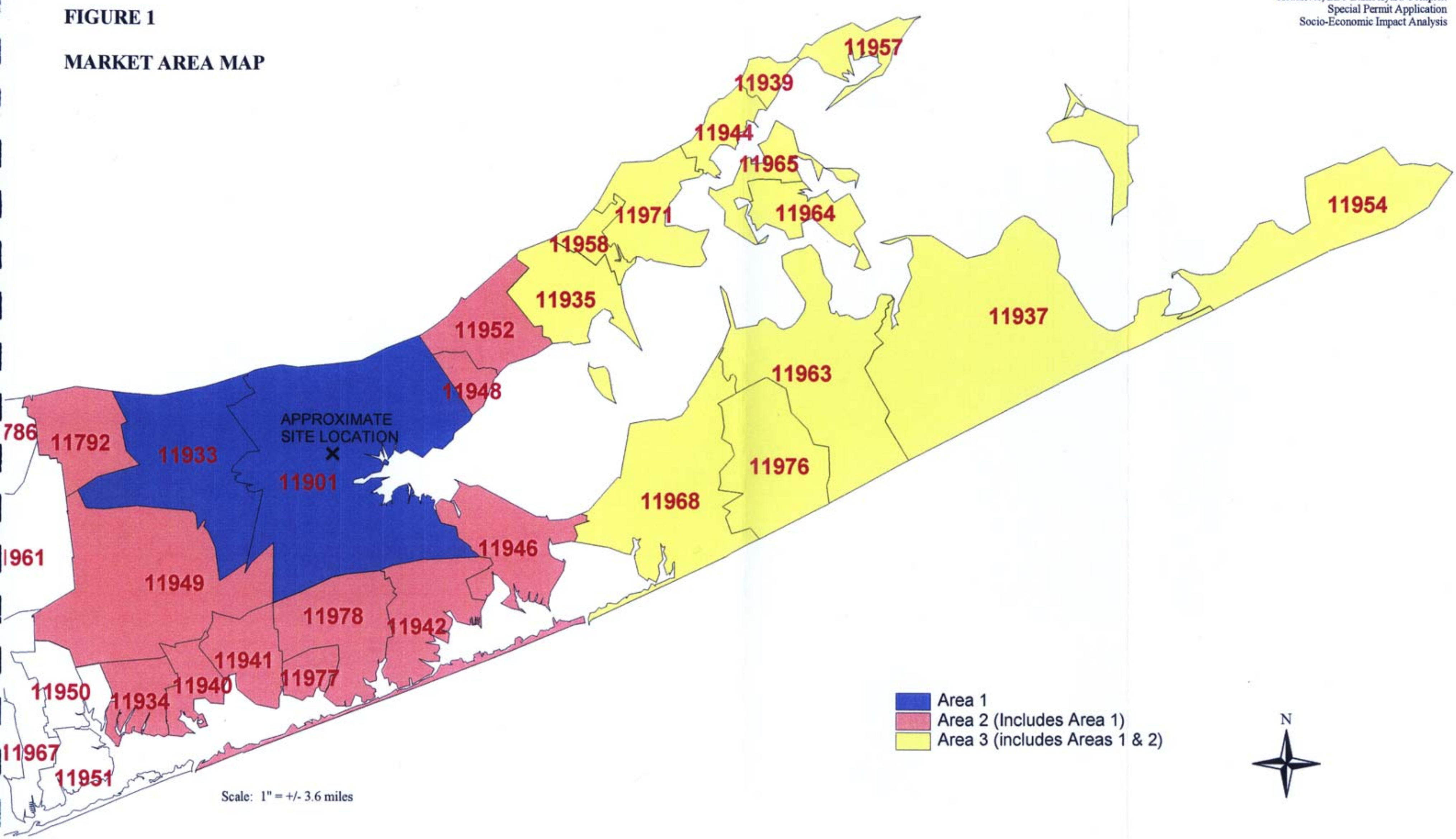
The market area is the geographical area from which a business or commercial development draws its customers. This is the area from which the majority of the customers or the total volume of business comes. The concept of the market area is based on the assumption that, all things being equal, people will travel to the nearest facility among competitors offering the same goods: **(Analyzing Neighborhood Retail Opportunities: A Guide for Carrying Out a Preliminary Market Study, Wim Wiewel and Robert Mier, American Planning Association, 1981).** Distance is therefore the first criteria for determining the market area. Other factors that influence the size of the market area are physical barriers such as parks, railroads, water bodies and expressways; perceived regional or neighborhood boundaries; and the comparative nature of the competitive facilities in terms of location, accessibility, price, quality, service and variety of merchandise. **Figure 1** depicts the primary, secondary and tertiary market areas for the proposed Headriver lumberyard project.

NP&V evaluated the geographic attributes of the areas surrounding the proposed location of the proposed Headriver, LLC lumberyard complex in order to determine the extent of its market areas, and related demographic information. It should be noted that the physical features associated with the project's location on the east end of Long Island significantly define the market area. Generally, the proposal's primary and secondary market areas, those that lie within approximately five (5) miles to ten (10) miles of the project site, are limited by various water bodies. The Long Island Sound's shoreline lies within five (5) miles to the north of the proposed project site, thereby limiting the northern extent of its market area. Similarly, the shoreline of the Great South Bay lies approximately nine (9) miles to the south of the project site, resulting in another physical boundary to its market area. Further demonstrating this point, approximately five (5) miles to the east of the project site lies the shoreline of the Peconic Bay.

The western boundary of the market area was determined to extend to the Calverton area in the Town of Riverhead, approximately five to six miles west of the proposed location. The market boundary was limited in this direction due to the location of regional lumberyard/hardware establishments located or being planned in the central portion of the Town of Brookhaven approximately 5 miles farther to the west. This area is included in the project's *primary market area* due to the travel time to the facility and the limited competition. In addition, the areas previously discussed bounded by water bodies to the north, south, and east, within five (5) to six (6) miles of the proposed project, may also be included within the project's *primary market area.* This conclusion is also supported by the relatively short travel time to the project site and the limited number of existing competitors related to these surrounding areas. For the purposes of this study, the primary trade area has been designated *Sub-Market Area 1.*

FIGURE 1

MARKET AREA MAP



Scale: 1" = +/- 3.6 miles

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A second market area, *Sub-Market Area 2,* was defined in order to detail projected retail expenditures with respect to the proposed project. This area was determined based on those areas to the south and east of the project site that lie within an approximate ten (10) mile radius, and where the project site would represent the closest regional lumberyard/hardware outlet. Due to the unique geographic attributes associated with the eastern most end of Long Island, specifically the Towns of Southold, Southampton, Shelter Island and East Hampton, a third sub-market area was included in the analysis, *Sub-Market Area 3*. This east end area is geographically isolated from any broad-based retail market due to its limited land mass and the surrounding bodies of water. The proposed project will represent the nearest regional lumberyard/hardware facility to these areas that lie in some instances, over twenty (20) miles from the project site. Further, in *Sub-Market Area 3* there is a limited availability of smaller scale establishments retailing the lumberyard and hardware merchandise lines at the price and quality that will be offered at the project site. As a result, a significant percentage of consumers are expected to travel to this planned regional facility to purchase such goods.

In order to estimate the number of potential consumers in each sub-market NP&V obtained a Marketview Report from Claritas, Ithaca, New York **(See Attachments A-C).** The Marketview Report provides data for retail sales by Standard Industrial Code (SIC), and various demographic information by zip code. The data provided in the Claritas Report offers an estimate of the 1999 population for each sub-area within the greater market area, and projections for the year 2004. The population projections will be utilized to determine future demand for additional building supply/hardware establishments in the subject market area. The market population data is provided in **Table 1.**

Table 1
MARKET AREA POPULATION
1999 and 2004

Geographic Area	1999 Population	2004 Population (1)
Area 1	22,385	23,435
Area 2	52,281	53,551
Area 3	41,916	42,996
Totals	116,582	119,982

Source: Marketview Comparison Report, Claritas Inc. May 1999

IV. CONSUMER EXPENDITURES AND TOTAL RETAIL DEMAND

A. Projecting Total Retail Demand

In order to determine the total expenditures or retail demand of consumers residing in the three (3) defined market sub-areas, data was utilized from the 1997 U.S. Census - Retail Trade. The retail trade census is undertaken by the U.S. Department of Commerce at five (5) year intervals, with the most recent prepared in 1997. The census contains the total expenditures for various types of merchandise lines by municipality, and can therefore be utilized to compute per capita expenditures for a particular area of the United States. **Table 2** exhibits the 1997 total sales in Suffolk County for the merchandise lines that will be available at the proposed project. These sales figures were divided by the County's estimated 1997 population of 1,360,075 (Suffolk County Planning Department) to arrive at the per capita expenditure for each merchandise line in Suffolk County. The per capita expenditures were further adjusted by the Consumer Price Index (CPI) from 1997 through 1999 to project sales activity in the year 2000. It is assumed for the purposes of this study, that the Suffolk County expenditure patterns are representative of consumers within the subject market areas.

TABLE 2
PER CAPITA RETAIL SALES
County of Suffolk

Retail Merchandise	1997 Total Sales	1997 Sales Per Capita	1999 Adjusted Sales Per Capita
Building Materials, Supplies, Paint, Hardware	$1,421,097,000	$1,045	$1,083
Nursery, Lawn and Garden Supplies	$136,279,000	$100	$106
Totals	$1,557,376,000	$1,145	$1,189

Source: 1997 U.S. Census – Retail Trade
U.S. Department of Labor, Bureau of Labor Statistics, Consumer Price Index

B. Estimating Consumer Expenditures

The next step in the analysis was to estimate the current total retail demand, or expected consumer expenditures for merchandise that will be available at the proposed project by residents within the three defined sub-market areas. It is important to note that, the analysis will assume that purchases currently made within the defined market areas will continue to be made at the same location. The demand for additional locations for the subject merchandise lines will be demonstrated by the estimated purchases that occur outside the three sub-market areas.

Retail demand is calculated by multiplying the adjusted 1999 Suffolk County Sales per capita figures for each merchandise line presented in the preceding table by the population figures presented in **Table 1** for the market areas. **Table 3** shows the results of the calculation of the total retail demand for the year 2000. In **Table 4** the same methodology is utilized to project retail demand for the year 2004.

TABLE 3
1999 RETAIL DEMAND

Retail Merchandise	Sub-Market Area 1	Sub-Market Area 2	Sub-Market Area 3	Total Market Area
Building Materials, Supplies, Paint, Hardware	$23,392,325	$54,633,645	$43,802,220	$121,828,190
Nursery, Lawn and Garden Supplies	$ 2,238,500	$ 5,228,100	$ 4,191,600	$ 11,658,200
Totals	$25,630,825	$59,861,745	$47,993,820	$133,386,390

Table 4
PROJECTED 2004 RETAIL DEMAND

Retail Merchandise	Sub-Market Area 1	Sub-Market Area 2	Sub-Market Area 3	Total Market Area
Building Materials, Supplies, Paint, Hardware	$25,380,105	$57,995,733	$46,564,668	$129,940,506
Nursery, Lawn and Garden Supplies	$ 2,484,110	$ 5,676,406	$ 4,557,576	$ 12,718,092
Totals	$27,864,215	$63,672,139	$51,122,244	$142,658,598

C. Market Area Sales Volume

As previously discussed, NP&V obtained a data base from Claritas/NPDC, which provided estimated sales volumes by merchandise line (SIC) for the three geographic sub-market areas, included in this study. **Table 5** extracts from the Claritas data the sales volume information for goods that will be available to consumers at the proposed project, for each of the sub-markets.

Table 5
1999 EXPENDITURES FOR SELECTED RETAIL MERCHANDISE

Retail Merchandise	Sub-Market Area 1	Sub-Market Area 2	Sub-Market Area 3	Total Market Area
Building Materials, Supplies, Paint, Hardware	$4,153,000	$11,318,000	$9,601,000	$25,072,000
Nursery, Lawn and Garden Supplies	$ 750,000	$ 2,131,000	$ 1,852,000	$ 4,733,000
Totals	$ 4,903,000	$13,449,000	$11,453,000	$29,805,000

V. DETERMINING UNSATISFIED RETAIL DEMAND

The level of *unsatisfied retail demand* represents the ability of a local market to absorb additional commercial space for a particular type of merchandise. The *unsatisfied retail demand* is calculated by subtracting the current level of expenditures for a particular merchandise line within a designated geographic or market area, from the total purchases made by consumers for such items within the same subject area. **Table 6** exhibits the results of this calculation for the market areas under consideration for the year 2000, based on the data presented in the previous sections of this report. In **Table 7** the unsatisfied demand is projected for the year 2004 for the subject market areas.

Table 6
UNSATISFIED RETAIL DEMAND FOR SELECTED RETAIL MERCHANDISE
2000

Retail Merchandise	Sub-Market Area 1	Sub-Market Area 2	Sub-Market Area 3	Total Market Area
Building Materials, Supplies, Paint, Hardware	$19,239,325	$43,315,645	$34,201,220	$ 96,756,190
Nursery, Lawn and Garden Supplies	$ 1,488,500	$ 3,097,100	$ 2,339,600	$ 6,925,200
Totals	$20,727,825	$46,412,745	$36,540,820	$103,581,390

Table 7
UNSATISFIED RETAIL DEMAND FOR SELECTED RETAIL MERCHANDISE
2004

Retail Merchandise	Sub-Market Area 1	Sub-Market Area 2	Sub-Market Area 3	Total Market Area
Building Materials, Supplies, Paint, Hardware	$21,227,105	$46,677,733	$36,963,668	$104,868,506
Nursery, Lawn and Garden Supplies	$ 1,734,110	$ 3,545,406	$ 2,705,576	$ 7,985,092
Totals	$ 22,961,215	$50,223,139	$39,669,244	$112,853,598

It is clearly shown in the two preceding tables that there currently is a high level of unsatisfied retail demand in the subject market areas for the merchandise lines under consideration. It is estimated that for the year 2000 there will be a total of $103,581,390 in expenditures for these goods by local consumers outside the subject market areas.

Assuming the same level of local retail opportunities, this total is projected to grow to $112,853,598 by the year 2004.

In order to conservatively estimate the capacity of the subject market areas to absorb the projected sales of the proposed Headriver, LLC lumberyard complex, and planned Home Depot, a market capture analysis was prepared for each sub-market area. This analysis applies a market capture rate or percentage, to the unsatisfied demand or projected retail sales that will be available to new entries into the market area. A higher percentage is utilized based on the proximity of the potential customers in a designated area to the project location. In addition, local competitors are also an important consideration in determining a market capture rate. In order to reduce market penetration, and thereby create a conservative estimate of the available retail demand in each sub-market area, the following percentages were applied: Sub-Area 1 – 85%, Sub-Area 2 - 75%, and Sub-Area 3 – 65%. The results of the market capture analysis are shown for the year 2000 and 2004 in **Tables 8** and **9**, respectively.

TABLE 8
RETAIL DEMAND/MARKET CAPTURE RATE
FOR SELECTED RETAIL MERCHANDISE
2000

Retail Merchandise	Sub-Market Area 1	Sub-Market Area 2	Sub-Market Area 3	Total Market Area
Building Materials, Supplies, Paint, Hardware	$16,353,426	$32,486,734	$22,230,793	$ 71,070,953
Nursery, Lawn and Garden Supplies	$ 1,265,225	$ 2,322,825	$ 1,520,740	$ 5,108,790
Totals	$17,618,651	$34,809,559	$23,751,533	$ 76,179,743

TABLE 9
RETAIL DEMAND/MARKET CAPTURE RATE
FOR SELECTED RETAIL MERCHANDISE
2004

Retail Merchandise	Sub-Market Area 1	Sub-Market Area 2	Sub-Market Area 3	Total Market Area
Building Materials, Supplies, Paint, Hardware	$18,043,039	$35,008,300	$24,026,384	$ 77,077,723
Nursery, Lawn and Garden Supplies	$ 1,473,994	$ 2,659,055	$ 1,758,624	$ 5,891,673
Totals	$19,517,033	$37,667,355	$25,785,008	$ 82,969,396

The results of the analysis indicate that even reducing the available retail demand for the subject merchandise lines via the application of a market capture rate, there is still considerable unsatisfied demand for lumber yard and hardware goods in the market areas under consideration. The unsatisfied retail demand is currently estimated to be $76,179,743 in the subject market areas, and projected to increase to $82,969,396 by the year 2004.

In order to conclude that the retail customer base in the defined sub-market areas can absorb the proposed Headriver, LLC lumberyard complex, and planned Home Depot, it is necessary to consider the projected sales expected to occur at these regional centers. Based on information received from the applicant, it is estimated that a successful operation will result in sales totaling $45 million annually. Further, it is anticipated that approximately twenty (20) percent of total sales will be comprised of commercial sales, thereby reducing the total retail sales component to an estimated $36 million annually. Therefore, in order to absorb the proposed project and planned Home Depot, it will be necessary for the greater market area serving both facilities to accommodate a total of approximately $72 million in retail sales.

As demonstrated in the conservative estimates generated via the market capture rates and unsatisfied retail demand for the subject market areas, it is projected that the retail market base for lumber yard and hardware goods can currently absorb over $76 million in new sales. This observation, along with the projected growth in demand expected to occur through the year 2004, supports the conclusion that the subject market areas will support both the planned Headriver, LLC lumberyard complex and Home Depot in the Town of Riverhead.

ATTACHMENT A

Study Area Components

Claritas Inc.

REA 1
tudy area components:

Zip	% Incl	Latitude	Longitude	Name
11901	100.00	40.9213	72.6644	Riverhead
11933	100.00	40.9285	72.7449	Calverton

REA 2
tudy area components:

Zip	% Incl	Latitude	Longitude	Name
11792	100.00	40.9521	72.8343	Wading River
11901	100.00	40.9213	72.6644	Riverhead
11933	100.00	40.9285	72.7449	Calverton
11934	100.00	40.7998	72.7966	Center Moriches
11935	100.00	41.0152	72.4766	Cutchogue
11940	100.00	40.8091	72.7533	East Moriches
11941	100.00	40.8170	72.7105	Eastport
11942	100.00	40.8500	72.5714	East Quogue
11946	100.00	40.8728	72.5196	Hampton Bays
11948	100.00	40.9674	72.5536	Laurel
11949	100.00	40.8482	72.8060	Manorville
11952	100.00	40.9958	72.5356	Mattituck
11977	100.00	40.8194	72.6686	Westhampton
11978	100.00	40.8229	72.6443	Westhampton Beach

REA 3
tudy area components:

Zip	% Incl	Latitude	Longitude	Name
11792	100.00	40.9521	72.8343	Wading River
11901	100.00	40.9213	72.6644	Riverhead
11933	100.00	40.9285	72.7449	Calverton
11934	100.00	40.7998	72.7966	Center Moriches
11935	100.00	41.0152	72.4766	Cutchogue
11937	100.00	41.0000	72.1803	East Hampton
11939	100.00	41.1265	72.3414	East Marion
11940	100.00	40.8091	72.7533	East Moriches
11941	100.00	40.8170	72.7105	Eastport
11942	100.00	40.8500	72.5714	East Quogue
11944	100.00	41.1040	72.3669	Greenport
11946	100.00	40.8728	72.5196	Hampton Bays
11948	100.00	40.9674	72.5536	Laurel
11949	100.00	40.8482	72.8060	Manorville
11952	100.00	40.9958	72.5356	Mattituck
11954	100.00	41.0460	71.9435	Montauk
11957	100.00	41.1438	72.2874	Orient
11958	100.00	41.0433	72.4641	Peconic
11963	100.00	40.9958	72.3113	Sag Harbor
11964	100.00	41.0641	72.3361	Shelter Island
11965	100.00	41.0765	72.3418	Shelter Island Heights
11968	100.00	40.9089	72.4147	Southampton
11971	100.00	41.0571	72.4243	Southold
11976	100.00	40.9236	72.3497	Water Mill
11977	100.00	40.8194	72.6686	Westhampton
11978	100.00	40.8229	72.6443	Westhampton Beach

ATTACHMENT B

Marketview Comparison Report,
Claritas Inc.

aritas Inc.
les (800)234-5973
ea 1 = AREA 1
ea 2 = AREA 2
ea 3 = AREA 3

9-MAY-00
Support (800)780-4237

tribute		Area 1		Area 2		Area 3	
pulation:	2004 Total.........	23435		76986		119982	
	1999 Total.........	22385		74666		116582	
	1990 Total.........	20010		69229		108749	
	1980 Total.........	17666		62267		98464	
	% Change 90-99.....	11.9		7.9		7.2	
	% Change 80-90.....	13.3		11.2		10.4	
ouseholds:	2004 Total.........	9281		30617		49611	
	1999 Total.........	8729		29248		47507	
	1990 Total.........	7512		26281		43032	
	1980 Total.........	6543		22938		37608	
	% Change 90-99.....	16.2		11.3		10.4	
	% Change 80-90.....	14.8		14.6		14.4	
v. HH Size:	2004...............	2.42		2.46		2.38	
	1999...............	2.45		2.50		2.41	
	1990...............	2.51		2.57		2.48	
999 Group Quarters Population..		1008		1531		1941	
amilies:	2004 Total.........	6187		20742		32737	
	1999 Total.........	5897		20114		31801	
	1990 Total.........	5201		18595		29574	
	% Change 90-99.....	13.4		8.2		7.5	
ousing nits:	2004 Total.........	11811		43597		82497	
	1999 Total.........	11100		41752		79309	
	1990 Total.........	9408		37199		70929	
999 Population by Race/Hispanic		22385	%	74666	%	116582	%
White (not Hispanic)..........		16024	71.6	63501	85.0	100717	86.4
Black (not Hispanic)..........		5090	22.7	7139	9.6	8996	7.7
Asian (not Hispanic)..........		205	0.9	875	1.2	1269	1.1
All Other (not Hispanic)......		131	0.6	275	0.4	773	0.7
Hispanic Origin...............		935	4.2	2876	3.9	4827	4.1
999 Pop. by Age:		22385	%	74666	%	116582	%
Under 5 Years...............		1499	6.7	4676	6.3	6928	5.9
5 to 9 Years...............		1500	6.7	4761	6.4	7133	6.1
10 to 14 Years...............		1424	6.4	4828	6.5	7143	6.1
15 to 19 Years...............		1344	6.0	4643	6.2	6767	5.8
20 to 24 Years...............		1274	5.7	4296	5.8	6131	5.3
25 to 29 Years...............		1435	6.4	4548	6.1	6829	5.9
30 to 34 Years...............		1492	6.7	4646	6.2	6948	6.0
35 to 39 Years...............		1636	7.3	5313	7.1	8021	6.9
40 to 44 Years...............		1704	7.6	5934	7.9	9138	7.8
45 to 54 Years...............		2836	12.7	10934	14.6	17103	14.7
55 to 64 Years...............		1756	7.8	6473	8.7	11014	9.4
65 to 74 Years...............		2148	9.6	6460	8.7	11257	9.7
75 to 84 Years...............		1699	7.6	5274	7.1	8892	7.6
85 Years and Over............		638	2.9	1880	2.5	3278	2.8
Total Median Age (in Years)...		38.7		39.6		41.3	
Male Median Age (in Years)....		36.0		37.7		39.5	

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ales (800)234-5973
rea 1 = AREA 1
rea 2 = AREA 2
rea 3 = AREA 3

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ttribute	Area 1		Area 2		Area 3	
999 Females by age:(see pp.9-10)	11566	%	38454	%	60341	%
Under 5 years................	731	6.3	2287	5.9	3411	5.7
5 to 9 years................	736	6.4	2339	6.1	3484	5.8
10 to 14 years................	664	5.7	2325	6.0	3457	5.7
15 to 19 years................	643	5.6	2223	5.8	3303	5.5
20 to 24 years................	578	5.0	2069	5.4	2976	4.9
25 to 29 years................	643	5.6	2169	5.6	3290	5.5
30 to 34 years................	726	6.3	2296	6.0	3443	5.7
35 to 39 years................	833	7.2	2667	6.9	4015	6.7
40 to 44 years................	920	8.0	3189	8.3	4858	8.1
45 to 54 years................	1444	12.5	5469	14.2	8616	14.3
55 to 64 years................	919	7.9	3282	8.5	5624	9.3
65 to 74 years................	1213	10.5	3597	9.4	6197	10.3
75 to 84 years................	1061	9.2	3233	8.4	5361	8.9
85 years and over.............	455	3.9	1309	3.4	2306	3.8
Female Median age (in years)..	41.2		41.3		42.9	
999 White population by age:...	16805	%	66068	%	105109	%
White under 5 years..........	975	5.8	3885	5.9	5925	5.6
White 5 to 17 years..........	2534	15.1	10552	16.0	16048	15.3
White 18 to 44 years..........	5572	33.2	22795	34.5	34758	33.1
White 45 to 64 years..........	3588	21.4	15803	23.9	25850	24.6
White 65 years and over.......	4136	24.6	13033	19.7	22528	21.4
999 Black population by age:...	5238	%	7390	%	9343	%
Black under 5 years..........	490	9.4	688	9.3	836	8.9
Black 5 to 17 years..........	1193	22.8	1726	23.4	2100	22.5
Black 18 to 44 years..........	2301	43.9	3139	42.5	3874	41.5
Black 45 to 64 years..........	922	17.6	1334	18.1	1776	19.0
Black 65 years and over.......	332	6.3	503	6.8	757	8.1
999 Hispanic population by age:	935	%	2876	%	4827	%
Hispanic under 5 years.......	93	9.9	284	9.9	436	9.0
Hispanic 5 to 17 years.......	182	19.5	633	22.0	962	19.9
Hispanic 18 to 44 years.......	458	49.0	1300	45.2	2280	47.2
Hispanic 45 to 64 years.......	134	14.3	496	17.2	879	18.2
Hispanic 65 years and over....	68	7.3	163	5.7	270	5.6
Per capita inc.: 1999...........	$19616		$24777		$27193	
1989 (Census)..	$13837		$17257		$19006	
% Change 89-99.	41.8		43.6		43.1	
Avg. hhld inc.: 1999...........	$48949		$62439		$66009	
1989 (Census)..	$36170		$45183		$47800	
% Change 89-99	35.3		38.2		38.1	
Med. hhld inc.: 1999...........	$37560		$46952		$47629	
1989 (Census)..	$29599		$36629		$36853	
% Change 89-99.	26.9		28.2		29.2	
Med. Family HH inc.: 1999.......	$47924		$58459		$58127	
1989 (Census)..	$37363		$44952		$44601	
% Change 89-99.	28.3		30.0		30.3	

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laritas Inc.
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rea 1 = AREA 1
rea 2 = AREA 2
rea 3 = AREA 3

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ttribute	Area 1		Area 2		Area 3	
999 Average Household Wealth...	$161062		$189977		$204740	
999 Median Household Wealth....	$83988		$97879		$106034	
999 Households by Hhld Income:.	8729	%	29248	%	47507	%
See pg.11) Under $10,000.......	1030	11.8	2317	7.9	3595	7.6
$ 10,000 to $ 19,999........	1338	15.3	3502	12.0	5707	12.0
$ 20,000 to $ 24,999........	594	6.8	1655	5.7	2641	5.6
$ 25,000 to $ 29,999........	539	6.2	1530	5.2	2498	5.3
$ 30,000 to $ 34,999........	485	5.6	1662	5.7	2729	5.7
$ 35,000 to $ 49,999........	1468	16.8	4568	15.6	7294	15.4
$ 50,000 to $ 74,999........	1593	18.2	5943	20.3	9777	20.6
$ 75,000 to $ 99,999........	898	10.3	3933	13.4	5880	12.4
$100,000 to $149,999........	545	6.2	2529	8.6	4074	8.6
$150,000 and Over...........	239	2.7	1609	5.5	3312	7.0
1990 Hholds by 1989 hhld income:	7512	%	26281	%	43032	%
Under $10,000.......	1295	17.2	3054	11.6	4810	11.2
$ 10,000 to $ 19,999........	1215	16.2	3655	13.9	5989	13.9
$ 20,000 to $ 24,999........	598	8.0	1966	7.5	3243	7.5
$ 25,000 to $ 29,999........	699	9.3	1996	7.6	3195	7.4
$ 30,000 to $ 34,999........	531	7.1	1805	6.9	3095	7.2
$ 35,000 to $ 49,999........	1199	16.0	4687	17.8	7796	18.1
$ 50,000 to $ 74,999........	1324	17.6	5626	21.4	8587	20.0
$ 75,000 to $ 99,999........	387	5.2	1896	7.2	3096	7.2
$100,000 to $149,999........	217	2.9	1057	4.0	1940	4.5
$150,000 and Over...........	47	0.6	539	2.1	1281	3.0
1999 Fam. HHs by Fam. Hhld Inc.:	5897	%	20114	%	31801	%
Under $10,000.......	283	4.8	685	3.4	1065	3.3
$ 10,000 to $ 19,999........	612	10.4	1553	7.7	2328	7.3
$ 20,000 to $ 24,999........	351	6.0	901	4.5	1386	4.4
$ 25,000 to $ 29,999........	355	6.0	909	4.5	1485	4.7
$ 30,000 to $ 34,999........	343	5.8	1017	5.1	1703	5.4
$ 35,000 to $ 49,999........	1100	18.7	3289	16.4	5208	16.4
$ 50,000 to $ 74,999........	1386	23.5	4816	23.9	7653	24.1
$ 75,000 to $ 99,999........	783	13.3	3294	16.4	4770	15.0
$100,000 to $149,999........	472	8.0	2229	11.1	3460	10.9
$150,000 and Over...........	212	3.6	1421	7.1	2743	8.6
1990 Fam. HH by 1989 Fam. HH Inc	5201	%	18595	%	29574	%
Under $10,000.......	371	7.1	909	4.9	1403	4.7
$ 10,000 to $ 19,999........	693	13.3	1944	10.5	2971	10.0
$ 20,000 to $ 24,999........	441	8.5	1259	6.8	2024	6.8
$ 25,000 to $ 29,999........	480	9.2	1383	7.4	2189	7.4
$ 30,000 to $ 34,999........	400	7.7	1266	6.8	2180	7.4
$ 35,000 to $ 49,999........	1042	20.0	3751	20.2	6107	20.6
$ 50,000 to $ 74,999........	1186	22.8	4900	26.4	7190	24.3
$ 75,000 to $ 99,999........	349	6.7	1743	9.4	2735	9.2
$100,000 to $149,999........	197	3.8	974	5.2	1701	5.8
$150,000 and Over...........	42	0.8	466	2.5	1074	3.6

NOTE: When median household wealth is < $25,000 it will be listed as $24,999.

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rea 1 = AREA 1
rea 2 = AREA 2
rea 3 = AREA 3

ttribute	Area 1		Area 2		Area 3	
999 Households by Hhold Wealth:	8729	%	29248	%	47507	%
Less than $25,000..........	2561	29.3	7809	26.7	12064	25.4
$ 25,000 to $ 49,999.........	756	8.7	2345	8.0	3716	7.8
$ 50,000 to $ 99,999.........	1541	17.7	4668	16.0	7480	15.7
$100,000 to $249,999.........	2219	25.4	7549	25.8	12269	25.8
$250,000 to $499,999.........	1169	13.4	4570	15.6	7742	16.3
$500,000 and Over............	483	5.5	2307	7.9	4236	8.9
999 Householders by Age:	8729	%	29248	%	47507	%
15 to 24 Years...............	207	2.4	717	2.5	1104	2.3
25 to 34 Years...............	1230	14.1	3952	13.5	5991	12.6
35 to 44 Years...............	1757	20.1	5875	20.1	9021	19.0
45 to 54 Years...............	1586	18.2	6210	21.2	9792	20.6
55 to 64 Years...............	1028	11.8	3746	12.8	6427	13.5
65 to 74 Years...............	1403	16.1	4127	14.1	7219	15.2
75 Years and Over............	1518	17.4	4621	15.8	7953	16.7
1999 Households by Hhold Inc:						
Age of Hholder 25-44 Years:	2987	%	9827	%	15012	%
Under $15,000............	318	10.6	759	7.7	1123	7.5
$ 15,000 to $ 24,999.........	289	9.7	750	7.6	1202	8.0
$ 25,000 to $ 34,999.........	342	11.4	941	9.6	1534	10.2
$ 35,000 to $ 49,999.........	521	17.4	1760	17.9	2702	18.0
$ 50,000 to $ 74,999.........	748	25.0	2587	26.3	3957	26.4
$ 75,000 to $ 99,999.........	431	14.4	1675	17.0	2283	15.2
$100,000 and Over............	338	11.3	1355	13.8	2211	14.7
Age of Hholder 45-64 Years:	2614	%	9956	%	16219	%
Under $15,000..........	263	10.1	646	6.5	1099	6.8
$ 15,000 to $ 24,999.........	249	9.5	744	7.5	1255	7.7
$ 25,000 to $ 34,999.........	256	9.8	870	8.7	1425	8.8
$ 35,000 to $ 49,999.........	540	20.7	1522	15.3	2337	14.4
$ 50,000 to $ 74,999.........	538	20.6	2205	22.1	3624	22.3
$ 75,000 to $ 99,999.........	382	14.6	1742	17.5	2631	16.2
$100,000 and over............	386	14.8	2227	22.4	3848	23.7
Age of Householder 65+ Years:	2921	%	8748	%	15172	%
Under $15,000..........	1108	37.9	2538	29.0	4015	26.5
$ 15,000 to $ 24,999.........	659	22.6	1812	20.7	2896	19.1
$ 25,000 to $ 34,999.........	395	13.5	1258	14.4	2090	13.8
$ 35,000 to $ 49,999.........	363	12.4	1159	13.2	2040	13.4
$ 50,000 to $ 74,999.........	269	9.2	1034	11.8	2000	13.2
$ 75,000 to $ 99,999.........	70	2.4	433	4.9	864	5.7
$100,000 and Over............	57	2.0	514	5.9	1267	8.4
1990 Households by Hhold Type:	7502	%	26296	%	43047	%
Male no Wife no Child.........	174	2.3	519	2.0	873	2.0
Female no Husband no Child....	472	6.3	1339	5.1	2026	4.7
Married Couple Family.........	4025	53.7	15461	58.8	24830	57.7
Other Family Hhold Own Child..	673	9.0	1529	5.8	2154	5.0
Non-Family...................	2158	28.8	7448	28.3	13164	30.6

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ea 1 = AREA 1
ea 2 = AREA 2
ea 3 = AREA 3

tribute	Area 1		Area 2		Area 3	
990 Pop. 65+ Yr. by HH Type:	4153	%	12403	%	21047	%
Living Alone..................	1229	29.6	3668	29.6	6237	29.6
In Families...................	2624	63.2	8198	66.1	13827	65.7
In Non-Families...............	15	0.4	109	0.9	360	1.7
In Group Quarters.............	285	6.9	428	3.5	623	3.0
990 Marital status:						
For Population 15+ Years:	16333	%	55881	%	88966	%
Never Married...............	4367	26.7	13433	24.0	20646	23.2
Now Married (Exc. Separated)	8469	51.9	32385	58.0	51906	58.3
Divorced or Separated.......	1604	9.8	4551	8.1	7148	8.0
Widowed.....................	1893	11.6	5512	9.9	9266	10.4
For Females 15+ Years:	8840	%	29318	%	46768	%
Never Married...............	2174	24.6	6153	21.0	9247	19.8
Now Married (Exc. Separated)	4197	47.5	16111	55.0	25819	55.2
Divorced or Separated.......	895	10.1	2586	8.8	4028	8.6
Widowed.....................	1574	17.8	4468	15.2	7674	16.4
990 Educational Attainment for opulation 25+ Years:	13996	%	47805	%	77255	%
Less than 9th Grade............	1610	11.5	3971	8.3	5632	7.3
9th to 12th Grade, No Diploma..	2383	17.0	6032	12.6	8976	11.6
High School Graduate...........	5012	35.8	16001	33.5	24955	32.3
Some College, No Degree........	2383	17.0	9255	19.4	14841	19.2
Associate Degree...............	723	5.2	3255	6.8	5147	6.7
Bachelor's Degree..............	1110	7.9	5217	10.9	9704	12.6
Graduate or Prof. Degree.......	775	5.5	4074	8.5	8000	10.4
1990 Pop. Age 16+, In Labor Frc:	8929	%	33296	%	52734	%
Civilian Employed Males.......	4513	50.5	17751	53.3	28012	53.1
Civilian Employed Females.....	3999	44.8	14045	42.2	22340	42.4
Persons in Armed Forces.......	35	0.4	127	0.4	162	0.3
Persons Unemployed............	382	4.3	1373	4.1	2220	4.2
1990 Occupat.-Employed pop. 16+:	8514	%	31791	%	50340	%
Managerial/Prof. Spec.........	1750	20.6	8506	26.8	14017	27.8
Exec/Admin/Managerial........	872	10.2	3453	10.9	5718	11.4
Professional Specialty.......	878	10.3	5053	15.9	8299	16.5
Tech./Sales/Admn. Support.....	2643	31.0	10045	31.6	15391	30.6
Technician and Related.......	361	4.2	1243	3.9	1652	3.3
Sales........................	872	10.2	3693	11.6	6109	12.1
Administrative Support.......	1410	16.6	5109	16.1	7630	15.2
Service Occupation............	1314	15.4	4243	13.3	6733	13.4
Private Household...........	61	0.7	156	0.5	326	0.6
Protective Service..........	240	2.8	967	3.0	1252	2.5
Other Service...............	1013	11.9	3120	9.8	5155	10.2
Farming/Forestry/Fishing......	352	4.1	1137	3.6	2045	4.1
Precision/Craft/Repair........	1173	13.8	4418	13.9	7115	14.1
Operator/Fabricators/Laborer..	1282	15.1	3442	10.8	5039	10.0
Machine Op/Assem./Inspect....	391	4.6	1077	3.4	1447	2.9
Trans. & Material Moving.....	498	5.8	1304	4.1	2034	4.0
Handlers/Helpers/Laborers....	393	4.6	1061	3.3	1558	3.1

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ea 1 = AREA 1
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tribute	Area 1		Area 2		Area 3	
990 Industry-Employed Pop. 16+:	8514	%	31796	%	50356	%
Agriculture/Forestry/Fisheries	419	4.9	1281	4.0	2233	4.4
Mining........................	0	0.0	33	0.1	33	0.1
Construction..................	729	8.6	2781	8.7	5169	10.3
Manufacturing-Nondurable Goods	306	3.6	960	3.0	1449	2.9
Manufacturing-Durable Goods...	634	7.4	2122	6.7	2804	5.6
Transportation................	337	4.0	1408	4.4	2211	4.4
Communications and Public Util	203	2.4	864	2.7	1068	2.1
Wholesales Trade..............	273	3.2	1035	3.3	1473	2.9
Retail Trade..................	1588	18.7	5380	16.9	8901	17.7
Finance/Insurance/Real Estate.	532	6.2	2054	6.5	3533	7.0
Business and Repair Services..	329	3.9	1394	4.4	2157	4.3
Personal Services.............	314	3.7	870	2.7	1787	3.5
Entertainment/Recreation Serv.	69	0.8	434	1.4	731	1.5
Professional and Related Serv.	2057	24.2	8666	27.3	13539	26.9
Public Administration.........	724	8.5	2514	7.9	3268	6.5
990 Pop. by Travel Time to Work:	8353	%	31388	%	49643	%
Travel in Under 10 Minutes...	2139	25.6	6506	20.7	12497	25.2
Travel in 10 to 14 Minutes....	1437	17.2	4471	14.2	8544	17.2
Travel in 15 to 19 Minutes....	1175	14.1	4775	15.2	7300	14.7
Travel in 20 to 29 Minutes....	1389	16.6	5615	17.9	7654	15.4
Travel in 30 to 44 Minutes....	1259	15.1	5068	16.1	7014	14.1
Travel in 45 to 59 Minutes....	427	5.1	2046	6.5	2687	5.4
Travel in 60 to 89 Minutes....	399	4.8	1832	5.8	2477	5.0
Travel in 90 Minutes and Over.	128	1.5	1075	3.4	1470	3.0
990 Pop. by Transport. to Work:	8354	%	31379	%	49642	%
Travel by Driving Alone.......	6513	78.0	25192	80.3	38803	78.2
Travel by Carpool.............	1091	13.1	3671	11.7	5418	10.9
Travel by Public transport....	241	2.9	797	2.5	1483	3.0
Travel by Walking Only........	290	3.5	829	2.6	1712	3.4
Travel by Other Means.........	84	1.0	283	0.9	569	1.1
Working at Home...............	135	1.6	607	1.9	1657	3.3
1990 Housing Units:	9443	%	37189	%	70912	%
Owner-Occupied Housing Units..	5650	59.8	19925	53.6	33089	46.7
Renter-Occupied Housing Units.	1879	19.9	6344	17.1	9938	14.0
Vacant Housing Units..........	1914	20.3	10916	29.4	27881	39.3
1990 Specified Owner-Occ. Housing Units by Value:	3812	%	16350	%	28038	%
Under $ 20,000..............	25	0.7	63	0.4	119	0.4
$20,000 to $39,999.........	42	1.1	86	0.5	125	0.4
$40,000 to $49,999.........	34	0.9	66	0.4	103	0.4
$50,000 to $74,999.........	195	5.1	492	3.0	690	2.5
$75,000 to $99,999.........	556	14.6	1421	8.7	1905	6.8
$100,000 to $149,999.........	1402	36.8	4626	28.3	6285	22.4
$150,000 to $199,999.........	876	23.0	4522	27.7	7354	26.2
$200,000 to $299,999.........	481	12.6	3314	20.3	6777	24.2
$300,000 to $499,999.........	150	3.9	1223	7.5	3215	11.5
$500,000 and Over............	51	1.3	537	3.3	1465	5.2
Median Housing Value.........	137299		163590		180759	

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ttribute	Area 1		Area 2		Area 3	
990 Specified Renter-Occupied nits by Gross Rent:	1823	%	6174	%	9683	%
With Cash Rent................	1730	94.9	5867	95.0	9036	93.3
Less than $100................	8	0.4	11	0.2	19	0.2
$100 to $149..................	65	3.6	77	1.2	91	0.9
$150 to $199..................	46	2.5	69	1.1	101	1.0
$200 to $249..................	56	3.1	67	1.1	88	0.9
$250 to $299..................	40	2.2	97	1.6	114	1.2
$300 to $399..................	169	9.3	350	5.7	495	5.1
$400 to $499..................	190	10.4	456	7.4	707	7.3
$500 to $599..................	163	8.9	739	12.0	1198	12.4
$600 to $749..................	426	23.4	1672	27.1	2280	23.5
$750 to $999..................	331	18.2	1411	22.9	2206	22.8
$1,000 or More................	236	12.9	918	14.9	1737	17.9
No Cash Rent..................	93	5.1	307	5.0	647	6.7
990 Households by Vehicles:	7529	%	26273	%	43031	%
0 Vehicles....................	938	12.5	2288	8.7	3269	7.6
1 Vehicle Available...........	2725	36.2	8667	33.0	14909	34.6
2 Vehicles Available..........	2666	35.4	10323	39.3	17139	39.8
3 Vehicles Available..........	809	10.7	3558	13.5	5537	12.9
4 Vehicles Available..........	259	3.4	1093	4.2	1643	3.8
5+ Vehicles Available.........	132	1.8	344	1.3	534	1.2
1990 Housing Units by Number of Units in Structure:	9443	%	37185	%	70909	%
Single Detached Unit..........	6485	68.7	29094	78.2	58110	82.0
Single Attached Unit..........	259	2.7	907	2.4	1760	2.5
Structures with 2 Units.......	270	2.9	945	2.5	1897	2.7
Structures w/ 3-4 Units.......	151	1.6	393	1.1	1025	1.4
Structures w/ 5-9 Units.......	116	1.2	441	1.2	874	1.2
Structures w/ 10-19 Units.....	342	3.6	1129	3.0	1474	2.1
Structures w/ 20-49 Units.....	80	0.8	1011	2.7	1427	2.0
Structures w/ 50+ Units.......	48	0.5	324	0.9	462	0.7
Mobile Homes/Trailers or Other	1691	17.9	2942	7.9	3885	5.5
1990 Housing Units by Year Built:	9440	%	37185	%	70910	%
Built 1989 to March 1990......	223	2.4	655	1.8	1405	2.0
Built 1985 to 1988............	851	9.0	3636	9.8	7957	11.2
Built 1980 to 1984............	767	8.1	2857	7.7	6716	9.5
Built 1970 to 1979............	2073	22.0	8884	23.9	15094	21.3
Built 1960 to 1969............	1601	17.0	6922	18.6	12751	18.0
Built 1950 to 1959............	1800	19.1	6445	17.3	10275	14.5
Built 1940 to 1949............	825	8.7	2645	7.1	4727	6.7
Built 1939 or Earlier	1300	13.8	5141	13.8	11985	16.9
1990 HUs by Year Moved In:	7531	%	26269	%	43029	%
Moved in 1989 to March 1990...	956	12.7	3270	12.4	5468	12.7
Moved in 1985 to 1988.........	2082	27.6	6958	26.5	11213	26.1
Moved in 1980 to 1984.........	1318	17.5	4053	15.4	6600	15.3
Moved in 1970 to 1979.........	1595	21.2	6323	24.1	9983	23.2
Moved in 1969 or Earlier......	1580	21.0	5665	21.6	9765	22.7

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rea 1 = AREA 1
rea 2 = AREA 2
rea 3 = AREA 3

ttribute	Area 1		Area 2		Area 3	
999 Expenditures by Selected Product ategories(in thousands of dollars):	($000s)	U.S. Index	($000s)	U.S. Index	($000s)	U.S. Index
'ood at Home	$36126	102	$126864	107	$203715	106
'ood Away From Home	$23990	102	$91277	116	$148426	116
lcoholic Beverages at Home	$2297	104	$8499	115	$13839	115
lcoholic Beverages Away From Home	$1494	97	$5984	116	$9757	116
'ersonal Care Products	$3097	91	$11461	101	$18460	100
'ersonal Care Services	$2960	109	$10657	117	$17428	118
Ionprescription Drugs	$1227	94	$4370	100	$7127	100
Iomen's Apparel	$8001	108	$30678	123	$50255	124
Ien's Apparel	$4437	104	$17494	123	$28176	122
irls' Apparel	$797	103	$2906	112	$4488	106
oys' Apparel	$1016	102	$3609	108	$5571	103
nfants' Apparel	$811	104	$2875	110	$4556	107
'ootwear (Excl. Infants)	$3248	101	$11938	111	$19129	109
Iousekeeping Supplies	$4381	98	$16149	108	$26177	107
awn/Garden Supplies (Incl. Plants)	$717	96	$2655	106	$4362	108
omestic Services	$4261	92	$16942	109	$27439	109
Iousehold Textiles	$1354	101	$5185	115	$8479	116
'urniture	$4725	98	$17741	110	$28499	109
'loor Coverings	$1461	110	$5757	129	$9451	131
Major Appliances	$1843	95	$6781	105	$11036	105
Small Appliances & Houseware	$1131	92	$4458	108	$7262	108
TV, Radio & Sound Equipment	$5941	92	$22689	105	$36478	104
)ther Entertainment Equip./Services	$5954	84	$24870	104	$39465	102
Transportation	$60690	94	$237104	109	$384737	109

1999 Expenditures by Selected Store Type (in thousands of dollars):	($000s)	U.S. Index	($000s)	U.S. Index	($000s)	U.S. Index
Building Materials & Supply Stores	$3656	100	$13569	111	$21985	110
Hardware Stores	$497	96	$1902	109	$3087	109
Retail Nursery/Lawn/Garden Supply	$750	100	$2881	115	$4733	116
Auto Supply Stores	$3171	89	$12496	105	$20369	105
Gasoline/Service Stations	$14471	90	$54998	102	$88881	101
Grocery Stores	$38325	100	$136103	107	$219056	106
Drug and Proprietary Stores	$6637	101	$24106	110	$39445	111
Eating Places	$23732	102	$90588	116	$147392	116
Drinking Places	$1104	98	$4343	115	$7093	116
Department Stores (Excl. Leased)	$16543	98	$63351	112	$102420	112
Apparel Stores	$7413	105	$28432	120	$46088	120
Shoe Stores	$1947	101	$7182	111	$11511	110
Furniture	$4239	97	$16022	110	$25802	109
Home Furnishing Stores	$2351	101	$9281	119	$15200	120
Household Appliance Stores	$1007	96	$3804	108	$6201	108
Radio/TV/Computer/Music Stores	$3380	90	$13355	106	$21597	105

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1999 Male and Female Population Comparison

rea 1 = AREA 1

Males		Age		Females
183	m	85+	ffff	455
638	mmmmmm	75-84	fffffffffff	1061
935	mmmmmmmmm	65-74	ffffffffffff	1213
837	mmmmmmmm	55-64	fffffffff	919
1392	mmmmmmmmmmmmmm	45-54	fffffffffffffff	1444
784	mmmmmmmm	40-44	fffffffff	920
803	mmmmmmmm	35-39	ffffffff	833
766	mmmmmmm	30-34	fffffff	726
792	mmmmmmmm	25-29	ffffff	643
696	mmmmmmm	20-24	ffffff	578
701	mmmmmmm	15-19	ffffff	643
760	mmmmmmm	10-14	ffffff	664
764	mmmmmmm	5-9	fffffff	736
768	mmmmmmm	<5	fffffff	731

rea 2 = AREA 2

Males		Age		Females
571	m	85+	fff	1309
2041	mmmmm	75-84	ffffffff	3233
2863	mmmmmmm	65-74	fffffffff	3597
3191	mmmmmmmm	55-64	fffffffff	3282
5465	mmmmmmmmmmmmmm	45-54	fffffffffffffff	5469
2745	mmmmmmm	40-44	ffffffff	3189
2646	mmmmmmm	35-39	fffffff	2667
2350	mmmmmm	30-34	ffffff	2296
2379	mmmmmm	25-29	fffff	2169
2227	mmmmmm	20-24	fffff	2069
2420	mmmmmm	15-19	ffffff	2223
2503	mmmmmm	10-14	ffffff	2325
2422	mmmmmm	5-9	ffffff	2339
2389	mmmmmm	<5	ffffff	2287

Area 3 = AREA 3

Males		Age		Females
972	m	85+	ffff	2306
3531	mmmmmm	75-84	fffffffff	5361
5060	mmmmmmmm	65-74	ffffffffff	6197
5390	mmmmmmmmm	55-64	fffffffff	5624
8487	mmmmmmmmmmmmmm	45-54	fffffffffffffff	8616
4280	mmmmmmm	40-44	ffffffff	4858
4006	mmmmmm	35-39	ffffff	4015
3505	mmmmmm	30-34	fffff	3443
3539	mmmmmm	25-29	fffff	3290
3155	mmmmm	20-24	fffff	2976
3464	mmmmmm	15-19	fffff	3303
3686	mmmmmm	10-14	ffffff	3457
3649	mmmmmm	5-9	ffffff	3484
3517	mmmmmm	<5	fffff	3411

laritas Inc.
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9-MAY-00
Support (800)780-4237

1999 Total Population Comparison (%)

rea 1 = AREA 1
rea 2 = AREA 2
rea 3 = AREA 3

Area 1		Age		Area 2
2.9	11	85+	22	2.5
7.6	1111111	75-84	2222222	7.1
9.6	111111111	65-74	22222222	8.7
7.8	11111111	55-64	22222222	8.7
12.7	111111111111	45-54	22222222222222	14.6
7.6	1111111	40-44	22222222	7.9
7.3	1111111	35-39	2222222	7.1
6.7	111111	30-34	222222	6.2
6.4	111111	25-29	222222	6.1
5.7	11111	20-24	22222	5.8
6.0	111111	15-19	222222	6.2
6.4	111111	10-14	222222	6.5
6.7	111111	5-9	222222	6.4
6.7	111111	<5	222222	6.3

Area 2		Age		Area 3
2.5	22	85+	33	2.8
7.1	2222222	75-84	3333333	7.6
8.7	22222222	65-74	333333333	9.7
8.7	22222222	55-64	333333333	9.4
14.6	22222222222222	45-54	333333333333333	14.7
7.9	22222222	40-44	33333333	7.8
7.1	2222222	35-39	3333333	6.9
6.2	222222	30-34	333333	6.0
6.1	222222	25-29	33333	5.9
5.8	22222	20-24	33333	5.3
6.2	222222	15-19	33333	5.8
6.5	222222	10-14	333333	6.1
6.4	222222	5-9	333333	6.1
6.3	222222	<5	333333	5.9

Area 3		Age		Area 1
2.8	33	85+	11	2.9
7.6	3333333	75-84	1111111	7.6
9.7	333333333	65-74	111111111	9.6
9.4	333333333	55-64	11111111	7.8
14.7	333333333333333	45-54	111111111111	12.7
7.8	33333333	40-44	1111111	7.6
6.9	3333333	35-39	1111111	7.3
6.0	333333	30-34	111111	6.7
5.9	33333	25-29	111111	6.4
5.3	33333	20-24	11111	5.7
5.8	33333	15-19	111111	6.0
6.1	333333	10-14	111111	6.4
6.1	333333	5-9	111111	6.7
5.9	333333	<5	111111	6.7

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1999 Households by Household Income (%):
(income ranges in thousands of dollars)

rea 1 = AREA 1
rea 2 = AREA 2
rea 3 = AREA 3

Area 1		HH inc		Area 2
2.7	11	$150+	2222	5.5
6.2	1111	$100-$150	222222	8.6
10.3	1111111	$ 75-$100	222222222	13.4
18.2	1111111111111	$ 50-$ 75	22222222222222	20.3
16.8	111111111111	$ 35-$ 50	2222222222	15.6
5.6	1111	$ 30-$ 35	2222	5.7
6.2	1111	$ 25-$ 30	222	5.2
6.8	11111	$ 20-$ 25	2222	5.7
15.3	11111111111	$ 10-$ 20	22222222	12.0
11.8	11111111	<$10	22222	7.9

Area 2		HH inc		Area 3
5.5	2222	$150+	33333	7.0
8.6	222222	$100-$150	333333	8.6
13.4	222222222	$ 75-$100	333333333	12.4
20.3	22222222222222	$ 50-$ 75	333333333333333	20.6
15.6	2222222222	$ 35-$ 50	33333333333	15.4
5.7	2222	$ 30-$ 35	3333	5.7
5.2	222	$ 25-$ 30	333	5.3
5.7	2222	$ 20-$ 25	3333	5.6
12.0	22222222	$ 10-$ 20	33333333	12.0
7.9	22222	<$10	33333	7.6

Area 3		HH inc		Area 1
7.0	33333	$150+	1	2.7
8.6	333333	$100-$150	1111	6.2
12.4	333333333	$ 75-$100	1111111	10.3
20.6	333333333333333	$ 50-$ 75	1111111111111	18.2
15.4	33333333333	$ 35-$ 50	111111111111	16.8
5.7	3333	$ 30-$ 35	1111	5.6
5.3	333	$ 25-$ 30	1111	6.2
5.6	3333	$ 20-$ 25	1111	6.8
12.0	33333333	$ 10-$ 20	11111111111	15.3
7.6	33333	<$10	11111111	11.8

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1999 estimates and 2004 projections produced by Claritas Inc.

ATTACHMENT C

Study Area Summary, Summary Business Data Report by 2-Digit SIC Category

Claritas Inc.

REPARED FOR: NELSON, POPE & VOORHIS, LLC
REA 1
laritas Inc.
ales (800)234-5973

9-MAY-00
Support (800)780-4237

tudy Area Summary

UMMARY BUSINESS DATA REPORT BY 2-DIGIT SIC CATEGORY

IC ode	Business Description	Total Estab.	-----Estimated----- Total Employ.	Sales (in millions)	Estab. 20+ Emp.
OT	ALL INDUSTRIES	1758	22556	2001	191
AN	ALL MANUFACTURING (SIC 20-39)	43	2074	149	9
ET	ALL RETAILING (SIC 52-59)	445	4750	614	53
1	AGRICULTURAL PRODUCTION - CROPS	12	82	6	1
2	AGRICULTURAL PRODUCTION - LIVESTOCK	0	0	0	0
7	AGRICULTURAL SERVICES	31	148	6	0
8	FORESTRY	0	0	0	0
9	FISHING, HUNTING, AND TRAPPING	0	0	0	0
0	METAL MINING	0	0	0	0
2	COAL MINING	0	0	0	0
3	OIL AND GAS EXTRACTION	1	18	2	0
4	MINING NONMETALICS, EXCEPT FUELS	0	0	0	0
5	BUILDING CONSTRUC.-GEN. CONTRACTORS	30	174	48	0
6	HEAVY CONSTRUCTION, EXCEPT SIC 15	12	137	16	2
7	CONSTRUCTION-SPECIAL TRADE CONTRACT	48	228	36	0
20	FOOD AND KINDRED PRODUCTS	5	122	11	2
21	TOBACCO MANUFACTURES	0	0	0	0
22	TEXTILE MILL PRODUCTS	2	10	0	0
23	APPAREL & OTHER FABRIC PRODUCTS	1	2	0	0
24	LUMBER & WOOD PRODUCTS, EX. FURNIT.	1	2	0	0
25	FURNITURE AND FIXTURES	1	13	0	0
26	PAPER AND ALLIED PRODUCTS	1	55	3	1
27	PRINTING, PUBLISHING, & ALLIED IND.	16	337	20	4
28	CHEMICALS AND ALLIED PRODUCTS	0	0	0	0
29	PETROLEUM REFINING & RELATED INDUS.	0	0	0	0
30	RUBBER AND MISC. PLASTICS PRODUCTS	0	0	0	0
31	LEATHER AND LEATHER PRODUCTS	0	0	0	0
32	STONE, CLAY, GLASS, & CONCRETE PROD	0	0	0	0
33	PRIMARY METAL INDUSTRIES	1	1	0	0
34	FABRICATED METAL PRODUCTS	2	7	0	0
35	IND. & COMM. MACHINERY & COMPUTERS	6	1476	108	1
36	ELECTRIC./ELECTRON.EQUIP.(EX.COMP.)	2	38	2	1
37	TRANSPORTATION EQUIPMENT	0	0	0	0
38	INSTRUMENTS AND RELATED PRODUCTS	0	0	0	0
39	MISC. MANUFACTURING INDUSTRIES	5	11	0	0
40	RAILROAD TRANSPORTATION	0	0	0	0
41	LOCAL, SUBURBAN, & INTERURBAN TRANS	11	335	18	4
42	MOTOR FREIGHT TRANSPORT. & WAREHOUS	13	74	7	1
43	U.S. POSTAL SERVICE	5	36	0	0

Prepared from NDS' Business Facts database
using data from InfoUSA

REPARED FOR: NELSON, POPE & VOORHIS, LLC
REA 1
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tudy Area Summary

UMMARY BUSINESS DATA REPORT BY 2-DIGIT SIC CATEGORY (Page 2 of 2)

IC ode	Business Description	Total Estab.	-----Estimated----- Total Employ.	Sales (in millions)	Estab. 20+ Emp.
4	WATER TRANSPORTATION	6	31	5	0
5	TRANSPORTATION BY AIR	0	0	0	0
6	PIPE LINES, EXCEPT NATURAL GAS	0	0	0	0
7	TRANSPORTATION SERVICES	10	187	22	1
8	COMMUNICATION	9	295	25	3
9	ELECTRIC, GAS, & SANITARY SERVICES	6	329	29	2
0	WHOLESALE TRADE-DURABLE GOODS	50	433	73	4
1	WHOLESALE TRADE-NONDURABLE GOODS	46	565	102	10
2	BLDG MAT'RL/GARDEN SUP./MOB'L HOMES	48	683	109	6
3	GENERAL MERCHANDISE STORES	6	436	48	5
4	FOOD STORES	39	497	80	4
55	AUTO. DEALERS & GAS. SERV. STATIONS	58	501	159	9
56	APPAREL AND ACCESSORY STORES	72	673	50	6
57	HOME FURNITURE/FURNISHINGS/EQUIP.	36	268	40	4
58	EATING AND DRINKING PLACES	80	886	40	13
59	MISCELLANEOUS RETAIL	106	806	85	6
60	DEPOSITORY INSTITUTIONS	18	663	186	5
61	NONDEPOSITORY CREDIT INSTITUTIONS	3	15	4	0
62	SECURITY/COMMODITY BROKERS & SERV.	9	78	12	3
63	INSURANCE CARRIERS	2	29	2	1
64	INSURANCE AGENTS, BROKERS & SERVICE	26	177	41	3
65	REAL ESTATE	76	501	48	3
67	HOLDING & OTHER INVESTMENT OFFICES	1	20	3	1
70	HOTELS AND OTHER LODGING PLACES	11	133	6	2
72	PERSONAL SERVICES	48	124	6	0
73	BUSINESS SERVICES	64	402	51	3
75	AUTO. REPAIR, SERVICES, AND PARKING	53	210	20	1
76	MISC. REPAIR SERVICES	18	58	5	0
78	MOTION PICTURES	2	19	3	0
79	AMUSE. & RECR. SERV. (EX. MOVIES)	32	713	54	4
80	HEALTH SERVICES	161	1685	110	8
81	LEGAL SERVICES	56	285	51	3
82	EDUCATIONAL SERVICES	35	1143	137	18
83	SOCIAL SERVICES	54	423	32	3
84	MUSEUMS, ART GALLERIES, ZOOS, ETC.	4	21	0	0
86	MEMBERSHIP ORGANIZATIONS	65	429	38	3
87	ENGIN./ACCT./RES./MANAG./RELAT.SERV	26	155	16	3
88	PRIVATE HOUSEHOLDS	0	0	0	0
89	MISCELLANEOUS SERVICES	4	6	0	0
90	PUBLIC ADMINISTRATION (SIC 90-97)	150	4913	0	37
99	NONCLASSIFIABLE ESTABLISHMENTS	62	458	0	0

Prepared from NDS' Business Facts database
using data from InfoUSA

CLARITAS

EPARED FOR: NELSON, POPE & VOORHIS, LLC
EA 2
aritas Inc.
les (800)234-5973

9-MAY-00
Support (800)780-4237

udy Area Summary

MMARY BUSINESS DATA REPORT BY 2-DIGIT SIC CATEGORY

C ode	Business Description	Total Estab.	-----Estimated----- Total Employ.	Sales (in millions)	Estab. 20+ Emp.
OT	ALL INDUSTRIES	4727	45514	4431	392
AN	ALL MANUFACTURING (SIC 20-39)	136	2903	209	20
ET	ALL RETAILING (SIC 52-59)	1165	9579	1162	102
1	AGRICULTURAL PRODUCTION - CROPS	31	218	17	3
2	AGRICULTURAL PRODUCTION - LIVESTOCK	0	0	0	0
7	AGRICULTURAL SERVICES	127	643	27	2
8	FORESTRY	0	0	0	0
9	FISHING, HUNTING, AND TRAPPING	2	6	0	0
0	METAL MINING	0	0	0	0
2	COAL MINING	0	0	0	0
3	OIL AND GAS EXTRACTION	2	28	3	0
4	MINING NONMETALICS, EXCEPT FUELS	1	2	0	0
5	BUILDING CONSTRUC.-GEN. CONTRACTORS	123	637	177	1
6	HEAVY CONSTRUCTION, EXCEPT SIC 15	44	414	47	5
7	CONSTRUCTION-SPECIAL TRADE CONTRACT	275	1470	230	9
20	FOOD AND KINDRED PRODUCTS	23	255	24	2
21	TOBACCO MANUFACTURES	0	0	0	0
22	TEXTILE MILL PRODUCTS	3	16	0	0
23	APPAREL & OTHER FABRIC PRODUCTS	5	11	0	0
24	LUMBER & WOOD PRODUCTS, EX. FURNIT.	5	39	2	1
25	FURNITURE AND FIXTURES	3	16	1	0
26	PAPER AND ALLIED PRODUCTS	1	55	3	1
27	PRINTING, PUBLISHING, & ALLIED IND.	38	517	31	6
28	CHEMICALS AND ALLIED PRODUCTS	1	27	2	1
29	PETROLEUM REFINING & RELATED INDUS.	0	0	0	0
30	RUBBER AND MISC. PLASTICS PRODUCTS	5	116	7	3
31	LEATHER AND LEATHER PRODUCTS	0	0	0	0
32	STONE, CLAY, GLASS, & CONCRETE PROD	3	13	0	0
33	PRIMARY METAL INDUSTRIES	2	60	4	1
34	FABRICATED METAL PRODUCTS	4	90	5	1
35	IND. & COMM. MACHINERY & COMPUTERS	15	1528	112	1
36	ELECTRIC./ELECTRON.EQUIP.(EX.COMP.)	5	44	2	1
37	TRANSPORTATION EQUIPMENT	6	65	4	2
38	INSTRUMENTS AND RELATED PRODUCTS	2	4	0	0
39	MISC. MANUFACTURING INDUSTRIES	15	47	3	0
40	RAILROAD TRANSPORTATION	0	0	0	0
41	LOCAL, SUBURBAN, & INTERURBAN TRANS	42	885	45	11
42	MOTOR FREIGHT TRANSPORT. & WAREHOUS	22	169	21	4
43	U.S. POSTAL SERVICE	20	177	2	1

Prepared from NDS' Business Facts database
using data from InfoUSA

EPARED FOR: NELSON, POPE & VOORHIS, LLC
EA 2 9-MAY-00
aritas Inc. Support (800)780-4237
les (800)234-5973

udy Area Summary

MMARY BUSINESS DATA REPORT BY 2-DIGIT SIC CATEGORY (Page 2 of 2)

C ode	Business Description	Total Estab.	-----Estimated----- Total Employ.	Sales (in millions)	Estab. 20+ Emp.
4	WATER TRANSPORTATION	52	249	37	2
5	TRANSPORTATION BY AIR	4	89	9	2
6	PIPE LINES, EXCEPT NATURAL GAS	0	0	0	0
7	TRANSPORTATION SERVICES	23	263	34	1
8	COMMUNICATION	15	346	30	5
9	ELECTRIC, GAS, & SANITARY SERVICES	14	452	39	3
0	WHOLESALE TRADE-DURABLE GOODS	150	1334	233	13
1	WHOLESALE TRADE-NONDURABLE GOODS	109	1352	228	15
2	BLDG MAT'RL/GARDEN SUP./MOB'L HOMES	131	1312	209	12
3	GENERAL MERCHANDISE STORES	8	537	59	6
4	FOOD STORES	107	1105	167	11
5	AUTO. DEALERS & GAS. SERV. STATIONS	140	1020	289	14
6	APPAREL AND ACCESSORY STORES	104	774	57	6
7	HOME FURNITURE/FURNISHINGS/EQUIP.	91	485	80	5
8	EATING AND DRINKING PLACES	272	2769	130	34
9	MISCELLANEOUS RETAIL	312	1577	168	14
0	DEPOSITORY INSTITUTIONS	43	1111	313	6
1	NONDEPOSITORY CREDIT INSTITUTIONS	8	51	15	0
2	SECURITY/COMMODITY BROKERS & SERV.	23	141	22	3
3	INSURANCE CARRIERS	3	31	3	1
4	INSURANCE AGENTS, BROKERS & SERVICE	53	317	74	4
5	REAL ESTATE	201	1107	130	4
7	HOLDING & OTHER INVESTMENT OFFICES	1	20	3	1
70	HOTELS AND OTHER LODGING PLACES	52	795	25	10
72	PERSONAL SERVICES	168	536	22	2
73	BUSINESS SERVICES	166	949	111	8
75	AUTO. REPAIR, SERVICES, AND PARKING	143	467	38	2
76	MISC. REPAIR SERVICES	60	170	18	0
78	MOTION PICTURES	14	99	10	0
79	AMUSE. & RECR. SERV. (EX. MOVIES)	94	1153	87	9
80	HEALTH SERVICES	344	3373	250	20
81	LEGAL SERVICES	109	430	78	3
82	EDUCATIONAL SERVICES	96	3751	403	49
83	SOCIAL SERVICES	112	1002	71	10
84	MUSEUMS, ART GALLERIES, ZOOS, ETC.	11	132	3	2
86	MEMBERSHIP ORGANIZATIONS	175	1283	120	11
87	ENGIN./ACCT./RES./MANAG./RELAT.SERV	111	557	65	5
88	PRIVATE HOUSEHOLDS	0	0	0	0
89	MISCELLANEOUS SERVICES	7	11	1	0
90	PUBLIC ADMINISTRATION (SIC 90-97)	206	5511	0	43
99	NONCLASSIFIABLE ESTABLISHMENTS	170	1301	2	0

Prepared from NDS' Business Facts database
using data from InfoUSA

EPARED FOR: NELSON, POPE & VOORHIS, LLC
EA 3
aritas Inc.
les (800)234-5973

9-MAY-00
Support (800)780-4237

udy Area Summary

MMARY BUSINESS DATA REPORT BY 2-DIGIT SIC CATEGORY

C ode	Business Description	Total Estab.	-----Estimated----- Total Employ.	Sales (in millions)	Estab. 20+ Emp.
OT	ALL INDUSTRIES	9103	82578	7891	728
AN	ALL MANUFACTURING (SIC 20-39)	242	3934	280	39
ET	ALL RETAILING (SIC 52-59)	2316	18352	2112	189
1	AGRICULTURAL PRODUCTION - CROPS	39	284	22	4
2	AGRICULTURAL PRODUCTION - LIVESTOCK	1	1	0	0
7	AGRICULTURAL SERVICES	278	1772	74	11
8	FORESTRY	0	0	0	0
9	FISHING, HUNTING, AND TRAPPING	7	35	3	0
0	METAL MINING	0	0	0	0
2	COAL MINING	0	0	0	0
3	OIL AND GAS EXTRACTION	2	28	3	0
4	MINING NONMETALICS, EXCEPT FUELS	1	2	0	0
5	BUILDING CONSTRUC.-GEN. CONTRACTORS	276	1502	418	5
6	HEAVY CONSTRUCTION, EXCEPT SIC 15	83	819	93	12
7	CONSTRUCTION-SPECIAL TRADE CONTRACT	495	2802	439	18
0	FOOD AND KINDRED PRODUCTS	34	374	34	4
1	TOBACCO MANUFACTURES	0	0	0	0
2	TEXTILE MILL PRODUCTS	3	16	0	0
3	APPAREL & OTHER FABRIC PRODUCTS	8	38	2	1
4	LUMBER & WOOD PRODUCTS, EX. FURNIT.	12	140	10	4
5	FURNITURE AND FIXTURES	5	54	4	1
6	PAPER AND ALLIED PRODUCTS	3	60	3	1
7	PRINTING, PUBLISHING, & ALLIED IND.	82	918	54	13
8	CHEMICALS AND ALLIED PRODUCTS	2	29	2	1
9	PETROLEUM REFINING & RELATED INDUS.	0	0	0	0
0	RUBBER AND MISC. PLASTICS PRODUCTS	7	119	7	3
31	LEATHER AND LEATHER PRODUCTS	0	0	0	0
32	STONE, CLAY, GLASS, & CONCRETE PROD	7	25	2	0
33	PRIMARY METAL INDUSTRIES	3	75	5	1
34	FABRICATED METAL PRODUCTS	11	115	7	1
35	IND. & COMM. MACHINERY & COMPUTERS	21	1579	116	2
36	ELECTRIC./ELECTRON.EQUIP.(EX.COMP.)	9	188	12	3
37	TRANSPORTATION EQUIPMENT	9	117	7	3
38	INSTRUMENTS AND RELATED PRODUCTS	3	24	1	1
39	MISC. MANUFACTURING INDUSTRIES	23	63	5	0
40	RAILROAD TRANSPORTATION	0	0	0	0
41	LOCAL, SUBURBAN, & INTERURBAN TRANS	72	1285	63	17
42	MOTOR FREIGHT TRANSPORT. & WAREHOUS	45	386	45	8
43	U.S. POSTAL SERVICE	35	288	3	2

OR: NELSON, POPE & VOORHIS, LLC Support (800)780-4237

nc.
)234-5973 (Page 2 of 2)

a Summary

BUSINESS DATA REPORT BY 2-DIGIT SIC CATEGORY

	Business Description	Total Estab.	-----Estimated----- Total Employ.	Sales (in millions)	Estab. 20+ Emp.
	WATER TRANSPORTATION	107	715	105	9
	TRANSPORTATION BY AIR	9	137	13	3
	PIPE LINES, EXCEPT NATURAL GAS	0	0	0	0
	TRANSPORTATION SERVICES	36	365	64	2
	COMMUNICATION	27	527	44	9
	ELECTRIC, GAS, & SANITARY SERVICES	25	605	52	5
	WHOLESALE TRADE-DURABLE GOODS	227	1829	321	17
	WHOLESALE TRADE-NONDURABLE GOODS	196	2265	427	33
	BLDG MAT'RL/GARDEN SUP./MOB'L HOMES	234	2370	378	22
	GENERAL MERCHANDISE STORES	17	842	93	10
	FOOD STORES	206	1939	296	22
	AUTO. DEALERS & GAS. SERV. STATIONS	225	1628	467	24
	APPAREL AND ACCESSORY STORES	210	1184	84	7
	HOME FURNITURE/FURNISHINGS/EQUIP.	180	917	146	6
	EATING AND DRINKING PLACES	549	6439	313	78
	MISCELLANEOUS RETAIL	695	3033	332	20
	DEPOSITORY INSTITUTIONS	75	1386	389	7
	NONDEPOSITORY CREDIT INSTITUTIONS	18	100	30	0
	SECURITY/COMMODITY BROKERS & SERV.	56	309	49	3
	INSURANCE CARRIERS	3	31	3	1
	INSURANCE AGENTS, BROKERS & SERVICE	94	540	126	6
	REAL ESTATE	387	2208	278	11
	HOLDING & OTHER INVESTMENT OFFICES	4	62	11	2
	HOTELS AND OTHER LODGING PLACES	176	3407	107	32
	PERSONAL SERVICES	274	878	37	3
3	BUSINESS SERVICES	330	1834	220	13
5	AUTO. REPAIR, SERVICES, AND PARKING	225	721	60	3
6	MISC. REPAIR SERVICES	110	290	29	0
8	MOTION PICTURES	42	243	26	0
9	AMUSE. & RECR. SERV. (EX. MOVIES)	217	2290	161	23
30	HEALTH SERVICES	563	6229	471	29
81	LEGAL SERVICES	205	681	126	3
82	EDUCATIONAL SERVICES	168	6242	661	82
83	SOCIAL SERVICES	200	1840	145	20
84	MUSEUMS, ART GALLERIES, ZOOS, ETC.	43	278	8	3
86	MEMBERSHIP ORGANIZATIONS	338	2511	193	24
87	ENGIN./ACCT./RES./MANAG./RELAT.SERV	272	1267	153	9
88	PRIVATE HOUSEHOLDS	0	0	0	0
89	MISCELLANEOUS SERVICES	11	19	1	0
90	PUBLIC ADMINISTRATION (SIC 90-97)	357	8156	0	69
99	NONCLASSIFIABLE ESTABLISHMENTS	416	3123	9	2

Prepared from NDS' Business Facts database
using data from InfoUSA
Claritas Inc. Arlington, VA

APPENDIX C

SONIR COMPUTER MODEL RESULTS

Appendix C-1
Model User's Guide

APPENDIX C-1

SONIR MODEL USER GUIDE

For

HEADRIVER, LLC LUMBERYARD COMPLEX
Riverhead, Town of Riverhead, New York

Simulation of Nitrogen in Recharge (SONIR)
Charles Voorhis Microcomputer Model

INTRODUCTION

SONIR is a microcomputer model developed by Charles Voorhis 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 which 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):**

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

when
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 landcover 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) which is capable of recharging precipitation is entered in this data cell. For sites which include tidal wetlands, the area which 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 which 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.

For the subject parcel, the Mineola station is nearest the site, therefore a rate of 43.65 inches per year is used.

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 which 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

For the project site, evapotransportation was varied as follows: 25.50 for wooded areas, and 22.40 for lawn areas.

6. *Runoff from Lawn* - Runoff is the quantity of water which 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 Lawn by dividing the lawn 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 indicated 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 higher end of the range (0.7 to 2.1 percent of precipitation) are 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 unvegetated 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 which 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 unvegetated 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 unvegetated 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 unvegetated 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 which 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 unvegetated 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 unvegetated 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. 10)** have indicated that lawn irrigation is estimated to be about 5.5 inches per year. This value is entered in Data Cell 28 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 which 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 NCDPW 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 which 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 which 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 which 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. Multipliers used are taken from multipliers "The New Practitioner's Guide to Fiscal Impact Analysis", **(Rutgers, 1985)**.

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 does not necessarily have to be 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 Nonpoint Source Management Handbook **(Koppelman, 1984; Chapter 5, p.6):**

Residential	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 3 times per year, and 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 2.1 pounds per 1000 square feet. This 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 Nonpoint Source Management Handbook indicates that application rates as low as 1.0 lbs/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 percent 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 which 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 which 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 27 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)** indicate that "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 which 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 15 mg/l in weak effluent; 40 mg/l in medium strength effluent, and 60 mg/l in strong effluent **(Canter and Knox, 1985; p. 47).** 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 which 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 which 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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Appendix C-2
Existing Conditions

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT HEADRIVER, LLC LUMBERYARD

DATA INPUT FIELD Existing Conditions **SHEET 1**

A	*Site Recharge Parameters*	*Value*	*Units*
1	Area of Site	21.21	acres
2	Precipitation Rate	43.65	inches
3	Acreage of Lawn	0.00	acres
4	Fraction of Land in Lawn	0.000	fraction
5	Evapotranspiration from Lawn	22.40	inches
6	Runoff from Lawn	0.31	inches
7	Acreage of Impervious	0.00	acres
8	Fraction of Land Impervious	0.000	fraction
9	Evaporation from Impervious	4.37	inches
10	Runoff from Impervious	0.00	inches
11	Acreage of Unvegetated	2.26	acres
12	Fraction of Land Unvegetated	0.107	fraction
13	Evapotrans. from Unvegetated	20.00	inches
14	Runoff from Unvegetated	0.7	inches
15	Acreage of Water	0.00	acres
16	Fraction of Site in Water	0.000	fraction
17	Evaporation from Water	30.00	inches
18	Makeup Water (if applicable)	0.00	inches
19	Acreage of Natural Area	18.95	acres
20	Fraction of Land Natural	0.893	fraction
21	Evapotrans. from Natural Area	25.50	inches
22	Runoff from Natural Area	0.31	inches
23	Acreage of Other Area	0.00	acres
24	Fraction of Land Other Area	0.000	fraction
25	Evapotrans. from Other Area	23.60	inches
26	Runoff from Other Area	0.31	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	Sanitary Nitrogen Leaching Rate	50	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	3.00	lbs/1000 sq ft
9	Fertilizer Nitrogen Leaching Rate 2	14	percent
10	Pet Waste Application Rate	0.00	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	1.50	mg/l
16	Precipitation Nitrogen Leaching Rate	15	percent
17	Nitrogen in Water Supply	0.00	mg/l
18	Nitrogen in Commercial/STP Flow	0.00	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 — **SHEET 2**

A	*Lawn Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Lawn	0.000	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	22.40	inches
4	Q = Runoff Rate	0.31	inches
5	R(l) = P - (E + Q)	20.94	inches
6	R(L) = R(l) x A	0.00	inches

B	*Impervious Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Impervious	0.000	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	4.37	inches
4	Q = Runoff Rate	0.00	inches
5	R(i) = P - (E + Q)	39.29	inches
6	R(I) = R(i) x A	0.00	inches

C	*Unvegetated Area Recharge*		
1	A = Fraction of Land Unveg.	0.107	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	0.70	inches
4	Q = Runoff Rate	0.00	inches
5	R(u) = P - (E + Q)	42.95	inches
6	R(U) = R(u) x A	4.58	inches

D	*Water Area Loss*		
1	A = Fraction of Site in Water	0.000	fraction
2	P = Precipitation Rate	43.65	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	13.65	inches
7	R(W) = R(w) x A	0.00	inches

E	*Natural Area Recharge*		
1	A = Fraction of Land in Natural	0.893	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	25.50	inches
4	Q = Runoff Rate	0.31	inches
5	R(n) = P - (E + Q)	17.84	inches
6	R(N) = R(n) x A	15.94	inches

F	*Other Area Recharge*		
1	A = Fraction of Land in Other	0.000	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	23.60	inches
4	Q = Runoff Rate	0.31	inches
5	R(o) = P - (E + Q)	19.74	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	2.82	inches
4	Q = Runoff Rate	0.31	inches
5	R(irr) = I - (E + Q)	2.37	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	923,908	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) =	20.52	inches

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE NITROGEN BUDGET Existing Conditions **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	0.00	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	0.00	mg/l
4	N(S) = CF x N	0	milligrams
5	N(S) = Sanitary Nitrogen	0.00	lbs

D	*Water Supply Nitrogen*		
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	liters/yr
3	N = Nitrogen in Water Supply	0.00	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	3.00	lbs/1000 sf
3	LR = Leaching Rate	14	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)	923,908	sq ft
3	R(N) = R(n) x A	1,579,540	cu ft
4	R(N) = Natural Recharge (liters)	44,732,574	liters
5	N = Nitrogen in Precipitation	1.50	mg/l
6	LR = Leaching Rate	15	percent
7	N(ppt) = P(S) x N x LR	1,006,483	milligrams
8	N(ppt) = Precipitation Nitrogen	2.22	lbs

H	*Irrigation Nitrogen*		
1	R = Irrigation Recharge (inches)	2.37	inches
2	R = Irrigation Rate (feet)	0.20	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	0.00	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=	2.22	lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

HEADRIVER, LLC LUMBERYARD
Existing Conditions

FINAL COMPUTATIONS

SHEET 4

A	*Nitrogen in Recharge*	*Value*	*Units*
1	N = Total Nitrogen (lbs)	2.22	lbs
2	N = Total Nitrogen (milligrams)	1,007,560	milligrams
3	R(T) = Total Recharge (inches)	20.52	inches
4	R(T) = Total Recharge (feet)	1.71	feet
5	A = Area of Site	923,908	sq ft
6	R = R(T) x A	1,579,540	cu ft
7	R = Site Recharge Volume	44,732,574	liters
9	NR = N/R	0.02	mg/l

FINAL CONCENTRATION OF NITROGEN IN RECHARGE

0.02

B	*Site Recharge Summary*	*Value*	*Units*
1	R(T) = Total Site Recharge	20.52	inches/yr
2	R = Site Recharge Volume	1,579,540	cu ft/yr
3	R = Site Recharge Volume	11,815,781	gal/yr
4	R = Site Recharge Volume	11.82	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 C-3
Proposed Project

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT HEADRIVER, LLC LUMBERYARD

DATA INPUT FIELD Proposed Project **SHEET 1**

A	*Site Recharge Parameters*	*Value*	*Units*
1	Area of Site	21.21	acres
2	Precipitation Rate	43.65	inches
3	Acreage of Lawn	1.82	acres
4	Fraction of Land in Lawn	0.086	fraction
5	Evapotranspiration from Lawn	22.40	inches
6	Runoff from Lawn	0.31	inches
7	Acreage of Impervious	14.57	acres
8	Fraction of Land Impervious	0.687	fraction
9	Evaporation from Impervious	4.37	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	20.00	inches
14	Runoff from Unvegetated	0.7	inches
15	Acreage of Water	0.00	acres
16	Fraction of Site in Water	0.000	fraction
17	Evaporation from Water	30.00	inches
18	Makeup Water (if applicable)	0.00	inches
19	Acreage of Natural Area	4.82	acres
20	Fraction of Land Natural	0.227	fraction
21	Evapotrans. from Natural Area	25.50	inches
22	Runoff from Natural Area	0.31	inches
23	Acreage of Other Area	0.00	acres
24	Fraction of Land Other Area	0.000	fraction
25	Evapotrans. from Other Area	23.60	inches
26	Runoff from Other Area	0.31	inches
27	Acreage of Land Irrigated	1.82	acres
28	Fraction of Land Irrigated	0.086	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	5,408	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	Sanitary Nitrogen Leaching Rate	50	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	3.00	lbs/1000 sq ft
9	Fertilizer Nitrogen Leaching Rate 2	14	percent
10	Pet Waste Application Rate	0.00	lbs/pet
11	Pet Waste Nitrogen Leaching Rate	50	percent
12	Area of Land Irrigated	1.82	acres
13	Irrigation Rate	5.50	inches
14	Irrigation Nitrogen Leaching Rate	15	percent
15	Nitrogen in Precipitation	1.50	mg/l
16	Precipitation Nitrogen Leaching Rate	15	percent
17	Nitrogen in Water Supply	0.00	mg/l
18	Nitrogen in Commercial/STP Flow	0.00	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 — Proposed Project — **SHEET 2**

A	*Lawn Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Lawn	0.086	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	22.40	inches
4	Q = Runoff Rate	0.31	inches
5	R(l) = P - (E + Q)	20.94	inches
6	R(L) = R(l) x A	1.80	inches

B	*Impervious Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Impervious	0.687	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	4.37	inches
4	Q = Runoff Rate	0.00	inches
5	R(i) = P - (E + Q)	39.29	inches
6	R(I) = R(i) x A	26.99	inches

C	*Unvegetated Area Recharge*		
1	A = Fraction of Land Unveg.	0.000	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	0.70	inches
4	Q = Runoff Rate	0.00	inches
5	R(u) = P - (E + Q)	42.95	inches
6	R(U) = R(u) x A	0.00	inches

D	*Water Area Loss*		
1	A = Fraction of Site in Water	0.000	fraction
2	P = Precipitation Rate	43.65	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	13.65	inches
7	R(W) = R(w) x A	0.00	inches

E	*Natural Area Recharge*		
1	A = Fraction of Land in Natural	0.227	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	25.50	inches
4	Q = Runoff Rate	0.31	inches
5	R(n) = P - (E + Q)	17.84	inches
6	R(N) = R(n) x A	4.05	inches

F	*Other Area Recharge*		
1	A = Fraction of Land in Other	0.000	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	23.60	inches
4	Q = Runoff Rate	0.31	inches
5	R(o) = P - (E + Q)	19.74	inches
6	R(O) = R(o) x A	0.00	inches

G	*Irrigation Recharge*		
1	A = Fraction of Land Irrigated	0.086	fraction
2	I = Irrigation Rate	5.50	inches
3	E = Evaptranspiration Rate	2.82	inches
4	Q = Runoff Rate	0.31	inches
5	R(irr) = I - (E + Q)	2.37	inches
6	R(IRR) = R(irr) x A	0.20	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	923,908	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) =	33.04	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	0.00	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	0.00	mg/l
4	N(S) = CF x N	0	milligrams
5	N(S) = Sanitary Nitrogen	0.00	lbs

D	*Water Supply Nitrogen*		
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	liters/yr
3	N = Nitrogen in Water Supply	0.00	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	3.00	lbs/1000 sf
3	LR = Leaching Rate	14	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)	2.74	feet
2	A = Area of Site (sq ft)	923,908	sq ft
3	R(N) = R(n) x A	2,528,230	cu ft
4	R(N) = Natural Recharge (liters)	71,599,469	liters
5	N = Nitrogen in Precipitation	1.50	mg/l
6	LR = Leaching Rate	15	percent
7	N(ppt) = P(S) x N x LR	1,610,988	milligrams
8	N(ppt) = Precipitation Nitrogen	3.55	lbs

H	*Irrigation Nitrogen*		
1	R = Irrigation Recharge (inches)	2.37	inches
2	R = Irrigation Rate (feet)	0.20	feet
3	A = Area of Land Irrigated	79,279	sq ft
4	R(I) = R(irr) x A	15,641	cu ft
5	R(I) = Site Precipitation (liters)	442,966	liters
6	N = Nitrogen in Water Supply	0.00	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=	3.55	lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

HEADRIVER, LLC LUMBERYARD
Proposed Project

FINAL COMPUTATIONS

SHEET 4

A	*Nitrogen in Recharge*	*Value*	*Units*
1	N = Total Nitrogen (lbs)	3.55	lbs
2	N = Total Nitrogen (milligrams)	1,612,712	milligrams
3	R(T) = Total Recharge (inches)	33.04	inches
4	R(T) = Total Recharge (feet)	2.75	feet
5	A = Area of Site	923,908	sq ft
6	R = R(T) x A	2,543,871	cu ft
7	R = Site Recharge Volume	72,042,435	liters
9	NR = N/R	0.02	mg/l

FINAL CONCENTRATION OF
NITROGEN IN RECHARGE

0.02

B	*Site Recharge Summary*	*Value*	*Units*
1	R(T) = Total Site Recharge	33.04	inches/yr
2	R = Site Recharge Volume	2,543,871	cu ft/yr
3	R = Site Recharge Volume	19,029,480	gal/yr
4	R = Site Recharge Volume	19.03	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 C-4
Alternatives

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT HEADRIVER, LLC LUMBERYARD

DATA INPUT FIELD Alternative 2 **SHEET 1**

A	Site Recharge Parameters	Value	Units
1	Area of Site	21.21	acres
2	Precipitation Rate	43.65	inches
3	Acreage of Lawn	2.62	acres
4	Fraction of Land in Lawn	0.124	fraction
5	Evapotranspiration from Lawn	22.40	inches
6	Runoff from Lawn	0.31	inches
7	Acreage of Impervious	18.59	acres
8	Fraction of Land Impervious	0.876	fraction
9	Evaporation from Impervious	4.37	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	20.00	inches
14	Runoff from Unvegetated	0.7	inches
15	Acreage of Water	0.00	acres
16	Fraction of Site in Water	0.000	fraction
17	Evaporation from Water	30.00	inches
18	Makeup Water (if applicable)	0.00	inches
19	Acreage of Natural Area	0.00	acres
20	Fraction of Land Natural	0.000	fraction
21	Evapotrans. from Natural Area	25.50	inches
22	Runoff from Natural Area	0.31	inches
23	Acreage of Other Area	0.00	acres
24	Fraction of Land Other Area	0.000	fraction
25	Evapotrans. from Other Area	23.60	inches
26	Runoff from Other Area	0.31	inches
27	Acreage of Land Irrigated	2.62	acres
28	Fraction of Land Irrigated	0.124	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	14,888	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	Sanitary Nitrogen Leaching Rate	50	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	3.00	lbs/1000 sq ft
9	Fertilizer Nitrogen Leaching Rate 2	14	percent
10	Pet Waste Application Rate	0.00	lbs/pet
11	Pet Waste Nitrogen Leaching Rate	50	percent
12	Area of Land Irrigated	2.62	acres
13	Irrigation Rate	5.50	inches
14	Irrigation Nitrogen Leaching Rate	15	percent
15	Nitrogen in Precipitation	1.50	mg/l
16	Precipitation Nitrogen Leaching Rate	15	percent
17	Nitrogen in Water Supply	0.00	mg/l
18	Nitrogen in Commercial/STP Flow	0.00	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

Alternative 2 SHEET 2

A	Lawn Area Recharge	Value	Units
1	A = Fraction of Land in Lawn	0.124	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	22.40	inches
4	Q = Runoff Rate	0.31	inches
5	R(l) = P - (E + Q)	20.94	inches
6	R(L) = R(l) x A	2.59	inches

B	Impervious Area Recharge	Value	Units
1	A = Fraction of Land in Impervious	0.876	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	4.37	inches
4	Q = Runoff Rate	0.00	inches
5	R(i) = P - (E + Q)	39.29	inches
6	R(I) = R(i) x A	34.43	inches

C	Unvegetated Area Recharge		
1	A = Fraction of Land Unveg.	0.000	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	0.70	inches
4	Q = Runoff Rate	0.00	inches
5	R(u) = P - (E + Q)	42.95	inches
6	R(U) = R(u) x A	0.00	inches

D	Water Area Loss		
1	A = Fraction of Site in Water	0.000	fraction
2	P = Precipitation Rate	43.65	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	13.65	inches
7	R(W) = R(w) x A	0.00	inches

E	Natural Area Recharge		
1	A = Fraction of Land in Natural	0.000	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	25.50	inches
4	Q = Runoff Rate	0.31	inches
5	R(n) = P - (E + Q)	17.84	inches
6	R(N) = R(n) x A	0.00	inches

F	Other Area Recharge		
1	A = Fraction of Land in Other	0.000	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	23.60	inches
4	Q = Runoff Rate	0.31	inches
5	R(o) = P - (E + Q)	19.74	inches
6	R(O) = R(o) x A	0.00	inches

G	Irrigation Recharge		
1	A = Fraction of Land Irrigated	0.124	fraction
2	I = Irrigation Rate	5.50	inches
3	E = Evaptranspiration Rate	2.82	inches
4	Q = Runoff Rate	0.31	inches
5	R(irr) = I - (E + Q)	2.37	inches
6	R(IRR) = R(irr) x A	0.29	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	923,908	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) =	37.31	inches

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE NITROGEN BUDGET — Alternative 2 — **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	0.00	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	0.00	mg/l
4	N(S) = CF x N	0	milligrams
5	N(S) = Sanitary Nitrogen	0.00	lbs

D	*Water Supply Nitrogen*		
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	liters/yr
3	N = Nitrogen in Water Supply	0.00	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	3.00	lbs/1000 sf
3	LR = Leaching Rate	14	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)	3.08	feet
2	A = Area of Site (sq ft)	923,908	sq ft
3	R(N) = R(n) x A	2,850,171	cu ft
4	R(N) = Natural Recharge (liters)	80,716,830	liters
5	N = Nitrogen in Precipitation	1.50	mg/l
6	LR = Leaching Rate	15	percent
7	N(ppt) = P(S) x N x LR	1,816,129	milligrams
8	N(ppt) = Precipitation Nitrogen	4.00	lbs

H	*Irrigation Nitrogen*		
1	R = Irrigation Recharge (inches)	2.37	inches
2	R = Irrigation Rate (feet)	0.20	feet
3	A = Area of Land Irrigated	114,127	sq ft
4	R(I) = R(irr) x A	22,517	cu ft
5	R(I) = Site Precipitation (liters)	637,676	liters
6	N = Nitrogen in Water Supply	0.00	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=	4.00	lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

HEADRIVER, LLC LUMBERYARD
Alternative 2

FINAL COMPUTATIONS

SHEET 4

A	*Nitrogen in Recharge*	*Value*	*Units*
1	N = Total Nitrogen (lbs)	4.00	lbs
2	N = Total Nitrogen (milligrams)	1,818,072	milligrams
3	R(T) = Total Recharge (inches)	37.31	inches
4	R(T) = Total Recharge (feet)	3.11	feet
5	A = Area of Site	923,908	sq ft
6	R = R(T) x A	2,872,687	cu ft
7	R = Site Recharge Volume	81,354,506	liters
9	NR = N/R	0.02	mg/l

FINAL CONCENTRATION OF
NITROGEN IN RECHARGE

0.02

B	*Site Recharge Summary*	*Value*	*Units*
1	R(T) = Total Site Recharge	37.31	inches/yr
2	R = Site Recharge Volume	2,872,687	cu ft/yr
3	R = Site Recharge Volume	21,489,195	gal/yr
4	R = Site Recharge Volume	21.49	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 — **HEADRIVER, LLC LUMBERYARD**

DATA INPUT FIELD — **Alternative 3** — **SHEET 1**

A	*Site Recharge Parameters*	*Value*	*Units*
1	Area of Site	21.21	acres
2	Precipitation Rate	43.65	inches
3	Acreage of Lawn	0.04	acres
4	Fraction of Land in Lawn	0.002	fraction
5	Evapotranspiration from Lawn	22.40	inches
6	Runoff from Lawn	0.31	inches
7	Acreage of Impervious	21.17	acres
8	Fraction of Land Impervious	0.998	fraction
9	Evaporation from Impervious	4.37	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	20.00	inches
14	Runoff from Unvegetated	0.7	inches
15	Acreage of Water	0.00	acres
16	Fraction of Site in Water	0.000	fraction
17	Evaporation from Water	30.00	inches
18	Makeup Water (if applicable)	0.00	inches
19	Acreage of Natural Area	0.00	acres
20	Fraction of Land Natural	0.000	fraction
21	Evapotrans. from Natural Area	25.50	inches
22	Runoff from Natural Area	0.31	inches
23	Acreage of Other Area	0.00	acres
24	Fraction of Land Other Area	0.000	fraction
25	Evapotrans. from Other Area	23.60	inches
26	Runoff from Other Area	0.31	inches
27	Acreage of Land Irrigated	0.04	acres
28	Fraction of Land Irrigated	0.002	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	22,140	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	Sanitary Nitrogen Leaching Rate	50	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	3.00	lbs/1000 sq ft
9	Fertilizer Nitrogen Leaching Rate 2	14	percent
10	Pet Waste Application Rate	0.00	lbs/pet
11	Pet Waste Nitrogen Leaching Rate	50	percent
12	Area of Land Irrigated	0.04	acres
13	Irrigation Rate	5.50	inches
14	Irrigation Nitrogen Leaching Rate	15	percent
15	Nitrogen in Precipitation	1.50	mg/l
16	Precipitation Nitrogen Leaching Rate	15	percent
17	Nitrogen in Water Supply	0.00	mg/l
18	Nitrogen in Commercial/STP Flow	0.00	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 Alternative 3 **SHEET 2**

A	*Lawn Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Lawn	0.002	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	22.40	inches
4	Q = Runoff Rate	0.31	inches
5	R(l) = P - (E + Q)	20.94	inches
6	R(L) = R(l) x A	0.04	inches

B	*Impervious Area Recharge*	*Value*	*Units*
1	A = Fraction of Land in Impervious	0.998	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	4.37	inches
4	Q = Runoff Rate	0.00	inches
5	R(i) = P - (E + Q)	39.29	inches
6	R(I) = R(i) x A	39.21	inches

C	*Unvegetated Area Recharge*		
1	A = Fraction of Land Unveg.	0.000	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	0.70	inches
4	Q = Runoff Rate	0.00	inches
5	R(u) = P - (E + Q)	42.95	inches
6	R(U) = R(u) x A	0.00	inches

D	*Water Area Loss*		
1	A = Fraction of Site in Water	0.000	fraction
2	P = Precipitation Rate	43.65	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	13.65	inches
7	R(W) = R(w) x A	0.00	inches

E	*Natural Area Recharge*		
1	A = Fraction of Land in Natural	0.000	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	25.50	inches
4	Q = Runoff Rate	0.31	inches
5	R(n) = P - (E + Q)	17.84	inches
6	R(N) = R(n) x A	0.00	inches

F	*Other Area Recharge*		
1	A = Fraction of Land in Other	0.000	fraction
2	P = Precipitation Rate	43.65	inches
3	E = Evapotranspiration Rate	23.60	inches
4	Q = Runoff Rate	0.31	inches
5	R(o) = P - (E + Q)	19.74	inches
6	R(O) = R(o) x A	0.00	inches

G	*Irrigation Recharge*		
1	A = Fraction of Land Irrigated	0.002	fraction
2	I = Irrigation Rate	5.50	inches
3	E = Evaptranspiration Rate	2.82	inches
4	Q = Runoff Rate	0.31	inches
5	R(irr) = I - (E + Q)	2.37	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	923,908	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) =	39.25	inches

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

SITE NITROGEN BUDGET

Alternative 3 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	0.00	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	0.00	mg/l
4	N(S) = CF x N	0	milligrams
5	N(S) = Sanitary Nitrogen	0.00	lbs

D	*Water Supply Nitrogen*		
1	WDF = Wastewater Design Flow	0	gal/day
2	WDF = Wastewater Design Flow	0	liters/yr
3	N = Nitrogen in Water Supply	0.00	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	3.00	lbs/1000 sf
3	LR = Leaching Rate	14	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)	3.27	feet
2	A = Area of Site (sq ft)	923,908	sq ft
3	R(N) = R(n) x A	3,021,979	cu ft
4	R(N) = Natural Recharge (liters)	85,582,440	liters
5	N = Nitrogen in Precipitation	1.50	mg/l
6	LR = Leaching Rate	15	percent
7	N(ppt) = P(S) x N x LR	1,925,605	milligrams
8	N(ppt) = Precipitation Nitrogen	4.25	lbs

H	*Irrigation Nitrogen*		
1	R = Irrigation Recharge (inches)	2.37	inches
2	R = Irrigation Rate (feet)	0.20	feet
3	A = Area of Land Irrigated	1,742	sq ft
4	R(I) = R(irr) x A	344	cu ft
5	R(I) = Site Precipitation (liters)	9,736	liters
6	N = Nitrogen in Water Supply	0.00	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=	4.25	lbs

SIMULATION OF NITROGEN IN RECHARGE (SONIR)

NELSON, POPE & VOORHIS, LLC MICROCOMPUTER MODEL

NAME OF PROJECT

HEADRIVER, LLC LUMBERYARD
Alternative 3

FINAL COMPUTATIONS

SHEET 4

A	*Nitrogen in Recharge*	*Value*	*Units*
1	N = Total Nitrogen (lbs)	4.25	lbs
2	N = Total Nitrogen (milligrams)	1,927,665	milligrams
3	R(T) = Total Recharge (inches)	39.25	inches
4	R(T) = Total Recharge (feet)	3.27	feet
5	A = Area of Site	923,908	sq ft
6	R = R(T) x A	3,022,323	cu ft
7	R = Site Recharge Volume	85,592,175	liters
9	NR = N/R	0.02	mg/l

FINAL CONCENTRATION OF NITROGEN IN RECHARGE

0.02

B	*Site Recharge Summary*	*Value*	*Units*
1	R(T) = Total Site Recharge	39.25	inches/yr
2	R = Site Recharge Volume	3,022,323	cu ft/yr
3	R = Site Recharge Volume	22,608,545	gal/yr
4	R = Site Recharge Volume	22.61	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 D

ECOLOGY-RELATED DOCUMENTATION

Appendix D-1
Army Corps of Engineers Correspondence

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
CHARLES J. VOORHIS, CEP, AICP • ARTHUR J. KOERBER, P.E. • VINCENT G. DONNELLY, P.E.
VICTOR BERT, P.E. • JOSEPH R. EPIFANIA, P.E. • ROBERT G. NELSON, JR., P.E.
PAUL M. RACZ, P.L.S.

July 13, 2000

Mr. Jim Haggerty
Eastern Permits Section Chief
U.S. Army Corps of Engineers, New York District
26 Federal Plaza
New York, NY 10278-0090

Re: Notification of Action
Headriver, LLC @ Riverhead, NY
NW/c/o Old Middle Country Road (CR 58) and
Kroemer Avenue intersection.

Dear Mr. Haggerty,

Nelson, Pope & Voorhis (NP&V) has been retained by Lerner-Heidenberg, owner of the above referenced site, to obtain the necessary authorization to complete to the above referenced project. The applicant proposes to construct a 135,200 SF lumberyard and associated parking areas and access drive on a 22.21 acre site zoned for commercial use. The site contains two small ponded areas, both of which are associated with low-lying areas located within an existing drainage gully along the western property boundary. The ponded areas total approximately 2,000 s.f in size, and each contained standing water for more than seven consecutive days during the growing season. Water levels appear to fluctuate with rain events, and the approximate depth of each ponded area is approximately 0-8 inches. Wetland boundaries were determined through use of vegetation analysis, hydrology, and hydric soils to a depth of eighteen (18) inches. We believe the Waters of the U.S. are the limits of these wetland delineation boundaries as indicated on the enclosed aerial photograph.

It should be noted that the NYS Department of Environmental Conservation Freshwater Wetland Map does not indicate the presence of any freshwater wetlands within the project location. Additionally, the US Fish and Wildlife Service National Wetland Inventory Map and the USGS Topographic Survey do not identify wetlands on the subject site. The USDA Soil Conservation Service was also consulted; the soil survey does not indicate the presence of surface water, although notes that an intermittent stream extends through the southwest portion of the subject property. Although a portion of the former drainage area exists, it does not appear that the intermittent stream functions on the property. The drainage area is completely isolated by the surrounding developments, area roadways and existing topography, and is subject to further alteration via culverts which re-direct run-off from the adjacent NYSDOT property in the northern portion of the site (as depicted) to the subject site.

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188
(631) 427-5665 • FAX (631) 427-5620 • www.nelsonpope.com

The proposed project will require grading of the property and associated fill to allow for construction of the lumberyard and parking areas. The applicant proposes to fill both wet depressions, totaling approximately 0.05 acres in size, and therefore cause the loss of less than 1/10 acre of "Waters of the United States". Therefore, the applicant would be required to submit the standard report within 30 days of completion of the work, in accordance with Nationwide Permit (NWP) 39, subsection "*i*". Further, as the intermittent stream no longer functions on the property, it is expected that the non-wetland portions within this depression would not be regulated under NWP 39, subsection "*c*". Nevertheless, this letter provides "notification" of the proposed action. Once the exemption is established, it is my understanding that subsequent lot development may proceed under Nation Wide Permit 39 due to the limited amount of fill. Please provide a letter of concurrence for our files.

The following is enclosed for your review:

1. Location Map
2. Site Photographs and Photograph key map
2. Aerial photograph showing wet depressions
3. Copy of the Site Plan

Please respond at your earliest convenience and do not hesitate to call should you have any questions or require additional information. Thank you.

Sincerely,

NELSON, POPE & VOORHIS

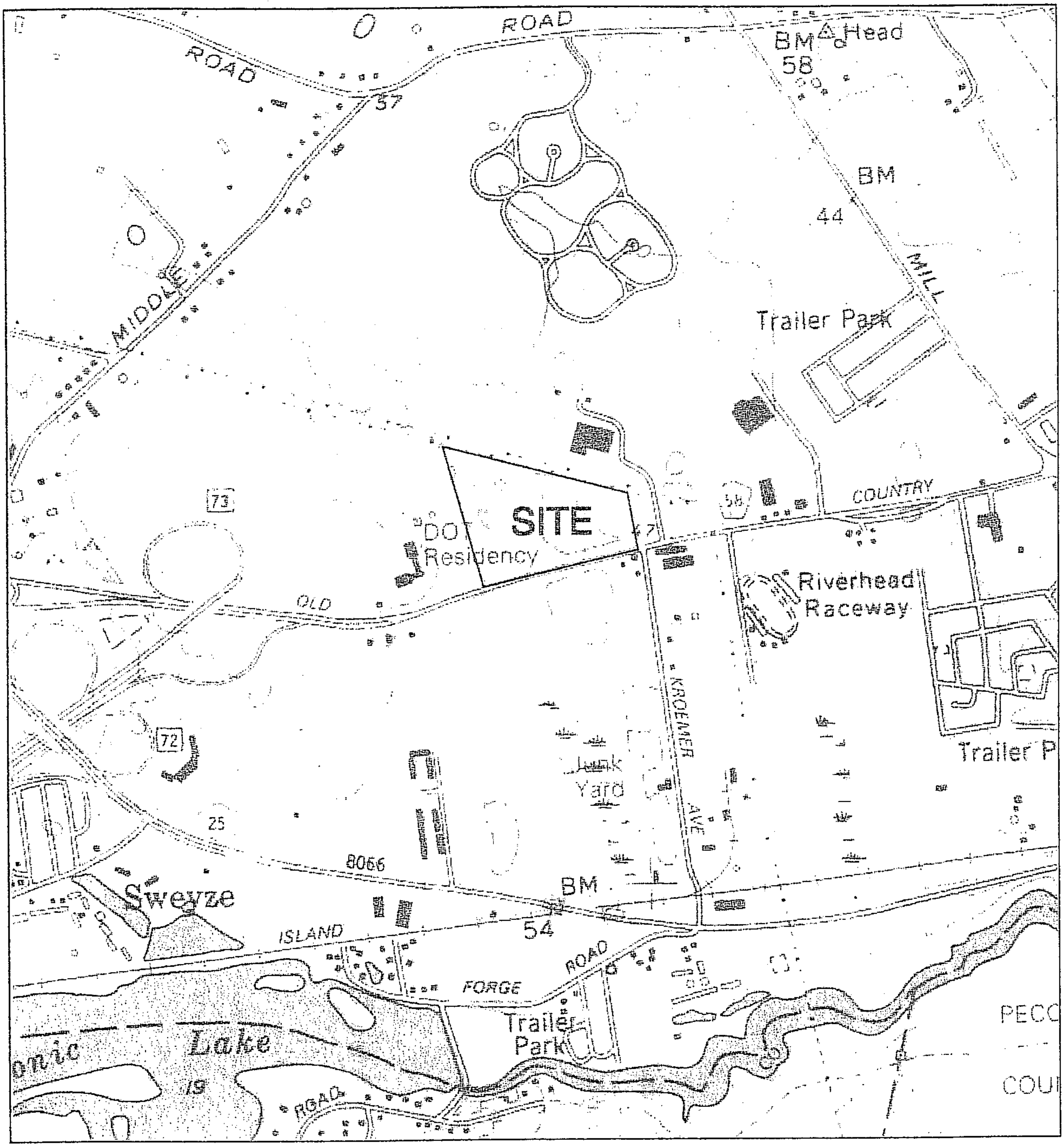
Shana Lacey

Shana M. Lacey
Environmental Scientist

cc: Steve Lerner, Lerner-Heidenberg

FIGURE 1

LOCATION MAP

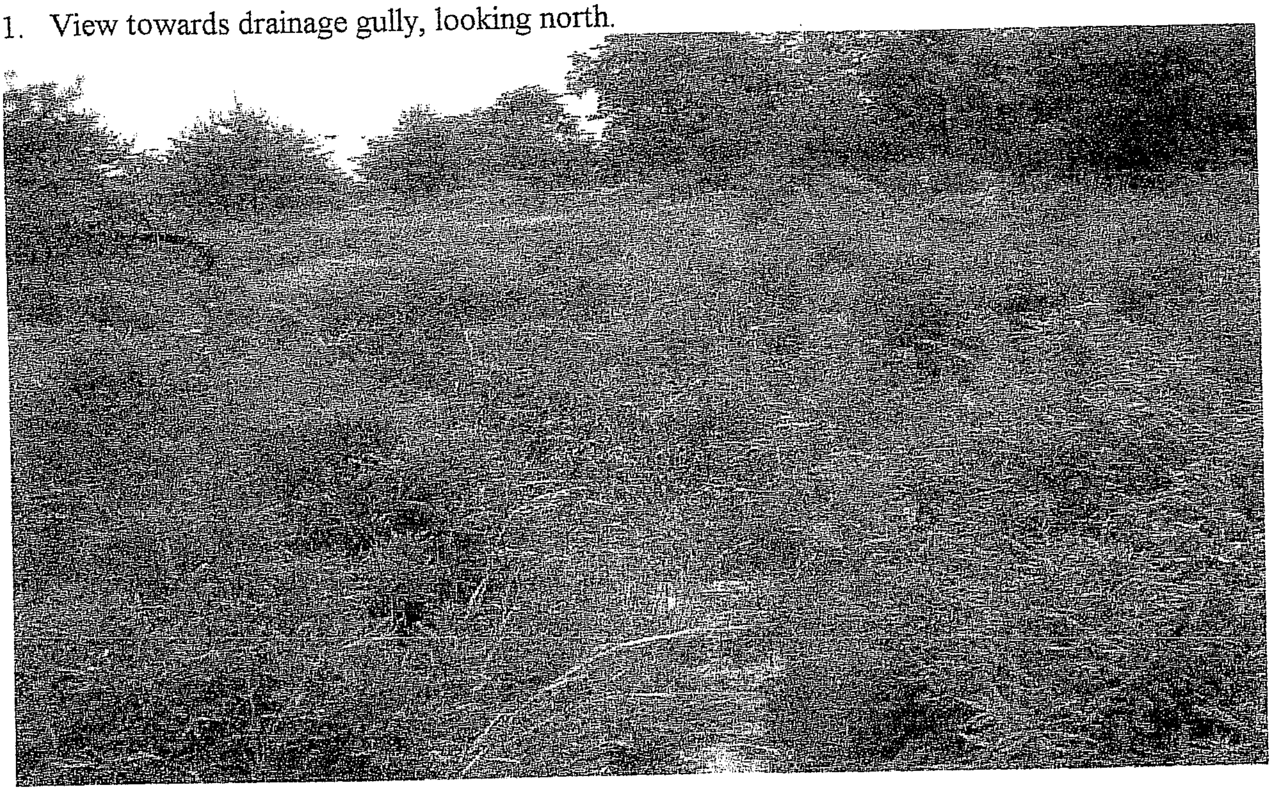


Source: NYS DOT
Scale: 1" = 1,200'

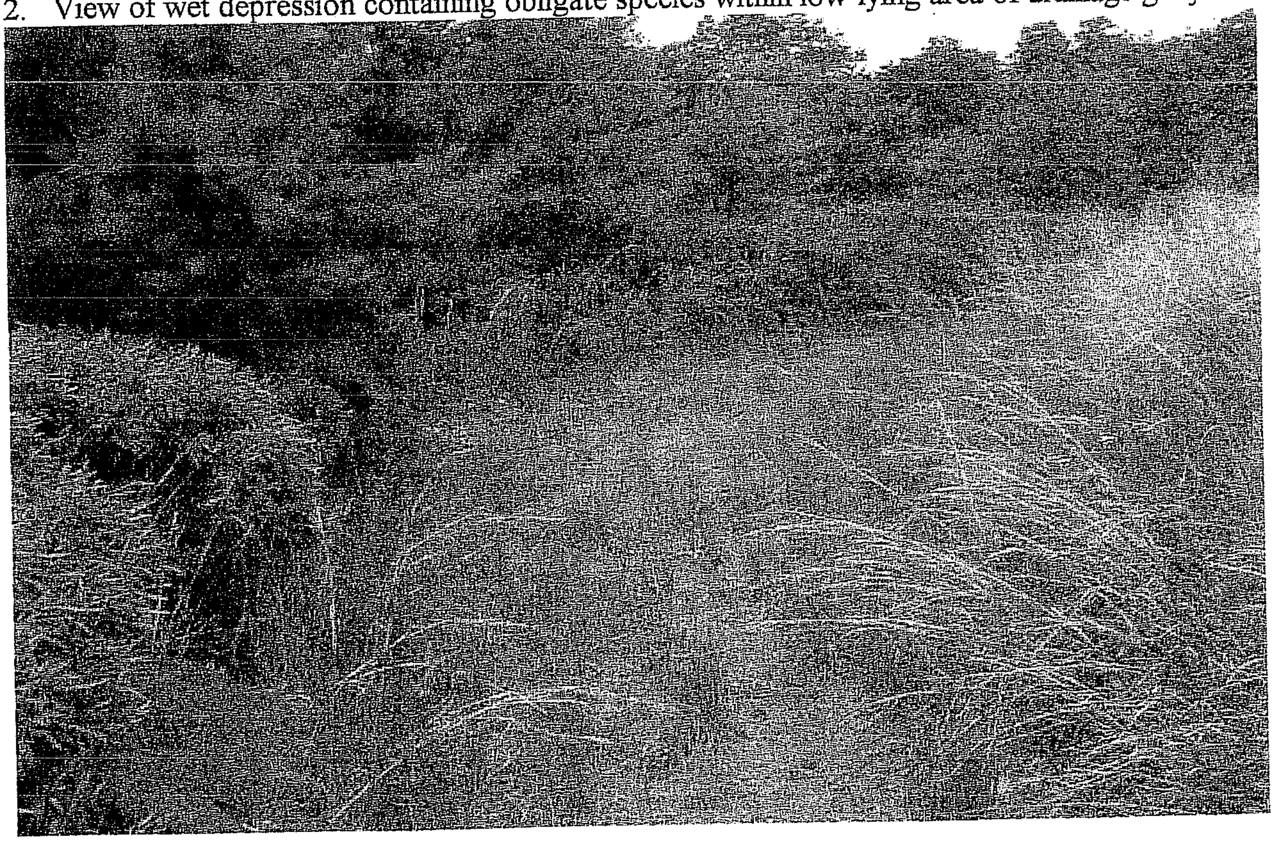
NORTH

NP&V
NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

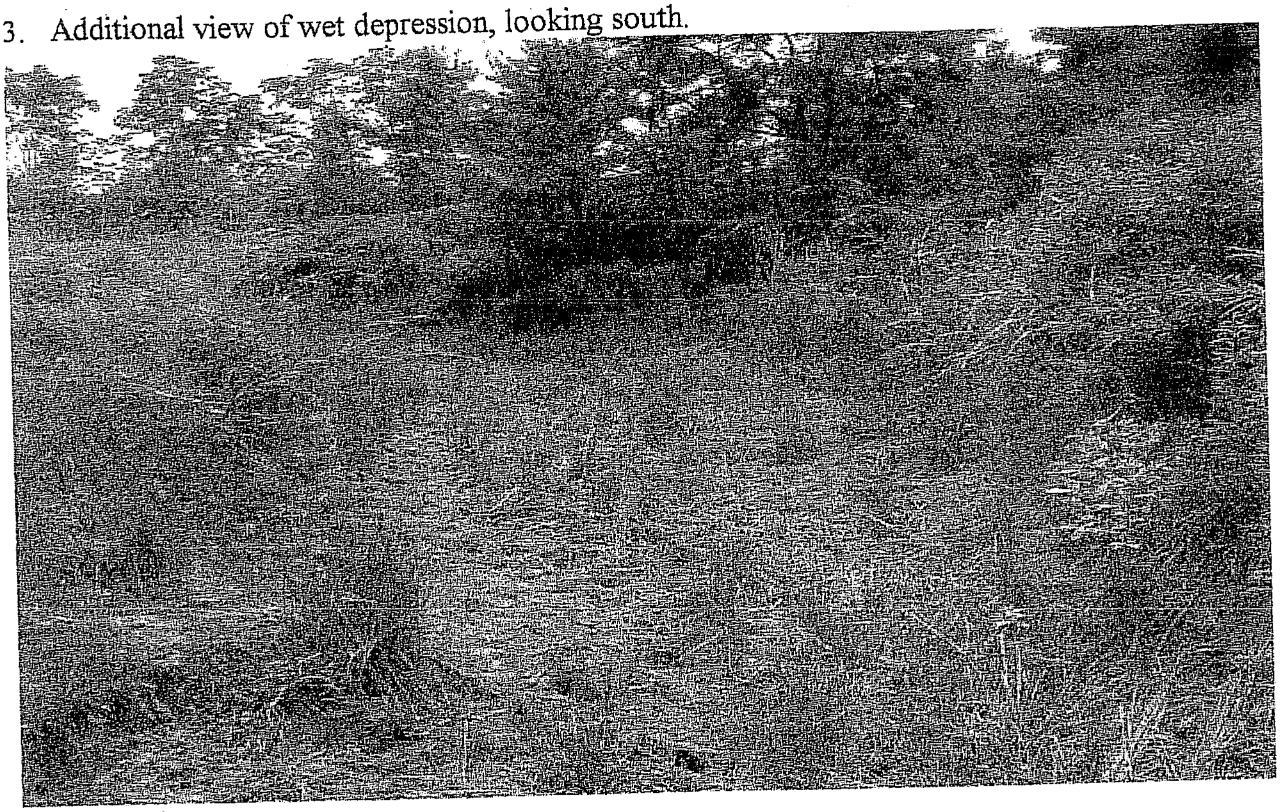
1. View towards drainage gully, looking north.



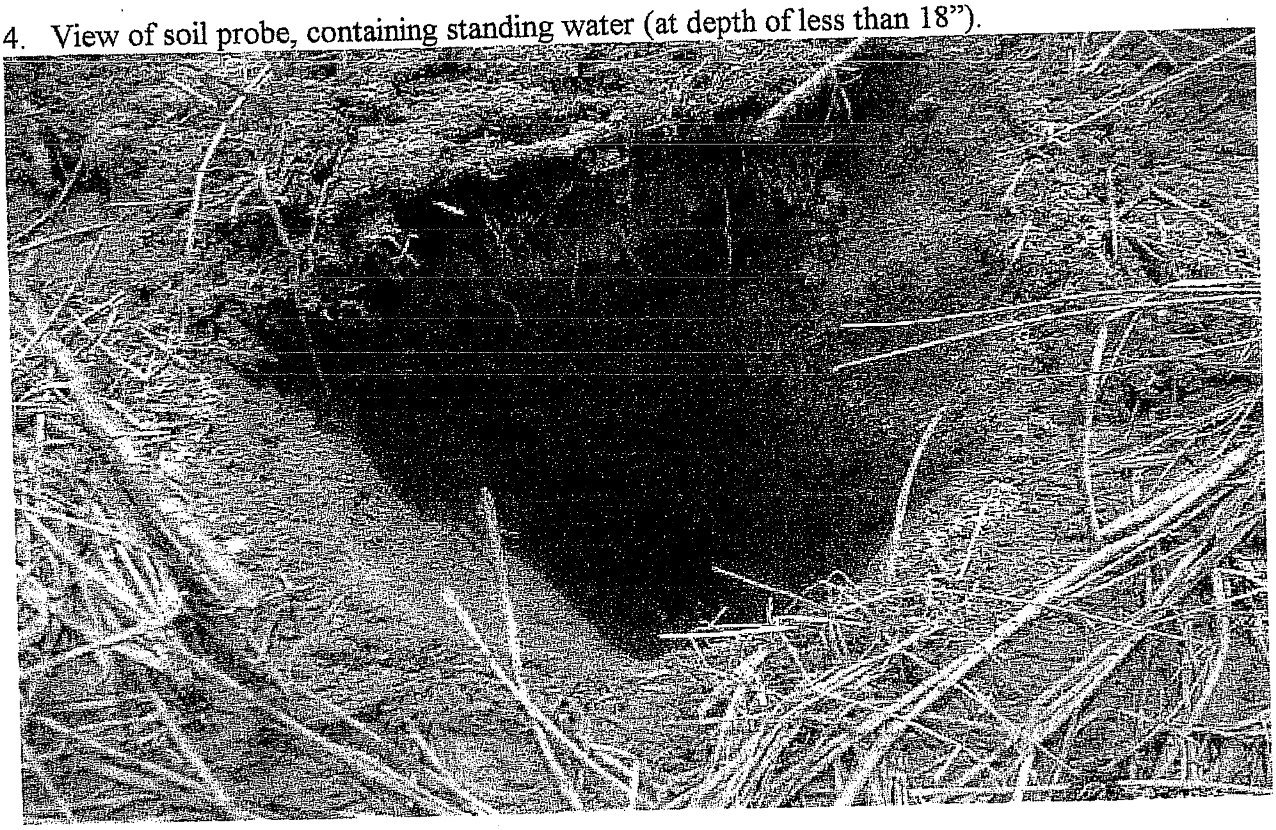
2. View of wet depression containing obligate species within low-lying area of drainage gully.



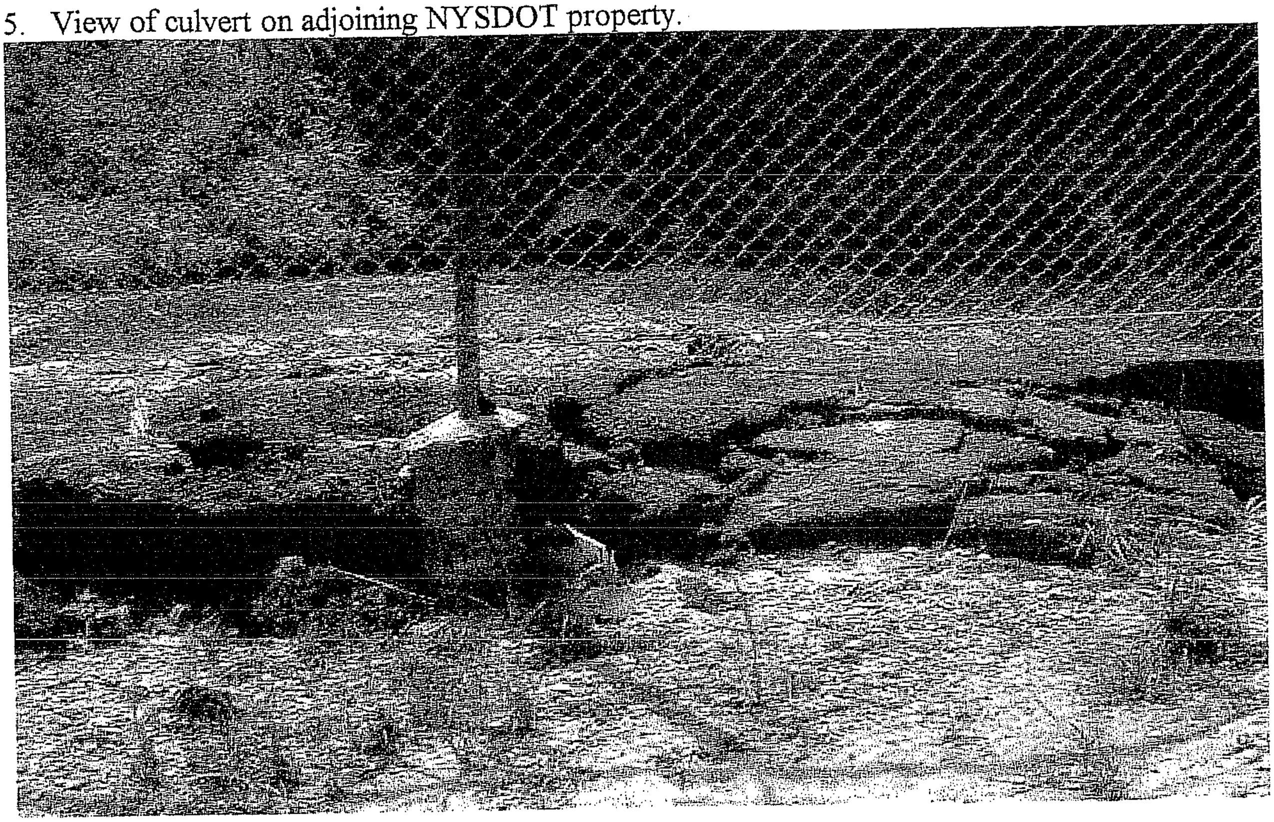
3. Additional view of wet depression, looking south.



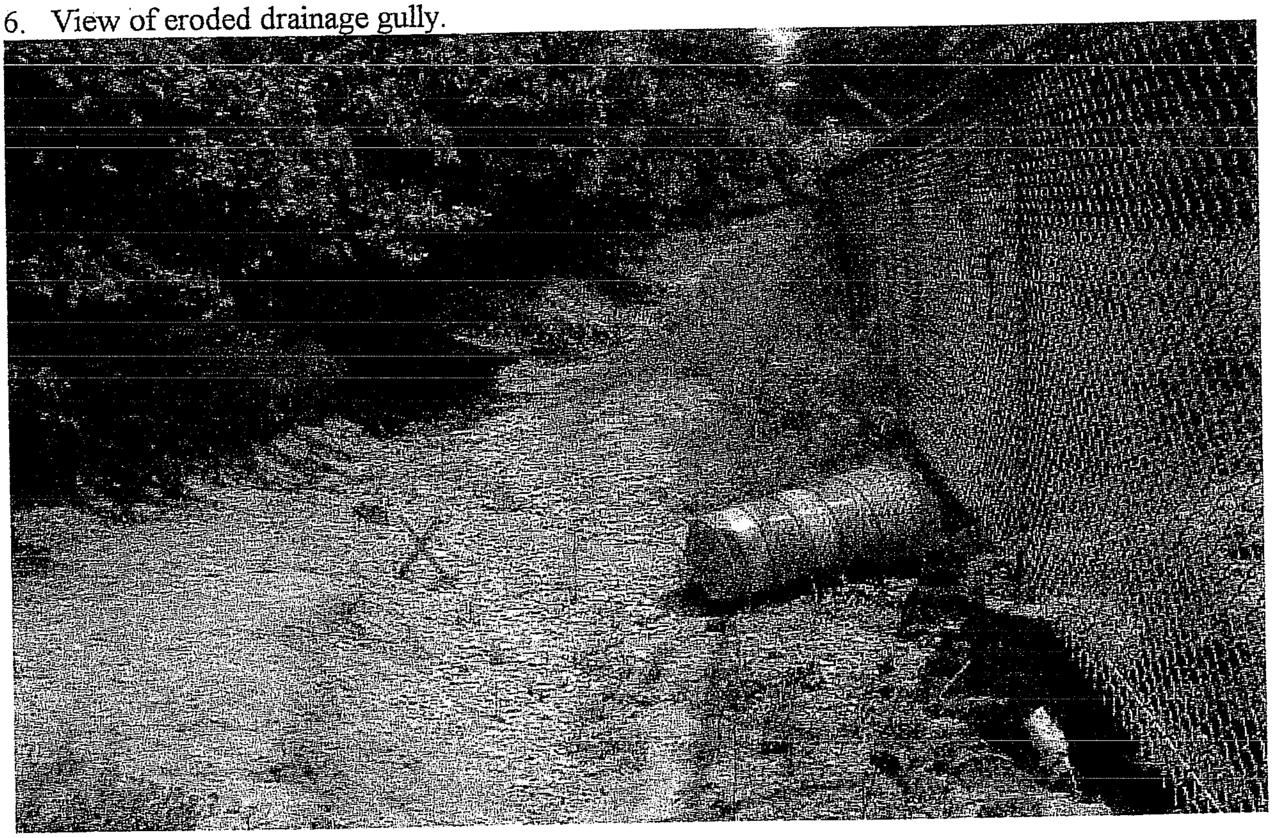
4. View of soil probe, containing standing water (at depth of less than 18").



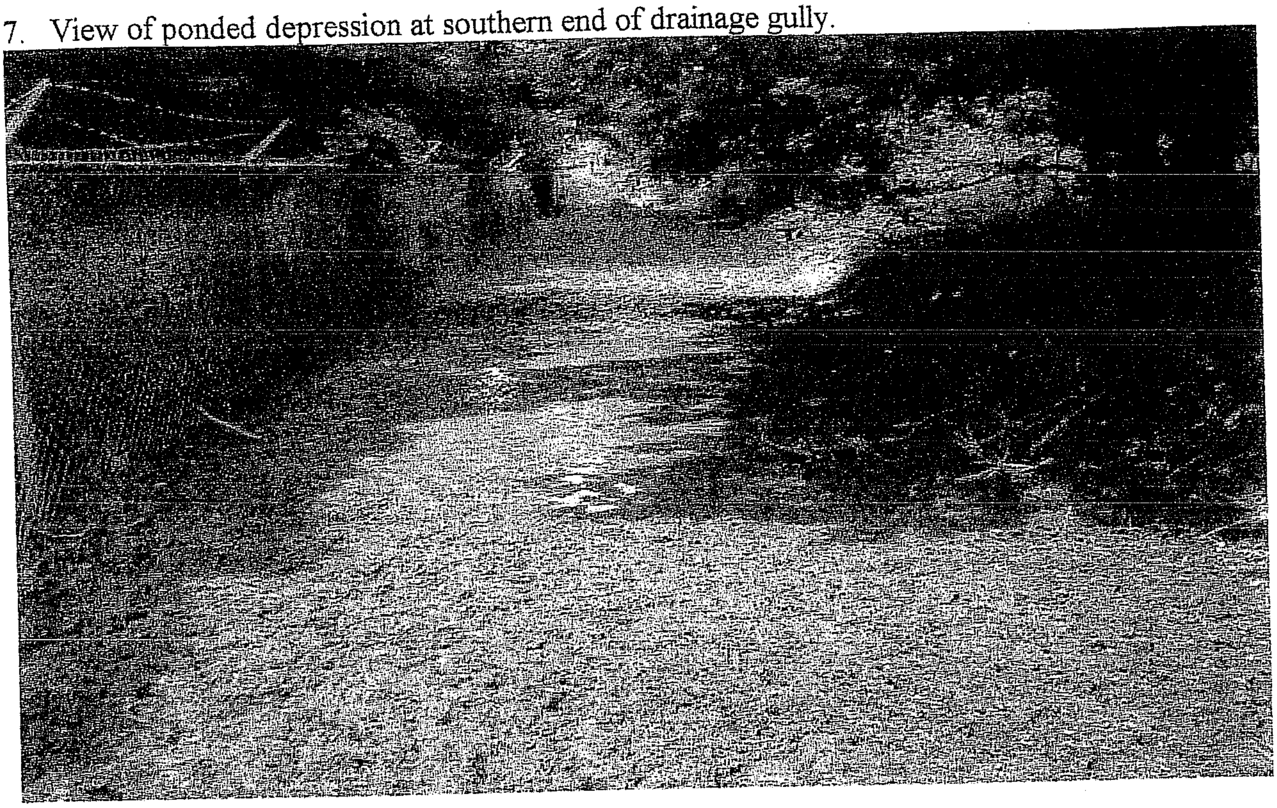
5. View of culvert on adjoining NYSDOT property.



6. View of eroded drainage gully.



7. View of ponded depression at southern end of drainage gully.



8. View of soil probe containing standing water (depth of less than 18")

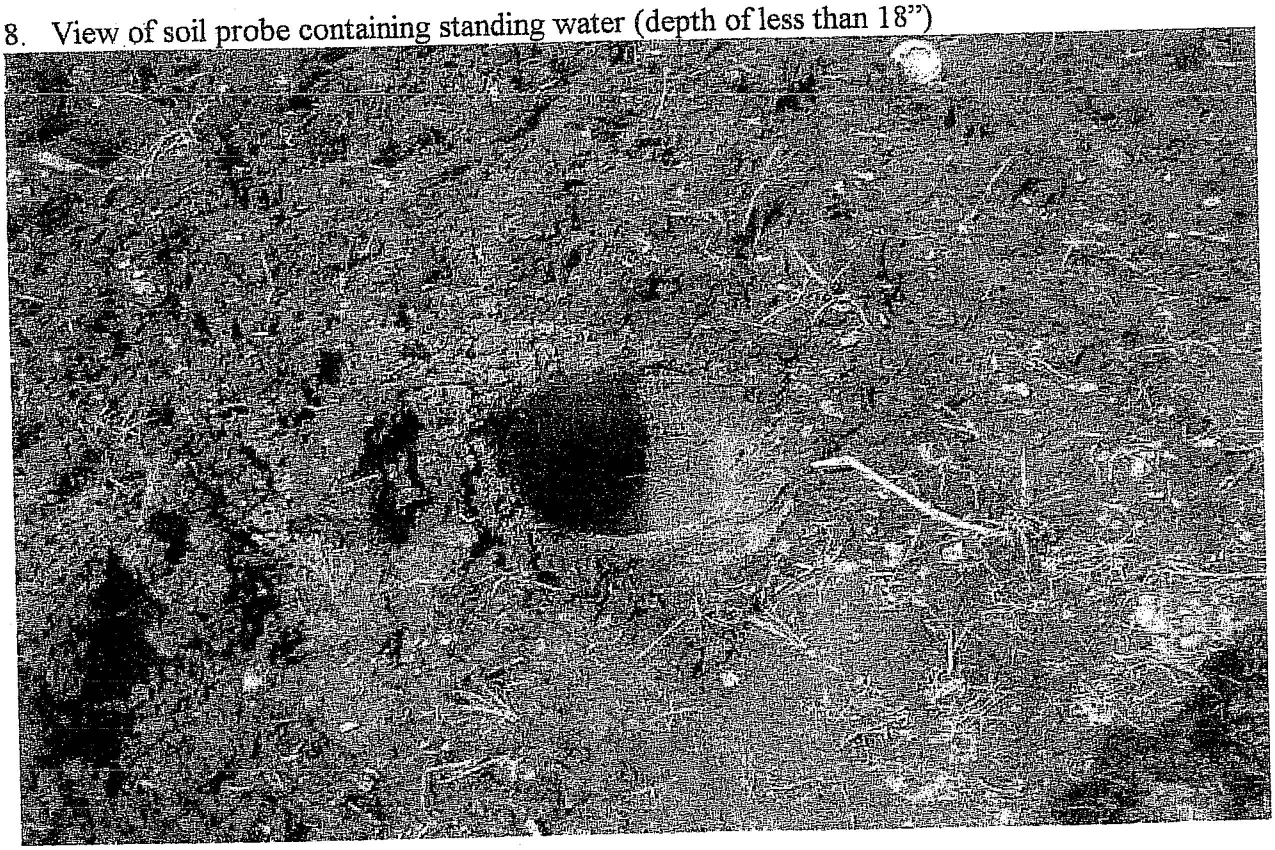


FIGURE 2

WET DEPRESSION LOCATION MAP & PHOTOGRAPHIC KEY

NP&V
NELSON POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

Source: Aerial Photograph, 1999
Scale: 1" = 200'

Appendix D-2
NY Natural Heritage Program Correspondence

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
CHARLES J. VOORHIS, CEP, AICP • ARTHUR J. KOERBER, P.E. • VINCENT G. DONNELLY, P.E.
VICTOR BERT, P.E. • JOSEPH R. EPIFANIA, P.E.• ROBERT G. NELSON, JR., P.E.
PAUL M. RACZ, P.L.S.

April 18, 2000

Jean Petrusiak, Director
Informational Services
NYSDEC Significant Habitat Unit
New York State Department of Environmental Conservation
Wildlife Resources Center
700 Troy-Schenectady Road
Latham, New York 12110-2400

Re: Request for Significant Habitat Program/Natural Heritage Program File Review and Breeding Bird Survey Census Block Data for a 27acre site located north of the intersection of Old Country Road (CR58) and Kroemer Avenue in Calverton, Town of Riverhead, Suffolk County, N.Y.

Dear Ms. Petrusiak:

My firm has been retained by the owner of the above-referenced parcel to investigate the environmental resources associated with this site. The proposed project is for the proposed construction of a 115,000 SF home improvement superstore with hypothetical consideration of additional uses that could occupy the balance of the site, potentially including, a 225 seat 6,500 SF restaurant and two other industrial structures of 30,000 SF and 6,000 SF. The subject property is located north of the intersection of Old Country Road (CR 58) and Kroemer Avenue and is currently vacant woodland (see attached location map).

It would be beneficial to consult the Significant Habitat Program ~~and Natural Heritage~~ Program files for any information you may have regarding unique habitats, and/or species of vegetation and wildlife. We would also like to obtain data from the 1988 Breeding Bird Survey for the census block containing the project site. Enclosed is a portion of the Riverhead 7.5 minute quadrangle with the location of the project site superimposed. Please provide any information you may have on this specific site or other unique ecological features within the vicinity, as well as a list of breeding birds which were identified within the census block for the 1988 survey. Your attention to this request would be greatly appreciated. Please do not hesitate to call if you have any questions regarding this correspondence.

Sincerely,

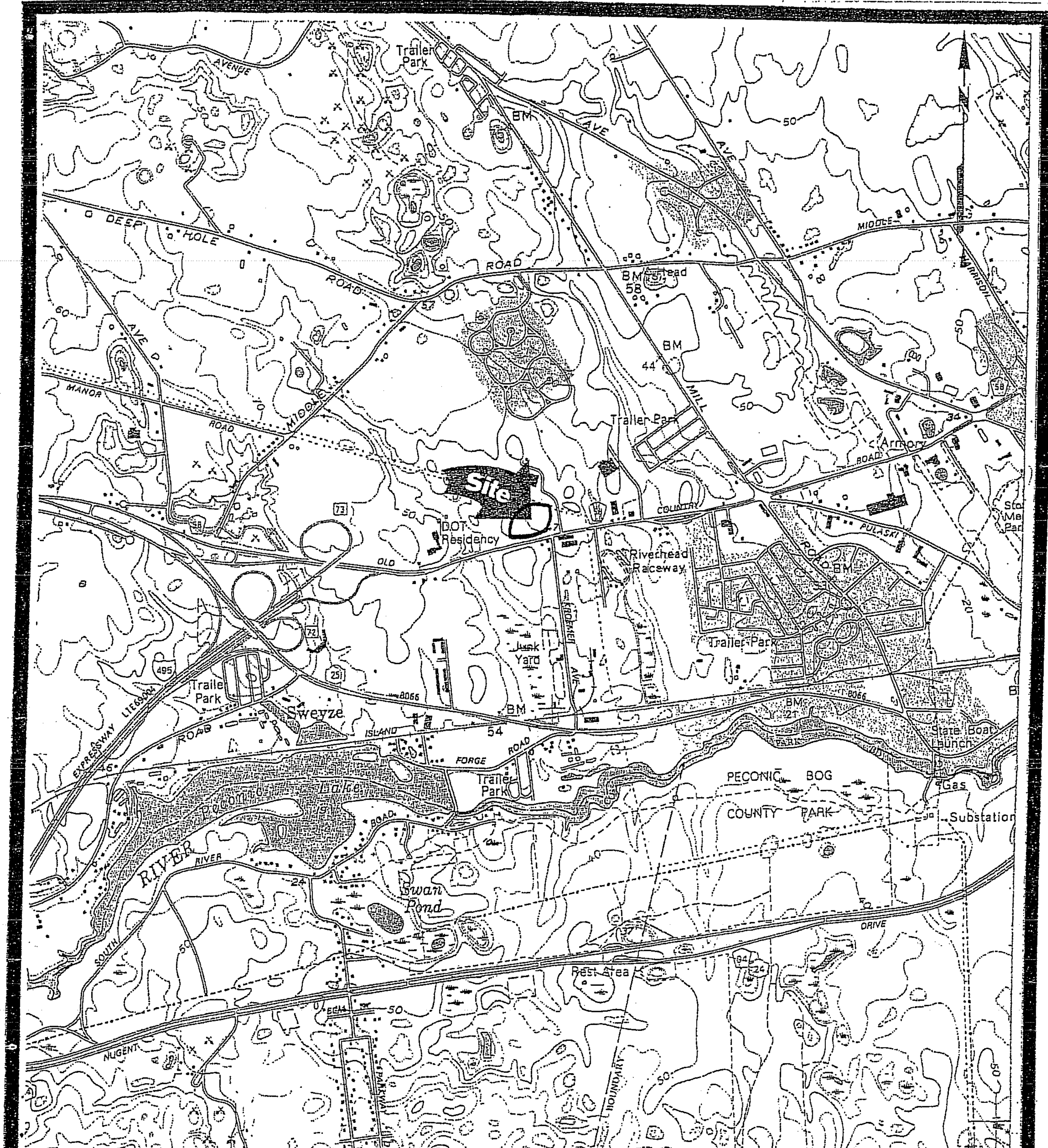
John Armentano

John Armentano
Environmental Planner

Called + requested redo with 1/2 mile buffer

enc.

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188
(631) 427-5665 • FAX (631) 427-5620 • www.nelsonpope.com



Location Map

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
Wildlife Resources Center - New York Natural Heritage Program
700 Troy-Schenectady Road, Latham, New York 12110-2400
Phone: (518) 783-3932 FAX: (518) 783-3916

John P. Cahill
Commissioner

May 12, 2000

John Armentano
Nelson, Pope & Voorhis
572 Walt Whitman Rd
Melville, NY 11747-2188

Dear Mr. Armentano:

In response to your recent request, we have reviewed the New York Natural Heritage Program databases with respect to the proposed Commercial Project, 27 acre site as indicated on the map you provided, located in Calverton, Town of Riverhead, Suffolk County.

We have no records of known occurrences of rare or state-listed animals or plants, significant natural communities, or other significant habitats, on or in the immediate vicinity of your site.

The absence of data does not mean, however, that rare or state-listed species, natural communities or other significant habitats do not exist on or adjacent to the proposed site, but rather that our files currently do not contain any information which indicates their presence. For most sites, comprehensive field surveys have not been conducted. For these reasons, we cannot provide a definitive statement on the presence or absence of rare or state-listed species, or of significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

This response applies only to known occurrences of rare or state-listed animals, and plants, significant natural communities, and other significant habitats. For information regarding regulated areas or permits that may be required under state law (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the enclosed address.

Sincerely,

Teresa Mackey

Teresa Mackey, Information Services
NY Natural Heritage Program

Enc.
cc: Reg. 1, Wildlife Mgr.

RECEIVED
MAY 15 2000
JA
NELSON & POPE LLP

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL PERMITS REGIONAL OFFICES

REGION	COUNTIES	NAME	ADDRESS AND PHONE NO.
Region 1	Nassau Suffolk	John Pavacic Permit Administrator	Loop Road, Bldg. 40 SUNY Stony Brook, NY 11790-2356 (516) 444-0365
Region 2	New York City	Charles deQuillfeldt Permit Administrator	Hunters Point Plaza 4740 21st Street Long Island City, NY 11101-5407 (718) 482-4997
Region 3	Dutchess Orange Putnam Rockland, Sullivan Ulster, Westchester	Margaret Duke Permit Administrator	21 South Putt Corners Road New Paltz, NY 12561-1696 (914) 256-3059
Region 4	Albany Columbia Delaware Greene, Montgomery, Otsego Rensselaer, Schenectady, Schoharie	William J. Clarke Permit Administrator	1150 N. Westcott Road Schenectady, NY 12306-2014 (518) 357-2234
Region 5	Clinton Essex Franklin Fulton, Hamilton Saratoga, Warren, Washington	Richard Wild Permit Administrator	Route 86 Ray Brook, NY 12977 (518) 897-1234
Region 6	Herkimer Jefferson Lewis Oneida, St. Lawrence	Randy Vaas Permit Administrator	State Office Building 317 Washington Street Watertown, NY 13601 (315) 785-2246
Region 7	Broome Cayuga Chenango Cortland, Madison, Onondaga Oswego, Tioga, Tompkins	Ralph Manna, Jr. Permit Administrator	615 Erie Blvd. West Syracuse, NY 13204-2400 (315) 426-7439
Region 8	Chemung Genesee Livingston Monroe, Ontario, Orleans Schuyler, Seneca, Steuben Wayne, Yates	Albert Butkas Permit Administrator	6274 East Avon-Lima Road Avon, NY 14414 (716) 226-2466
Region 9	Allegany Cattaraugus Chautauqua	Steven Doleski Permit Administrator	270 Michigan Avenue Buffalo, NY 14203-2999 (716) 851-7165

New York State Department of Environmental Conservation
Division of Fish, Wildlife & Marine Resources
Wildlife Resources Center – New York Natural Heritage Program
700 Troy-Schenectady Road, Latham, New York 12110-2400
Phone: (518) 783-3932 FAX: (518) 783-3916

John P. Cahill
Commissioner

June 30, 2000

RECEIVED
JUL 03 2000 SL
NELSON & POPE, LLP

Shana M Lacey
Nelson, Pope & Voorhis
572 Walt Whitman Rd
Melville, NY 11747-2188

Dear Ms. Lacey:

In response to your recent request, we have reviewed the New York Natural Heritage Program databases with respect to the proposed 27 acre Home Improvement Store, and possible other commercial possibilities, area as indicated on the map you provided, located in Calverton, Town of Riverhead, Suffolk County.

Enclosed is a report of rare or state-listed animals and plants, significant natural communities, and other significant habitats, which our databases indicate occur, or may occur, on your site or in the immediate vicinity of your site. The information contained in this report is considered sensitive and may not be released to the public without permission from the New York Natural Heritage Program.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our databases. We cannot provide a definitive statement on the presence or absence of all rare or state-listed species or significant natural communities. This information should not be substituted for on-site surveys that may be required for environmental impact assessment.

Our databases are continually growing as records are added and updated. If this proposed project is still under development one year from now, we recommend that you contact us again so that we may update this response with the most current information.

This response applies only to known occurrences of rare or state-listed animals and plants, of significant natural communities, and of other significant habitats. For information regarding regulated areas or permits that may be required under state law (e.g., regulated wetlands), please contact the appropriate NYS DEC Regional Office, Division of Environmental Permits, at the enclosed address.

Sincerely,

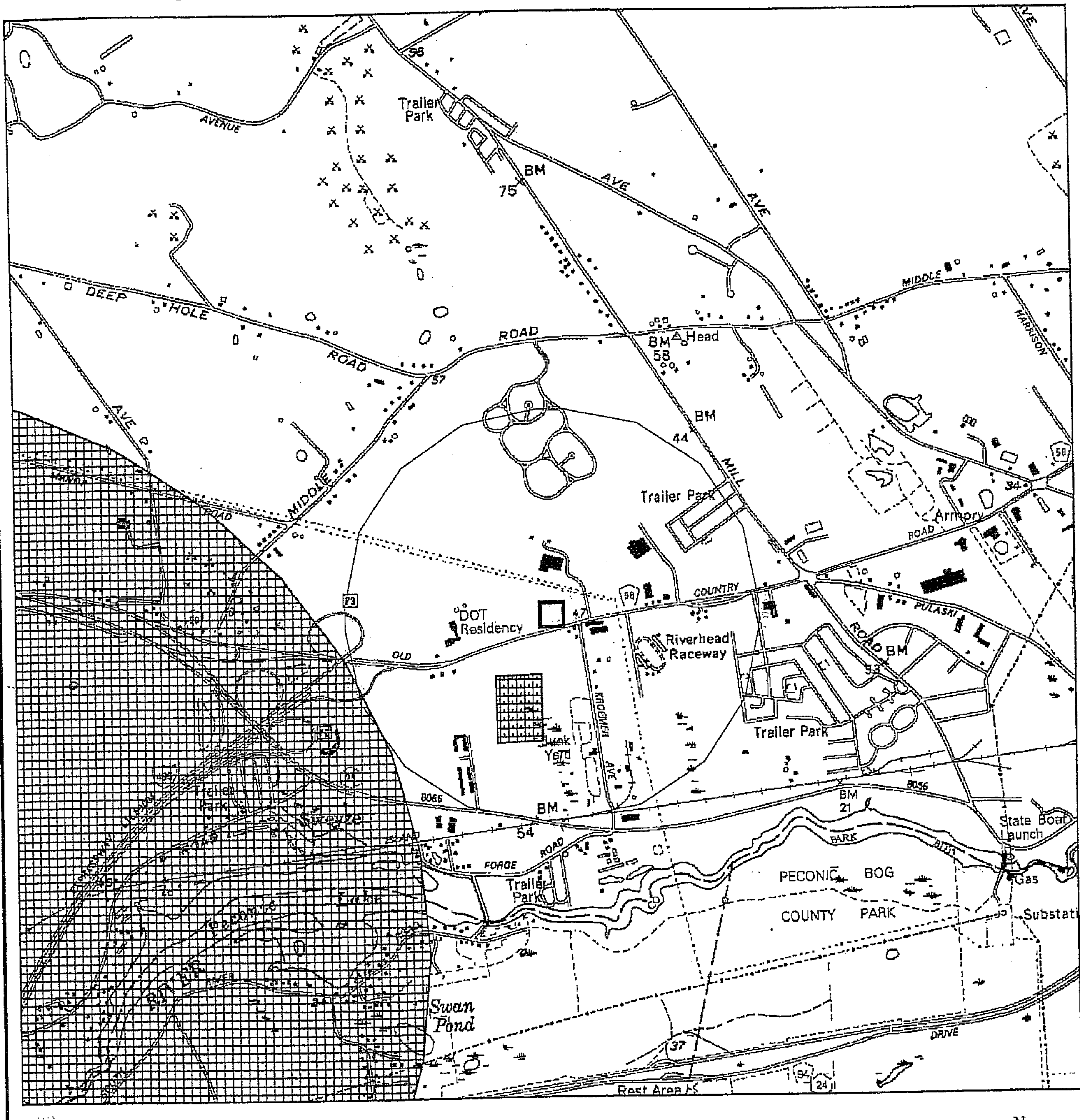
Teresa Mackey jp

Teresa Mackey, Information Services
NY Natural Heritage Program

Encs.
cc: Reg. 1, Wildlife Mgr.
Peter Nye, Endangered Species Unit, Delmar

Natural Heritage Map of Rare Species and Ecological Communities

Prepared June 29, 2000 by NY Natural Heritage Program, NYS DEC, Latham, New York



PROJECT SITE (and 0.5 mile buffer)

New York Natural Heritage Program Database Records*

Animal

Plant

Community

Other

N

Scale: 1:24000

0.5 0 0.5 Miles

***This map MAY NOT display locations of species MOST vulnerable to disturbance. The locations that are displayed are considered sensitive and cannot be released to the public.**

Natural Heritage Report on Rare Species and Ecological Communities

Prepared 29 June 2000 by NY Natural Heritage Program, NYS DEC, Latham, New York

cords with a Precision value of "S" or with a blank Precision are known to be in a location that may be impacted by the proposed action.
cords with a Precision value of "M" may possibly occur within the project area in appropriate habitat.
is report contains SENSITIVE information that should be treated in a sensitive manner -- Please see cover letter.
fer to the Users' Guide for explanations of codes, ranks, and fields.

County Town Scientifc Name, COMMON NAME, & Group Name	NY Legal Status, Heritage Ranks, & Federal Status	Precision & Acreage	EO Rank & Last Seen	General Habitat and Quality	Detailed Location	USGS Topo Quad	Office Use
SUFFOLK							
RIVERHEAD							
Carex hormathodes MARSH STRAW SEDGE Vascular Plant	RARE G4G5; S2S3	M	H 1927-07-02	MOIST WOODS.	CALVERTON	RIVERHEAD	4007286
Cicindela patruela consentanea A TIGER BEETLE Beetle	UNPROTECTED G3T2; SH	M	H 1946-05-07		CALVERTON	RIVERHEAD	4007286
Aster solidagineus FLAX-LEAF WHITETOP Vascular Plant	UNPROTECTED G5; S2	M	H 1927-08-14		CALVERTON CALVERTON, DRY GROUND.	RIVERHEAD	4007286
Ambystoma tigrinum TIGER SALAMANDER Amphibian	ENDANGERED G5; S3 (PS)	S 5	B 1991-03-12	SERIES OF SMALL PONDS IN WOODS. 12 EGG MASSES.	KROEMER AVENUE POND FROM THE JUNCTION OF OLD COUNTRY RD (RT 25) AND KROEMER RD, S 1000 FT ON KROEMER AVENUE. WETLAND APPROXIMATELY 900 FEET W OF KROEMER AVENUE.	RIVERHEAD	4007286 ESU

Natural Heritage Report on Rare Species and Ecological Communities

Prepared 29 June 2000 by NY Natural Heritage Program, NYS DEC, Latham, New York

ords with a Precision value of "S" or with a blank Precision are known to be in a location that may be impacted by the proposed action.
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report contains SENSITIVE information that should be treated in a sensitive manner -- Please see cover letter.
r to the Users' Guide for explanations of codes, ranks, and fields.

County Town Scientific Name, COMMON NAME, & Group Name	NY Legal Status, Heritage Ranks, & Federal Status	Precision & Acreage	EO Rank & Last Seen	General Habitat and Quality	Detailed Location	USGS Topo Quad	Office Use
SUFFOLK							
RIVERHEAD							
COASTAL PLAIN POND SHORE Community	UNPROTECTED G3G4; S2	S 3	C 1988-08-09	A SERIES OF THREE SMALL DEPRESSIONS IN THE PINE BARRENS WITH COASTAL PLAIN POND VEGETATION. ONE POND IS SHRUBBED IN, ALL WERE DRY IN 1988 BUT STILL QUITE MUCKY. LOW DIVERSITY, SOME EXOTICS, SMALL AREA.	KROEMER AVENUE POND FROM RIVERHEAD GO WEST ON RTE 25 2.25 MILES TO KROEMER AVENUE. GO N ON KROEMER AVE 0.3 MILES. WETLAND IS DUE W OF HERE.	RIVERHEAD	4007286
Rhynchospora scirpoides LONG-BEAKED BALD-RUSH Vascular Plant	RARE G4; S3	S 1	C 1988-08-09	SERIES OF SMALL PONDS SET IN WOODS. MUCKY POND SHORE. ASSOCIATED SPECIES: RHEXIA, JUNCUS CANADENSIS, PANICUM AND RHYNCHOSPORA CAPITELLATA. VERY SMALL POPULATION IN MARGINAL HABITAT.	KROEMER AVENUE POND FROM THE JUNCTION OF RTE 25 AND KROEMER AVE, 0.25 MI SW TO POND IN WOODS. PLANTS LOCATED IN MUCKY POND SHORE.	RIVERHEAD	4007286
RIVERHEAD, BROOKHAVEN							
Chamaecyparis thyoides ATLANTIC WHITE CEDAR Vascular Plant	RARE G4; S3	M	H 1923-11-17		CALVERTON	RIVERHEAD	4007286

Natural Heritage Report on Rare Species and Ecological Communities

Prepared 29 June 2000 by NY Natural Heritage Program, NYS DEC, Latham, New York

ords with a Precision value of "S" or with a blank Precision are known to be in a location that may be impacted by the proposed action.
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: report contains SENSITIVE information that should be treated in a sensitive manner -- Please see cover letter.
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County Town Scientifc Name, COMMON NAME, & Group Name	NY Legal Status, Heritage Ranks, & Federal Status	Precision & Acreage	EO Rank & Last Seen	General Habitat and Quality	Detailed Location	USGS Topo Quad	Office Use
SUFFOLK							
RIVERHEAD, BROOKHAVEN							
Cyperus lupulinus ssp lupulinus HOP SEDGE Vascular Plant	UNPROTECTED G5T7; S2	M	H 1955-09-09	DRY SANDY SOIL.	CALVERTON	RIVERHEAD	4007286
Aletris farinosa STARGRASS Vascular Plant	UNPROTECTED G5; S2	M	H 1927-08-12	LOW, WET GRAVELLY SOIL.	CALVERTON LOW, WET GRAVELLY SOIL, CALVERTON.	RIVERHEAD	4007286
Viola primulifolia PRIMROSE-LEAF VIOLET Vascular Plant	UNPROTECTED G5; S2	M	H 1927-05-29	MOIST, OPEN GROUND.	CALVERTON	RIVERHEAD	4007286

10 Records Processed

USERS GUIDE TO NY NATURAL HERITAGE DATA

New York Natural Heritage Program, 700 Troy-Schenectady Road, Latham NY 12110-2400 phone: (518) 783-3932

NATURAL HERITAGE PROGRAM: The Natural Heritage Program is an ongoing, systematic, scientific inventory whose goal is to compile and maintain data on the rare plants and animals native to New York State, and significant ecological communities. The data provided in the report facilitate sound planning, conservation, and natural resource management and help to conserve the plants, animals and ecological communities that represent New York's natural heritage.

DATA SENSITIVITY: The data provided in the report are ecologically sensitive and should be treated in a sensitive manner. The report is for your in-house use and should not be released, distributed or incorporated in a public document without prior permission from the Natural Heritage Program.

NATURAL HERITAGE REPORTS (may contain any of the following types of data):
COUNTY NAME: County where the occurrence of a rare species or significant ecological community is located.
TOWN NAME: Town where the occurrence of a rare species or significant ecological community is located.
USGS 7 ½' TOPOGRAPHIC MAP: Name of 7.5 minute US Geological Survey (USGS) quadrangle map (scale 1:24,000).
LAT: Centrum latitude coordinate of the location of the occurrence. Caution: latitude & longitude must be used with PRECISION (e.g. the location of an occurrence with M (minute) precision is not precisely known & is thought to occur within a 1.5 mile radius of the latitude/longitude coordinates).
LONG: Centrum longitude coordinate of the location of the occurrence. See also LAT above.
PRECISION: S - seconds: location known precisely. (within a 300' or 1-second radius of the latitude and longitude given.
M - minutes: location known only to within a 1.5 mile (1 minute) radius of the latitude and longitude given.
G - general: location known to within a 5 mile radius of the latitude and longitude given.
SIZE (acres): Approximate acres occupied by the rare species or significant ecological community at this location. A blank indicates unknown size.
SCIENTIFIC NAME: Scientific name of the occurrence of a rare species or significant ecological community.
COMMON NAME: Common name of the occurrence of a rare species or significant ecological community.
ELEMENT TYPE: Type of element (i.e. plant, animal, significant ecological community, other, etc.)
LAST SEEN: Year rare species or significant ecological community last observed extant at this location.
EO RANK: Comparative evaluation summarizing the quality, condition, viability and defensibility of this occurrence. Use with LAST SEEN and PRECISION.
A-E = Extant: A=excellent, B=good, C=marginal, D=poor, E=extant but with insufficient data to assign a rank of A - D.
F = Failed to find. Did not locate species, but habitat is still there and further field work is justified.
H = Historical. Historical occurrence without any recent field information.
X = Extirpated. Field/other data indicates element/habitat is destroyed and the element no longer exists at this location.
? = Unknown.
Blank = Not assigned.

NEW YORK STATE STATUS (animals): Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.
E = Endangered Species: any species which meet one of the following criteria:
1) Any native species in imminent danger of extirpation or extinction in New York.
2) Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.
T = Threatened Species: any species which meet one of the following criteria:
1) Any native species likely to become an endangered species within the foreseeable future in NY.
2) Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.
SC = Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).
P = Protected Wildlife (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.
U = Unprotected (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a license to take may be required.
G = Game (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NEW YORK STATE STATUS (plants): The following categories are defined in regulation 6NYCRR part 193.3 and apply to NYS Environmental Conservation Law section 9-1503.
E = Endangered Species: listed species are those with:
1) 5 or fewer extant sites, or
2) fewer than 1,000 individuals, or
3) restricted to fewer than 4 U.S.G.S. 7 ½ minute topographical maps, or
4) species listed as endangered by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.
T = Threatened: listed species are those with:
1) 6 to fewer than 20 extant sites, or
2) 1,000 to fewer than 3,000 individuals, or
3) restricted to not less than 4 or more than 7 U.S.G.S. 7 and ½ minute topographical maps, or
4) listed as threatened by U.S. Department of Interior, as enumerated in Code of Federal Regulations 50 CFR 17.11.
R = Rare: listed species have:
1) 20 to 35 extant sites, or
2) 3,000 to 5,000 individuals statewide.

continued on next page

Appendix D-3
Species List

PROJECTION OF WILDLIFE ECOLOGICAL RESPONSE (POWER)

NELSON, POPE & VOORHIS, LLC, MICROCOMPUTER MODEL

SPECIES LIST

Appendix D-3

INTRODUCTION

This appendix has been included to present the results of a computer model used to investigate the various wildlife species which can be expected to be found on the site considering the habitats established. This model was developed by and for.the use of Nelson, Pope & Voorhis, LLC using available information and references for the various species. The model utilizes the Lotus 1-2-3 spreadsheet to identify wildlife species commonly found in various Long Island habitats, based upon thorough research of available literature. The habitat investigated consisted of Successional Old Field, Successional Hardwood Forest, and Pitch Pine-Oak Forest. Some of the species listed in this model would not be expected on the property given the surrounding development, but are present in similar habitats.

The first column identifies the common name of the species, presented with the main common name in alphabetical order (for example: red-tailed hawk would come before blue jay). The scientific name of particular species is in the second column. The third column shows the legal status of the species, of which there are four possible entries (Endangered, Threatened, Special Concern and Local Concern). The fourth column indicates the seasons during which the species might be expected to be present and the fifth column, of particular importance to the environmental setting, contains information on frequency of the species in the habitat (abundant, common, rare and non expected); the species activity in the habitat (nesting, hunting and resting). References are provided with the reference list provided at the end of the appendix. The printout contained in this appendix, coupled with the discussions provided in the main body of the report, provides significant information of the wildlife found, or expected to be found on site.

Successional Old Field Species - Inventory and Characteristics

Common Name	Scientific Name	Status	Found During Winter	Found During Spring	Found During Summer	Found During Fall	Frequency/ Habitat Use	References
Birds								
red-winged blackbird	*Agelaius phoeniceus*	none		X	X	Early	C / N,F	4 6
Eastern bluebird	*Sialia sialis*	special concern		X	X	Early	R / N,F	4 7
common bobwhite	*Colinus virginianus*	none	X	X	X	X	C / N,F	4 8
indigo bunting	*Passerina cyanea*	none		Late	X	Early	C / N,F	4 20
Northern cardinal	*Cardinalis cardinalis*	none	X	X	X	X	C / N,F	4 20
gray catbird	*Dumetella carolinensis*	none		Late	X		A / N,F	4 9
black capped chickadee	*Parus atricapillus*	none	X	X	X	X	C / H	4 11
brown-headed cowbird	*Molothrus ater*	none		X	X	Early	A / H	4 6
American crow	*Corvus brachyrhynchos*	none	X	X	X	X	A / H	4 11
black-billed cuckoo	*Coccyzus erythropthalmus*	none		Late	X		C / N,F	4 11
yellow-billed cuckoo	*Coccyzus americanus*	none		Late	X		C / N,F	4 12
mourning dove	*Zenaida macroura*	none	X	X	X	X	A / N,H	4 8
rock dove	*Columba livia*	none	X	X	X	X	A / N,F	4 8
American goldfinch	*Carduelis tristis*	none		X	X	X	C / N,F	4 20
house finch	*Carpodacus mexicanus*	none		X	X	X	A / N,F	4 20
common flicker	*Colaptus auratus*	none	X	X	X	X	C / N,F	4 14
least flycatcher	*Empidonax minimus*	none		Late	X		R / N,F	4 15
willow flycatcher	*Empidonax traillii*	none		Late	X		C / N,F	4 15
common grackle	*Quiscalus quiscula*	none	X	X	X	X	A / N,F	4 6
ruffed grouse	*Bonasa umbellus*	none	X	X	X	X	C / N,F	4 8
rose-breasted grosbeak	*Pheucticus ludovicianus*	none		Late	X	Early	C / N,F	4 20
Northern harrier	*Circus cyaneus*	threatened	X	X	X	X	R / H	4 16
Cooper's hawk	*Accipiter cooperii*	special concern		X	X		N / N,H	4 17
red-tailed hawk	*Buteo jamaicensis*	none	X	X	X	X	C / H	4 16
sharp-shinned hawk	*Accipiter striatus*	none	X	X	X	X	N / N,F	4 16
blue jay	*Cyanocitta cristatta*	none	X	X	X	X	A / N,F	4 10
Northern (dark-eyed) junco	*Junco hyemalis*	none		X	X	Early	R / N,F	4 21
American kestrel	*Falco sparverius*	none	X	X	X	X	C / H	4 17
Eastern kingbird	*Tyrannus tyrannus*	none		X	X	Early	A / N,F	4 15
Eastern meadowlark	*Sturnella magna*	none		Late	X		C / N,F	4 6
Northern mockingbird	*Mimus polyglottos*	none	X	X	X	X	A / N,F	4 9

Common Name	Scientific Name	Status	Found During Winter	Spring	Summer	Fall	Frequency/ Habitat Use	References
common nighthawk	*Chordeiles minor*	special concern		Late	X		R / N,F	4 12
barn owl	*Tyto alba*	special concern	X	X	X	X	R / H	4 17
great-horned owl	*Bubo virginianus*	none	X	X	X	X	C / N,H	4 17
ring-necked pheasant	*Phasianus colchicus*	none	X	X	X	X	C / N,F	4 8
American robin	*Turdus migratorius*	none		X	X	Early	A / N,F	4 7
chipping sparrow	*Spizella passerina*	none	X	X	X	X	C / N,F	4 21
fox sparrow	*Passerella iliaca*	none	X	X		X	C / F	20 21
field sparrow	*Spizella pusilla*	none		X	X	X	C / N,F	4 21
grasshopper sparrow	*Ammodramus savannarum*	special concern		X	X	Early	C / N,F	4 20
house sparrow	*Passer domesticus*	none	X	X	X	X	C / N,F	4 20
Savannah sparrow	*Passerculus sandwichensis*	none		X	X	Early	R / N,F	4 21
song sparrow	*Melospiza melodia*	none	X	X	X	X	A / N,F	4 22
swamp sparrow	*Melospiza georgiana*	none	X	X	X	X	C / N,F	4 22
white-crowned sparrow	*Zonotrichia leucophrys*	none	X	X		X	C / F	22 32
European starling	*Sturnus vulgaris*	none	X	X	X	X	A / N,F	4 23
barn swallow	*Hirundo rustica*	none		Late	X		C / N,F	4 15
brown thrasher	*Toxostoma rufum*	none		X	X	Early	C / N,F	4 9
rufous-sided towhee	*Pipilo erythrophthalmus*	none		Late	X	Early	A / N,F	4 20
black-and-white warbler	*Mniotilta varia*	none		X	X		R / N,F	4 18
blue-winged warbler	*Vermivora pinus*	none		Late	X		C / N,F	4 14
chestnut-sided warbler	*Dendroica pensylvanica*	none		Late	X		R / N,F	4 19
prairie warbler	*Dendroica discolor*	none		Late	X	Early	C / N,F	4 19
yellow warbler	*Dendrocica petchia*	none		Late	X		R / N,F	4 18
cedar waxwing	*Bombycilla cedrorum*	none		X	X	Early	C / N,F	4 23 32
whip-poor-will	*Caprimulgus vociferous*	none		Late	X		C / F	4 12
American woodcock	*Philhela minor*	none		X	X	X	C / N,F	4 30
red-headed woodpecker	*Melanerpes erythrocephalus*	none		X	X	Early	C / N,F	4 14
house wren	*Troglodytes aedon*	none		Late	X	Early	C / N,F	4 9
common yellowthroat	*Geothlypis trichas*	none		X	X	Early	C / N,F	4 19
Mammals								
Eastern chipmunk	*Tamis striatus*	none	X	X	X	X	C / N,F	1 29
Eastern cottontail	*Sylvilagus floridanus*	none	X	X	X	X	A / N,F	1 29
white-tailed deer	*Odocoileus virginianus*	none	X	X	X	X	C / F	1 25 29
red fox	*Vulpes vulpes*	none	X	X	X	X	C / H	1 29

Common Name	Scientific Name	Status	Found During Winter	Spring	Summer	Fall	Frequency/ Habitat Use	References
Eastern mole	*Scalopus aquaticus*	none	X	X	X	X	C / N,F	1 29
house mouse	*Mus musculus*	none	X	X	X	X	R / N,F	1 29
meadow-jumping mouse	*Zapus hudsonicus*	none	X	X	X	X	R / N,F	1 29
white-footed mouse	*Peromyscus leucopus*	none	X	X	X	X	C / N,F	1 29
Virginia opossum	*Didelphis virginiana*	none	X	X	X	X	C / N,F	1 29
racoon	*Procyon lotor*	none	X	X	X	X	C / F	1 29
black rat	*Rattus rattus*	none	X	X	X	X	R / N,F	1 29
Norway rat	*Rattus norvegicus*	none	X	X	X	X	C / N,F	1 29
least shrew	*Cryptotis parva*	none	X	X	X	X	N / N,F	1 29
short-tailed shrew	*Blarina breuicauda*	none	X	X	X	X	A / N,F	1 29
striped skunk	*Mephitis mephitis*	none	X	X	X	X	N / N,F	1 29
meadow vole	*Microtus pennsylvanicus*	none	X	X	X	X	C / N,F	29 45
pine vole	*Microtus pinetorum*	none	X	X	X	X	C / N,F	1 29
long-tailed weasel	*Mustela frenata*	none	X	X	X	X	R / N,H	1 29
woodchuck	*Marmota monax*	none	X	X	X	X	R / N,F	1 29
Herptiles								
Eastern garter snake	*Thamnophis sirtalis*	none	X	X	X	X	C / N,F	38 40
eastern hognose snake	*Heterodon platyrhinos*	special concern	X	X	X	X	R / N,H	38
eastern milk snake	*Lampropettis d. triangulum*	none	X	X	X	X	C / N,F	38 39
Fowler's toad	*Bufo woodhousei fowleri*	none	X	X	X	X	C / F	33 37

KEY:

Frequency:	Activity:
A- abundant	N- nesting
C- common	H- hunting
R- rare	R- resting
N- not expected	

Successional Woodland Species - Inventory and Characteristics

Common Name	Scientific Name	Status	Found During winter	spring	summer	fall	Frequency / Habitat Use	References
Birds	**Birds**							
gray catbird	*Dumetella carolinensis*	none		Late	X		C / N,F	4 9
black capped chickadee	*Parus atricapillus*	none	X	X	X	X	A / N,F	4 11
brown-headed cowbird	*Molothrus ater*	none		X	X	Early	A / N,F	4 6
brown creeper	*Certhia familiaris*	none		X	X	Early	C / N,F	4 9
American crow	*Corvus brachyrhynchos*	none	X	X	X	X	A / N,H	4 11
yellow-billed cuckoo	*Coccyzus americanus*	none		Late	X		C / N,F	4 12
mourning dove	*Zenaida macroura*	none	X	X	X	X	C / N,H	4 8
rock dove	*Columba livia*	none	X	X	X	X	C / N,F	4 8
house finch	*Carpodacus mexicanus*	none		X	X	X	A / N,F	4 20
common flicker	*Colaptus auratus*	none	X	X	X	X	A / N,F	4 14
common grackle	*Quiscalus quiscula*	none	X	X	X	X	A / N,F	4 6
ruffed grouse	*Bonasa umbellus*	none	X	X	X	X	R / N,F	4 8
rose-breasted grosbeak	*Pheucticus ludovicianus*	none		Late	X	Early	R / N,F	4 20
Cooper's hawk	*Accipiter cooperii*	special concern		X	X		N / N,H	4 17
red-tailed hawk	*Buteo jamaicensis*	none	X	X	X	X	C / H	4 16
sharp-shinned hawk	*Accipiter striatus*	none	X	X	X	X	N / N,F	4 16
blue jay	*Cyanocitta cristatta*	none	X	X	X	X	A / N,F	4 10
Northern (dark-eyed) junco	*Junco hyemalis*	none		X	X	Early	R / N,F	4 21
American kestrel	*Falco sparverius*	none	X	X	X	X	C / N,H	4 17
Eastern kingbird	*Tyrannus tyrannus*	none		X	X	Early	C / N,F	4 15
golden-crowned kinglet	*Regulus satrapa*	none	X	X		X	R / N,H	4 7
ruby-crowned kinglet	*Regulus calendula*	none	X	X		X	R / N,H	4 7
Northern mockingbird	*Mimus polyglottos*	none	X	X	X	X	C / N,F	4 9
great-horned owl	*Bubo virginianus*	none	X	X	X	X	C / N,H	4 17
long-eared owl	*Asio otus*	none	X	X	X	X	C / N,H	4 17
American redstart	*Setophaga ruticilla*	none		Late	X	X	C / N,F	4 19
American robin	*Turdus migratorius*	none		X	X	Early	A / N,F	4 7
yellow-bellied sapsucker	*Sphyrapicus varius*	none		Late	X	Early	C / N,F	14
fox sparrow	*Passerella iliaca*	none	X	X		X	R / F	20 21
house sparrow	*Passer domesticus*	none	X	X	X	X	C / N,F	4 20
song sparrow	*Melospiza melodia*	none	X	X	X	X	A / N,F	4 22

Common Name	Scientific Name	Status	Found During winter	spring	summer	fall	Frequency / Habitat Use	References
white-throated sparrow	*Zonotrichia albicollis*	none	X	X	X	X	C / N,F	4 22
European starling	*Sturnus vulgaris*	none	X	X	X	X	A / N,F	4 23
barn swallow	*Hirundo rustica*	none		Late	X		C / N,F	4 15
brown thrasher	*Toxostoma rufum*	none		X	X	Early	C / N,F	4 9
hermit thrush	*Catharus guttatus*	none	X	X	X	X	R / N,F	4 7
wood thrush	*Hylocichla mustelina*	none		X	X	Early	C / N,F	4 7
rufous-sided towhee	*Pipilo erythrophthalmus*	none		Late	X	Early	A / N,F	4 20
red-eyed vireo	*Vireo olivaceus*	none		Late	X		C / N,F	4 23
black-and-white warbler	*Mniotilta varia*	none		X	X		C / N,F	4 18
blue-winged warbler	*Vermivora pinus*	none		Late	X		C / N,F	4 14
chestnut-sided warbler	*Dendroica pensylvanica*	none		Late	X		C / N,F	4 19
cedar waxwing	*Bombycilla cedrorum*	none		X	X	Early	C / N,F	4 23 32
whip-poor-will	*Caprimulgus vociferous*	none		Late	X		C / N	4 12
Eastern wood-peewee	*Contopus virens*	none		X	X		C / N,F	4 15
American woodcock	*Philhela minor*	none		X	X	X	R / N,F	4 30
downy woodpecker	*Picoides pubescens*	none	X	X	X	X	A / N,F	4 14
hairy woodpecker	*Picoides villosus*	none	X	X	X	X	R / N,F	4 14
red-bellied woodpecker	*Melanerpes carolinus*	none	X	X	X	X	R / N,F	4 14
Carolina wren	*Thryothorus ludovicianus*	none	X	X	X	X	C / N,F	4 9
house wren	*Troglodytes aedon*	none		Late	X	Early	C / N,F	4 9
big-brown bat	*Eptesicus fuscus*	none	X	X	X	X	C / N,F	1 29
hoary bat	*Lasiurus borealis*	none			Late	Early	C / N,F	45
Keen's bat	*Myotis keenii*	none			X	Early	R / N	1 29
Mammals								
little-brown bat	*Myotis lucifugus*	none	X	X	X	X	C / N,F	1 29
red bat	*Lasiurus borealis*	none		Late	X	Early	C / N,F	1 29
silver-haired bat	*Lasionycteris noctivagans*	none			X		R / N,F	1 29
Eastern chipmunk	*Tamis striatus*	none	X	X	X	X	C / N,F	1 29
Eastern cottontail	*Sylvilagus floridanus*	none	X	X	X	X	A / N,F	1 29
white-tailed deer	*Odocoileus virginianus*	none	X	X	X	X	C / F	1 25 29
red fox	*Vulpes vulpes*	none	X	X	X	X	C / N,H	1 29
Eastern mole	*Scalopus aquaticus*	none	X	X	X	X	C / N,F	1 29
meadow-jumping mouse	*Zapus hudsonicus*	none	X	X	X	X	R / N,F	1 29
white-footed mouse	*Peromyscus leucopus*	none	X	X	X	X	C / N,F	1 29

Common Name	Scientific Name	Status	Found During winter	spring	summer	fall	Frequency / Habitat Use	References
Virginia opossum	*Didelphis virginiana*	none	X	X	X	X	C / N,F	1 29
racoon	*Procyon lotor*	none	X	X	X	X	C / N,F	1 29
masked shrew	*Sorex cinereus*	none	X	X	X	X	C / N,F	1 29
short-tailed shrew	*Blarina breuicauda*	none	X	X	X	X	A / N,F	1 29
striped skunk	*Mephitis mephitis*	none	X	X	X	X	N / N,F	1 29
Eastern gray squirrel	*Sciurus carolinensis*	none	X	X	X	X	C / N,F	1 29
meadow vole	*Microtus pennsylvanicus*	none	X	X	X	X	R / N,F	29 45
pine vole	*Microtus pinetorum*	none	X	X	X	X	C / N,F	1 29
long-tailed weasel	*Mustela frenata*	none	X	X	X	X	R / N,H	1 29
woodchuck	*Marmota monax*	none	X	X	X	X	R / N,F	1 29
Herptiles								
Eastern garter snake	*Thamnophis sirtalis*	none	X	X	X	X	C / N,F	38 40
eastern hognose snake	*Heterodon platyrhinos*	special concern	X	X	X	X	R / N,H	38
eastern milk snake	*Lampropettis d. triangulum*	none	X	X	X	X	C / N,F	38 39

Pine Oak Forest Species - Inventory and Characteristics

Common Name	Scientific Name	Status	Found During winter	spring	summer	fall	Frequency/ Habitat Use	References
gray catbird	*Dumetella carolinensis*	none		Late	X		R / N,F	4 9
black capped chickadee	*Parus atricapillus*	none	X	X	X	X	A / N,F	4 11
brown-headed cowbird	*Molothrus ater*	none		X	X	Early	A / N,F	4 6
brown creeper	*Certhia familiaris*	none		X	X	Early	C / N,F	4 9
American crow	*Corvus brachyrhynchos*	none	X	X	X	X	A / N,H	4 11
yellow-billed cuckoo	*Coccyzus americanus*	none		Late	X		R / N,F	4 12
mourning dove	*Zenaida macroura*	none	X	X	X	X	C / N,H	4 8
house finch	*Carpodacus mexicanus*	none		X	X	X	A / N,F	4 20
purple finch	*Carpodacus purpureus*	none	X	X	X	X	C / N,F	4 20
common flicker	*Colaptus auratus*	none	X	X	X	X	C / N,F	4 14
great-crested flycatcher	*Myiarchus crinitus*	none		Late	X		C / N,F	4 15
common grackle	*Quiscalus quiscula*	none	X	X	X	X	C / N,F	4 6
ruffed grouse	*Bonasa umbellus*	none	X	X	X	X	R / N,F	4 8
broad-winged hawk	*Buteo platypterus*	none		X	X		R / N,H	4 16
Cooper's hawk	*Accipiter cooperii*	special concern		X	X		N / N,H	4 17
red-tailed hawk	*Buteo jamaicensis*	none	X	X	X	X	C / N,H	4 16
sharp-shinned hawk	*Accipiter striatus*	none	X	X	X	X	R / N,H	4 16
blue jay	*Cyanocitta cristatta*	none	X	X	X	X	A / N,F	4 10
Northern (dark-eyed) junco	*Junco hyemalis*	none		X	X	Early	R / N,F	4 21
Eastern kingbird	*Tyrannus tyrannus*	none		X	X	Early	C / N,F	4 15
golden-crowned kinglet	*Regulus satrapa*	none	X	X		X	R / N,H	4 7
ruby-crowned kinglet	*Regulus calendula*	none	X	X		X	R / N,H	4 7
Northern mockingbird	*Mimus polyglottos*	none	X	X	X	X	C / N,F	4 9
white-breasted nuthatch	*Sitta carolinensis*	none	X	X	X	X	A / N,F	4 9
northern oriole	*Icterus galbula*	none		Late	X		R / N,F	4 6
ovenbird	*Seiurus aurocapillus*	none		Late	X	Early	C / N,F	4 19
common screech owl	*Otus asio*	none	X	X	X	X	C / N	4 17
great-horned owl	*Bubo virginianus*	none	X	X	X	X	C / N,H	4 17
long-eared owl	*Asio otus*	none	X	X	X	X	C / N,H	4 17
American robin	*Turdus migratorius*	none		X	X	Early	A / N,F	4 7
yellow-bellied sapsucker	*Sphyrapicus varius*	none		Late	X	Early	C / N,F	14
pine siskin	*Carduelis pinus*	none	X	X	X	X	N / N,F	4 20

Common Name	Scientific Name	Status	Found During winter	spring	summer	fall	Frequency/ Habitat Use	References
fox sparrow	*Passerella iliaca*	none	X	X		X	R / F	20 21
house sparrow	*Passer domesticus*	none	X	X	X	X	C / N,F	4 20
song sparrow	*Melospiza melodia*	none	X	X	X	X	R / N,F	4 22
white-throated sparrow	*Zonotrichia albicollis*	none	X	X	X	X	R / N,F	4 22
European starling	*Sturnus vulgaris*	none	X	X	X	X	C / N,F	4 23
chimney swift	*Chaetura pelagica*	none		X	X		C / F	4 42
scarlet tanager	*Piranga olivacea*	none		X	X		C / N,F	4
brown thrasher	*Toxostoma rufum*	none		X	X	Early	R / N,F	4 9
hermit thrush	*Catharus guttatus*	none	X	X	X	X	C / N,F	4 7
wood thrush	*Hylocichla mustelina*	none		X	X	Early	R / N,F	4 7
tufted titmouse	*Parus bicolor*	none	X	X	X	X	R / N,F	4 11
veery	*Catharus fuscescens*	none		Late	X		R / N,F	4 7
red-eyed vireo	*Vireo olivaceus*	none		Late	X		R / N,F	4 23
black-and-white warbler	*Mniotilta varia*	none		X	X		R / N,F	4 18
black-throated blue warbler	*Dendroica caerulescens*	none		Late	X	Early	C / N,F	18
pine warbler	*Dendroica pinus*	none		X	X	Early	C / N,F	4 19
prairie warbler	*Dendroica discolor*	none		Late	X	Early	C / N,F	4 19
yellow-rumped warbler	*Dendroica coronata*	none		X	X	Early	C / N,F	4 8
cedar waxwing	*Bombycilla cedrorum*	none		X	X	Early	R / N,F	4 23 32
whip-poor-will	*Caprimulgus vociferous*	none		Late	X		C / N	4 12
Eastern wood-peewee	*Contopus virens*	none		X	X		C / N,F	4 15
downy woodpecker	*Picoides pubescens*	none	X	X	X	X	A / N,F	4 14
hairy woodpecker	*Picoides villosus*	none	X	X	X	X	C / N,F	4 14
red-bellied woodpecker	*Melanerpes carolinus*	none	X	X	X	X	R / N,F	4 14
house wren	*Troglodytes aedon*	none		Late	X	Early	R / N,F	4 9
Mammals								
big-brown bat	*Eptesicus fuscus*	none	X	X	X	X	C / N,F	1 29
hoary bat	*Lasiurus borealis*	none			Late	Early	C / N,F	45
Keen's bat	*Myotis keenii*	none			X	Early	R / N	1 29
little-brown bat	*Myotis lucifugus*	none	X	X	X	X	C / N,F	1 29
red bat	*Lasiurus borealis*	none		Late	X	Early	C / N,F	1 29
Eastern pipistrelle	*Pipistrellus subflavus*	none		X	X	Early	R / N,F	1 29
silver-haired bat	*Lasionycteris noctivagans*	none			X		R / N,F	1 29
Eastern chipmunk	*Tamis striatus*	none	X	X	X	X	C / N,F	1 29

Common Name	Scientific Name	Status	Found During winter	spring	summer	fall	Frequency/ Habitat Use	References
Eastern cottontail	*Sylvilagus floridanus*	none	X	X	X	X	C / N,F	1 29
white-tailed deer	*Odocoileus virginianus*	none	X	X	X	X	C / N,F	1 25 29
red fox	*Vulpes vulpes*	none	X	X	X	X	C / N,H	1 29
Eastern mole	*Scalopus aquaticus*	none	X	X	X	X	C / N,F	1 29
house mouse	*Mus musculus*	none	X	X	X	X	N / N,F	1 29
meadow-jumping mouse	*Zapus hudsonicus*	none	X	X	X	X	R / N,F	1 29
white-footed mouse	*Peromyscus leucopus*	none	X	X	X	X	C / N,F	1 29
Virginia opossum	*Didelphis virginiana*	none	X	X	X	X	C / N,F	1 29
racoon	*Procyon lotor*	none	X	X	X	X	C / N,F	1 29
masked shrew	*Sorex cinereus*	none	X	X	X	X	C / N,F	1 29
short-tailed shrew	*Blarina breuicauda*	none	X	X	X	X	A / N,F	1 29
striped skunk	*Mephitis mephitis*	none	X	X	X	X	N / N,F	1 29
Eastern gray squirrel	*Sciurus carolinensis*	none	X	X	X	X	C / N,F	1 29
southern-flying squirrel	*Glaucimys volans*	none	X	X	X	X	C / N,F	1 29
pine vole	*Microtus pinetorum*	none	X	X	X	X	C / N,F	1 29
long-tailed weasel	*Mustela frenata*	none	X	X	X	X	R / N,H	1 29
woodchuck	*Marmota monax*	none	X	X	X	X	R / N,F	1 29
Herptiles								
common gray treefrog	*Hyla versicolor*	none	X	X	X	X	C / N,F	33 37
red-backed salamander	*Plethodon cinerus cinerus*	none	X	X	X	X	R / N,F	34 36
Eastern tiger salamander	*Ambystoma tigrinum tigri*	endangered	X	X	X	X	R / F	36 38
marbled salamander	*Ambystoma opacum*	none	X	X	X	X	R / N,F	34 36 38
Eastern garter snake	*Thamnophis sirtalis*	none	X	X	X	X	C / N,F	38 40
eastern hognose snake	*Heterodon platyrhinos*	special concern	X	X	X	X	R / N,H	38
eastern milk snake	*Lampropettis d. triangulu*	none	X	X	X	X	C / N,F	38 39
Eastern spadefoot toad	*Scaphiopus holbrooki*	none	X	X	X	X	C / N,F	33
Fowler's toad	*Bufo woodhousei fowleri*	none	X	X	X	X	C / F	33 37
Eastern box turtle	*Terrepene carolina*	none	X	X	X	X	C / N,F	41

Key:

Frequency	Activity:
A- abundant	N- nesting
C- common	H- hunting
R- rare	R- resting
N- not expected	

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Appendix D-4
Breeding Bird List

New York State Breeding Bird Atlas
Breeding Species for Block Number(s):
6853D

Common Name	Scientific Name	Breeding Class	Year	New York Legal Status	Heritage State Rank
Green Heron	Butorides virescens	B2	81	Protected	S5
Mute Swan	Cygnus olor	NE	84	Protected	SE
Canada Goose	Branta canadensis	NE	84	Game Species	S5
Wood Duck	Aix sponsa	P2	82	Game Species	S5
American Black Duck	Anas rubripes	P2	83	Game Species	S4
Mallard	Anas platyrhynchos	FL	81	Game Species	S5
Osprey	Pandion haliaetus	X1	81	Protected-Special Concern	S4
Northern Harrier	Circus cyaneus	X1	81	Threatened	S3
Broad-winged Hawk	Buteo platypterus	X1	81	Protected	S5
Red-tailed Hawk	Buteo jamaicensis	P2	81	Protected	S5
American Kestrel	Falco sparverius	FL	81	Protected	S5
Ruffed Grouse	Bonasa umbellus	X1	81	Game Species	S5
Northern Bobwhite	Colinus virginianus	FL	81	Game Species	S4
American Crow	Corvus brachyrhynchos	FL	81	Game Species	S5
Killdeer	Charadrius vociferus	FL	81	Protected	S5
Spotted Sandpiper	Actitis macularia	X1	81	Protected	S5
American Woodcock	Scolopax minor	D2	82	Game Species	S5
Rock Dove	Columba livia	NE	84	Unprotected	SE
Mourning Dove	Zenaida macroura	NY	84	Protected	S5
Black-billed Cuckoo	Coccyzus erythropthalmus	S2	81	Protected	S5
Yellow-billed Cuckoo	Coccyzus americanus	S2	81	Protected	S5
Eastern Screech-Owl	Otus asio	S2	84	Protected	S5
Great Horned Owl	Bubo virginianus	ON	82	Protected	S5
Barn Owl	Tyto alba	X1	81	Protected	S3
Whip-poor-will	Caprimulgus vociferus	S2	81	Protected-Special Concern	S4
Chimney Swift	Chaetura pelagica	X1	81	Protected	S5
Ruby-throated Hummingbird	Archilochus colubris	X1	81	Protected	S5
Belted Kingfisher	Ceryle alcyon	UN	82	Protected	S5
Downy Woodpecker	Picoides pubescens	ON	83	Protected	S5
Hairy Woodpecker	Picoides villosus	NY	81	Protected	S5
Northern Flicker	Colaptes auratus	ON	82	Protected	S5
Eastern Wood-Pewee	Contopus virens	S2	81	Protected	S5
Eastern Phoebe	Sayornis phoebe	X1	81	Protected	S5
Great Crested Flycatcher	Myiarchus crinitus	T2	81	Protected	S5
Eastern Kingbird	Tyrannus tyrannus	FL	81	Protected	S5
Horned Lark	Eremophila alpestris	P2	83	Protected-Special Concern	S5
Purple Martin	Progne subis	NY	83	Protected	S5

Note: For reports covering multiple blocks, only the record containing the most recent year for the highest level of breeding recorded for each species is shown.

Common Name	Scientific Name	Breeding Class	Year	New York Legal Status	Heritage State Rank
Tree Swallow	Tachycineta bicolor	ON	82	Protected	S5
Northern Rough-winged Swallow	Stelgidopteryx serripennis	ON	83	Protected	S5
Barn Swallow	Hirundo rustica	FY	81	Protected	S5
Blue Jay	Cyanocitta cristata	NY	83	Protected	S5
Fish Crow	Corvus ossifragus	X1	81	Protected	S4
Black-capped Chickadee	Poecile atricapillus	FL	81	Protected	S5
Tufted Titmouse	Baeolophus bicolor	FL	84	Protected	S5
White-breasted Nuthatch	Sitta carolinensis	FL	82	Protected	S5
Carolina Wren	Thryothorus ludovicianus	S2	84	Protected	S5
House Wren	Troglodytes aedon	S2	81	Protected	S5
Hermit Thrush	Catharus guttatus	FL	81	Protected	S5
Wood Thrush	Hylocichla mustelina	S2	81	Protected	S5
American Robin	Turdus migratorius	NE	84	Protected	S5
Gray Catbird	Dumetella carolinensis	FL	81	Protected	S5
Northern Mockingbird	Mimus polyglottos	FL	81	Protected	S5
Brown Thrasher	Toxostoma rufum	FL	82	Protected	S5
Cedar Waxwing	Bombycilla cedrorum	FL	84	Protected	S5
European Starling	Sturnus vulgaris	FL	81	Unprotected	SE
White-eyed Vireo	Vireo griseus	S2	84	Protected	S4
Red-eyed Vireo	Vireo olivaceus	FL	82	Protected	S5
Blue-winged Warbler	Vermivora pinus	NY	83	Protected	S5
Yellow Warbler	Dendroica petechia	FL	81	Protected	S5
Pine Warbler	Dendroica pinus	FL	82	Protected	S5
Prairie Warbler	Dendroica discolor	FL	82	Protected	S5
Black-and-white Warbler	Mniotilta varia	FL	81	Protected	S5
American Redstart	Setophaga ruticilla	FL	84	Protected	S5
Ovenbird	Seiurus aurocapillus	FY	81	Protected	S5
Common Yellowthroat	Geothlypis trichas	FL	81	Protected	S5
Scarlet Tanager	Piranga olivacea	T2	81	Protected	S5
Northern Cardinal	Cardinalis cardinalis	FL	82	Protected	S5
Indigo Bunting	Passerina cyanea	P2	83	Protected	S5
Eastern Towhee	Pipilo erythrophthalmus	FY	81	Protected	S5
Chipping Sparrow	Spizella passerina	FL	81	Protected	S5
Field Sparrow	Spizella pusilla	S2	81	Protected	S5
Vesper Sparrow	Pooecetes gramineus	FY	83	Protected-Special Concern	S5
Savannah Sparrow	Passerculus sandwichensis	S2	81	Protected	S5
Grasshopper Sparrow	Ammodramus savannarum	FL	84	Protected-Special Concern	S4
Song Sparrow	Melospiza melodia	NY	81	Protected	S5
Swamp Sparrow	Melospiza georgiana	S2	81	Protected	S5
Red-winged Blackbird	Agelaius phoeniceus	FL	81	Protected	S5
Eastern Meadowlark	Sturnella magna	FL	81	Protected	S5
Common Grackle	Quiscalus quiscula	FY	81	Protected	S5

Note: For reports covering multiple blocks, only the record containing the most recent year for the highest level of breeding recorded for each species is shown.

Common Name	Scientific Name	Breeding Class	Year	New York Legal Status	Heritage State Rank
Brown-headed Cowbird	Molothrus ater	FL	83	Protected	S5
Orchard Oriole	Icterus spurius	X1	82	Protected	S4
Baltimore Oriole	Icterus galbula	ON	81	Protected	S5
House Finch	Carpodacus mexicanus	FL	81	Protected	SE
American Goldfinch	Carduelis tristis	X1	84	Protected	S5
House Sparrow	Passer domesticus	ON	81	Unprotected	SE

Total Species 85

Note: For reports covering multiple blocks, only the record containing the most recent year for the highest level of breeding recorded for each species is shown.

NEW YORK STATE - BREEDING BIRD ATLAS REPORT

The enclosed data from the New York State Breeding Bird Atlas represents a cumulative effort from 1980-1985. These data are the result of on-site surveys within each block conducted by numerous volunteers. The intensity level and effort in data collecting varies throughout the State. Some blocks have been more thoroughly searched than others. For these reasons, we cannot provide a definitive statement concerning the absence of a breeding record for a species not listed in a block. We can only provide a listing of species known to be breeding or suspected of breeding in each block or set of blocks.

For each species listed, its breeding class code and year, its New York State Legal Status, and its Natural Heritage Program state rarity rank are provided. Explanations of these fields are as follows:

BREEDING CLASS AND YEAR

Indicates the highest class of evidence used to document breeding in that block or set of blocks during the course of the Breeding Bird Atlas Survey, and the year this evidence was recorded. Breeding classes used, and their codes, are listed below, in descending order of breeding confirmation, from strongest evidence of confirmed breeding down to evidence of possible breeding.

	CODE	DEFINITION OF BREEDING EVIDENCE
Confirmed Breeding:	NY	Nest with young.
	NE	Identifiable nest and eggs, bird sitting on nest or eggs, identifiable eggshells found beneath nest, or identifiable dead nestling(s).
	FY	Adult(s) with food for young.
	FS	Adult carrying fecal sac.
	ON	Adult(s) entering or leaving nest site in circumstances indicating occupied nest.
	FL	Recently fledged young (including downy young of precocial species - waterfowl, shorebirds).
	FE	Female with egg in the oviduct.
	UN	Used nest found.
	DD	Distraction display or injury-feigning.
Probable Breeding:	B2	Nest building or excavation or a nest hole.
	N2	Visiting probable nest site. Nest building by wrens and woodpeckers.
	D2	Courtship and display, agitated behavior or anxiety calls from adults suggesting probable presence nearby of a nest or young; well-developed brood-patch or cloacal protuberance on trapped adult.
	T2	Bird (or pair) apparently holding territory.
	S2	Singing male present (or breeding calls heard) on more than one date in the same place.
	P2	Pair observed in suitable habitat in breeding season.

Continued on next page...

Possible Breeding: X1 Species observed in possible nesting habitat but no other indication of breeding noted, or singing male(s) present (or breeding calls heard), in breeding season (based upon one visit).

NEW YORK STATE LEGAL STATUS - ANIMALS

Categories of Endangered and Threatened species are defined in New York State Environmental Conservation Law section 11-0535. Endangered, Threatened, and Special Concern species are listed in regulation 6NYCRR 182.5.

E = Endangered Species: any species which meet one of the following criteria:
1) Any native species in imminent danger of extirpation
2) Any species listed as endangered by the United States Department of the Interior, as enumerated in the Code of Federal Regulations 50 CFR 17.11.

T = Threatened Species: any species which meet one of the following criteria:
1) Any native species likely to become an endangered species within the foreseeable future in New York.
2) Any species listed as threatened by the U.S. Department of the Interior, as enumerated in the Code of the Federal Regulations 50 CFR 17.11.

SC = Special Concern Species: those species which are not yet recognized as endangered or threatened, but for which documented concern exists for their continued welfare in New York. Unlike the first two categories, species of special concern receive no additional legal protection under Environmental Conservation Law section 11-0535 (Endangered and Threatened Species).

P = Protected Wildlife (defined in Environmental Conservation Law section 11-0103): wild game, protected wild birds, and endangered species of wildlife.

U = Unprotected (defined in Environmental Conservation Law section 11-0103): the species may be taken at any time without limit; however a licence to take may be required.

G = Game (defined in Environmental Conservation Law section 11-0103): any of a variety of big game or small game species as stated in the Environmental Conservation Law; many normally have an open season for at least part of the year, and are protected at other times.

NY NATURAL HERITAGE PROGRAM STATE RARITY RANKS:

Each species has a state rank, which reflects its rarity within New York State, as determined by the NY Natural Heritage Program. These ranks carry no legal weight.

S1 = Typically 5 or fewer occurrences in New York State, very few remaining individuals, acres, or miles of stream, or some factor of its biology making it especially vulnerable in New York State.

S2 = Typically 6 to 20 occurrences in New York State, few remaining individuals, acres, or miles of stream, or factors demonstrably making it very vulnerable in New York State.

S3 = Typically 21 to 100 occurrences, limited acreage, or miles of stream in New York State.

S4 = Apparently secure in New York State.

S5 = Demonstrably secure in New York State.

SH = Historically known from New York State, but not seen in the past 15 years.

SX = Apparently extirpated from New York State.

SE = Exotic, not native to New York State

NR = Not ranked (e.g., hybrids)

Questions concerning these data may be addressed to:

New York Natural Heritage Program
NYS DEC - Wildlife Resources Center
700 Troy-Schenectady Road
Latham, New York 12110-2400

Copies of the published book "The Atlas of Breeding Birds in New York State", Robert F. Andrle and Janet R. Carroll, Editors, may be purchased directly from Cornell University Press. Call phone number 1-800-666-2211 to order.

Appendix D-5
Species Adaptability

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING

PROJECTION OF WILDLIFE ECOLOGICAL RESPONSE (POWER)

NELSON, POPE & VOORHIS, LLC, MICROCOMPUTER MODEL

SPECIES ADAPTABILITY

Appendix D-5

This portion of the appendix has been included to present the results of a computer program to identify "Species Adaptability". This list is another component of the program developed for use by Nelson, Pope & Voorhis, LLC used for the preparation of **Appendix D-3,** however, in this application the "Adaptability" of the observed and expected species are shown. The "adaptability" as indicated in the table, refers to whether an individual species may potentially benefit from (+) a habitat change from natural to urban/suburban setting; or, be impacted (-), or remain constant (=), as a result of this change. These values are not intended to represent the dynamics of actual species on the subject site under post-development conditions. The column entitled "Comments" provides relevant information which was obtained from the literature, as regards special habits of the particular species, such as adaptability, nesting, food, etc. This column is particularly important in assessing the potential impacts to the species as a result of the proposed project. The preceding text considers the site specific aspects of the proposed development in regard to individual species. This Appendix is included to provide the reader with the benefit of what the literature which was consulted in connection with the Habitat Suitability Model suggests, in terms of generalized species dynamics resulting from land use. References are those used in previous appendix.

Successional Old Field Species - Adaptability and Comments

Common Name	Scientific Name	Adapt.	Comments	References
Birds				
red-winged blackbird	*Agelaius phoeniceus*	=	needs water	4 6
Eastern bluebird	*Sialia sialis*	-	found almost entirely in nesting boxes, extremely rare in wild	4 7
common bobwhite	*Colinus virginianus*	-	somewhat tolerant of humans during spring and summer months	4 8
indigo bunting	*Passerina cyanea*	-	inhabits open woodlands with dense thickets for cover	4 20
Northern cardinal	*Cardinalis cardinalis*	=	found around gardens, yards, parks	4 20
gray catbird	*Dumetella carolinensis*	=	abundant around parks, urban and suburban areas	4 9
black capped chickadee	*Parus atricapillus*	=	abundant around parks, urban and suburban areas	4 11
brown-headed cowbird	*Molothrus ater*	=	lays eggs in other bird's nests; some stay during winter	4 6
American crow	*Corvus brachyrhynchos*	=	extremely adaptable; omnivorous	4 11
black-billed cuckoo	*Coccyzus erythropthalmus*	-	avoids human activities	4 11
yellow-billed cuckoo	*Coccyzus americanus*	-	avoids heavy urban areas; prefers wooded open or edges for nests	4 12
mourning dove	*Zenaida macroura*	=	abundant around parks, urban and suburban areas	4 8
rock dove	*Columba livia*	+	nests almost entirely on buildings; considered a pest species	4 8
American goldfinch	*Carduelis tristis*	=	prefers diet of thistles and dandelions	4 20
house finch	*Carpodacus mexicanus*	+	nests almost entirely on buildings; considered a pest species	4 20
common flicker	*Colaptus auratus*	=	abundant around parks, suburban and urban areas	4 14
least flycatcher	*Empidonax minimus*	=	prefers open areas and woodland borders; uncommon on Long Island	4 15
willow flycatcher	*Empidonax traillii*	-	found mostly on south shore and western north shore areas	4 15
common grackle	*Quiscalus quiscula*	=	adapts well to urban and suburban habitats	4 6
ruffed grouse	*Bonasa umbellus*	-	prefers dense cover, thick woods; avoids humans	4 8
rose-breasted grosbeak	*Pheucticus ludovicianus*	=	mainly found on north shore	4 20
Northern harrier	*Circus cyaneus*	-	avoids humans; extremely protective of nests	4 16
Cooper's hawk	*Accipiter cooperii*	-	no atlas sightings (non-breeder) on LI; needs extensive woodland	4 17
red-tailed hawk	*Buteo jamaicensis*	-	needs 100 foot radius undisturbed area for nest	4 16
sharp-shinned hawk	*Accipiter striatus*	-	avoids humans; nests in heavily forested areas	4 16
blue jay	*Cyanocitta cristatta*	=	extremely adaptable to human activity and other stresses	4 10
Northern (dark-eyed) junco	*Junco hyemalis*	-	prefers forested area with elevation >300 meters; no LI atlas record	4 21
American kestrel	*Falco sparverius*	-	adaptable; prefers open areas and parks; will nest near humans	4 17
Eastern kingbird	*Tyrannus tyrannus*	=	very adaptable to human activities; prefers open areas	4 15
Eastern meadowlark	*Sturnella magna*	-	found in marshes during winter months	4 6
Northern mockingbird	*Mimus polyglottos*	+	prefers to nest near humans	4 9

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Common Name	Scientific Name	Adapt.	Comments	References
common nighthawk	*Chordeiles minor*	=	primarily a grassland specie; will nest in burnt areas and roofs	4 12
barn owl	*Tyto alba*	=	hunts in open areas, nests in man made structures and hollow trees	4 17
great-horned owl	*Bubo virginianus*	-	nocturnal; rare in wooded areas of less than 20 acres	4 17
ring-necked pheasant	*Phasianus colchicus*	-	needs fields with cover along edge	4 8
American robin	*Turdus migratorius*	=	very adaptable; abundant in parks; nests in man-made structures	4 7
chipping sparrow	*Spizella passerina*	+	abundant around man made structures	4 21
fox sparrow	*Passerella iliaca*	-	boreal species, winters here in edge, thickets, brushy areas	20 21
field sparrow	*Spizella pusilla*	-	associated with grasslands, fields and brushy wooded edges	4 21
grasshopper sparrow	*Ammodramus savannarum*	-	requires grasslands	4 20
house sparrow	*Passer domesticus*	+	prefers buildings, urban, suburban, gardens; considered a pest	4 20
Savannah sparrow	*Passerculus sandwichensis*	-	found in shore areas; not expected inland	4 21
song sparrow	*Melospiza melodia*	=	common to most habitats except deep forest, open field and marsh	4 22
swamp sparrow	*Melospiza georgiana*	-	prefers fresh water marshes; may be found in weedy fields, parks	4 22
white-crowned sparrow	*Zonotrichia leucophrys*	=	often found in suburban areas and city parks	22 32
European starling	*Sturnus vulgaris*	+	extremely adaptable to human activity; considered a pest	4 23
barn swallow	*Hirundo rustica*	+	nests almost entirely on buildings	4 15
brown thrasher	*Toxostoma rufum*	=	common in parks and suburban areas, wooded edges and dry open are	4 9
rufous-sided towhee	*Pipilo erythrophthalmus*	-	may be present year round on Long Island	4 20
black-and-white warbler	*Mniotilta varia*	-	builds nests under shrubs and/or trees	4 18
blue-winged warbler	*Vermivora pinus*	-	primarily abandoned and overgrown field, and thickets	4 14
chestnut-sided warbler	*Dendroica pensylvanica*	-	prefers first growth woods, with some open brush area	4 19
prairie warbler	*Dendroica discolor*	-	prefers scrub fields and open pine barrens habitat	4 19
yellow warbler	*Dendrocica petchia*	=	rare breeder on LI, winter sps, abundant in parks & yards	4 18
cedar waxwing	*Bombycilla cedrorum*	+	prefers open woodlands, orchards and residential areas	4 23 32
whip-poor-will	*Caprimulgus vociferous*	-	nocturnal; prefers open woods with adjacent fields	4 12
American woodcock	*Philhela minor*	-	prefers moist woodland and thicket near open fields	4 30
red-headed woodpecker	*Melanerpes erythrocephalus*	=	prefers open woodlands, parks and suburban areas	4 14
house wren	*Troglodytes aedon*	=	found in suburban areas and gardens; nests in crevices of buildings	4 9
common yellowthroat	*Geothlypis trichas*	=	found in all open brushy wet areas	4 19
Mammals				
Eastern chipmunk	*Tamis striatus*	=	prefers open woods, thickets, and rocky areas	1 29
Eastern cottontail	*Sylvilagus floridanus*	=	will adapt to suburban areas, if there is sufficient cover	1 29
white-tailed deer	*Odocoileus virginianus*	-	requires range of one-half square mile	1 25 29
red fox	*Vulpes vulpes*	-	builds den in wooded areas with loose-sandy soil and good drainage	1 29
Eastern mole	*Scalopus aquaticus*	=	tunnels underground	1 29
house mouse	*Mus musculus*	+	lives in association with man, not expected away from buildings	1 29

Common Name	Scientific Name	Adapt.	Comments	References
meadow-jumping mouse	*Zapus hudsonicus*	=	found around water in pine barrens; prefers open areas with grasses	1 29
white-footed mouse	*Peromyscus leucopus*	=	common to most all habitats; does not adapt well to human activity	1 29
Virginia opossum	*Didelphis virginiana*	=	common in suburban areas, as well as woods, marsh and coastal areas	1 29
racoon	*Procyon lotor*	+	nocturnal; very adaptive; found in urban and forest areas	1 29
black rat	*Rattus rattus*	=	lives in association with man, mainly city water front buildings	1 29
Norway rat	*Rattus norvegicus*	+	nocturnal; usually associated with human activity	1 29
least shrew	*Cryptotis parva*	-	not commonly documented on Long Island	1 29
short-tailed shrew	*Blarina breuicauda*	=	tunnels underground; abundant in a variety of habitats	1 29
striped skunk	*Mephitis mephitis*	=	prefers mixed wood & brush within 2 miles of water; not expected on LI	1 29
meadow vole	*Microtus pennsylvanicus*	=	tunnels underground; prefers open woodland	29 45
pine vole	*Microtus pinetorum*	=	tunnels underground; prefers sandy soil in woods and field; can swim	1 29
long-tailed weasel	*Mustela frenata*	-	prefers dense wood, but may appear in all land habitats near water	1 29
woodchuck	*Marmota monax*	-	appears primarily in scrub woods and brushy areas; not common on LI	1 29
Herptiles				
Eastern garter snake	*Thamnophis sirtalis*	=	occupies a variety of habitats	38 40
eastern hognose snake	*Heterodon platyrhinos*	=	sandy soil and sunny roadside; feeds on herptiles and insects	38
eastern milk snake	*Lampropettis d. triangulum*	=	occupies a variety of habitats	38 39
Fowler's toad	*Bufo woodhousei fowleri*	-	found in suburban areas, gardens; breeds in shallow permanent ponds	33 37

Successional Woodland Species - Adaptability and Comments

Common Name	Scientific Name	Adapt.	Comments	References
Birds				
gray catbird	*Dumetella carolinensis*	=	abundant around parks, urban and suburban areas	4 9
black capped chickadee	*Parus atricapillus*	=	abundant around parks, urban and suburban areas	4 11
brown-headed cowbird	*Molothrus ater*	=	lays eggs in other bird's nests; some stay during winter	4 6
brown creeper	*Certhia familiaris*	-	prefers predominantly deciduous wooded areas	4 9
American crow	*Corvus brachyrhynchos*	=	extremely adaptable; omnivorous	4 11
yellow-billed cuckoo	*Coccyzus americanus*	-	avoids heavy urban areas; prefers wooded open or edges for nests	4 12
mourning dove	*Zenaida macroura*	=	abundant around parks, urban and suburban areas	4 8
rock dove	*Columba livia*	+	nests almost entirely on buildings; considered a pest species	4 8
house finch	*Carpodacus mexicanus*	+	nests almost entirely on buildings; considered a pest species	4 20
common flicker	*Colaptus auratus*	=	abundant around parks, suburban and urban areas	4 14
common grackle	*Quiscalus quiscula*	=	adapts well to urban and suburban habitats	4 6
ruffed grouse	*Bonasa umbellus*	-	prefers dense cover, thick woods; avoids humans	4 8
rose-breasted grosbeak	*Pheucticus ludovicianus*	=	mainly found on north shore	4 20
Cooper's hawk	*Accipiter cooperii*	-	no atlas sightings (non-breeder) on LI; needs extensive woodland	4 17
red-tailed hawk	*Buteo jamaicensis*	-	needs 100 foot radius undisturbed area for nest	4 16
sharp-shinned hawk	*Accipiter striatus*	-	avoids humans; nests in heavily forested areas	4 16
blue jay	*Cyanocitta cristatta*	=	extremely adaptable to human activity and other stresses	4 10
Northern (dark-eyed) junco	*Junco hyemalis*	-	prefers forested area with elevation >300 meters; no LI atlas record	4 21
American kestrel	*Falco sparverius*	-	adaptable; prefers open areas and parks; will nest near humans	4 17
Eastern kingbird	*Tyrannus tyrannus*	=	very adaptable to human activities; prefers open areas	4 15
golden-crowned kinglet	*Regulus satrapa*	-	prefers spruce vegetation; no atlas sightings on Long Island	4 7
ruby-crowned kinglet	*Regulus calendula*	-	occurs as non-breeding species; present during migration	4 7
Northern mockingbird	*Mimus polyglottos*	+	prefers to nest near humans	4 9
great-horned owl	*Bubo virginianus*	-	nocturnal; rare in wooded areas of less than 20 acres	4 17
long-eared owl	*Asio otus*	-	nocturnal; prefers dense forested areas near water	4 17
American redstart	*Setophaga ruticilla*	-	urbanization and agriculture have negative effects	4 19
American robin	*Turdus migratorius*	=	very adaptable; abundant in parks; nests in man-made structures	4 7
yellow-bellied sapsucker	*Sphyrapicus varius*	=	nests in tree cavity; found in parks, yards and gardens	14
fox sparrow	*Passerella iliaca*	-	boreal species, winters here in edge, thickets, brushy areas	20 21
house sparrow	*Passer domesticus*	+	prefers buildings, urban, suburban, gardens; considered a pest	4 20
song sparrow	*Melospiza melodia*	=	common to most habitats except deep forest, open field and marsh	4 22

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Common Name	Scientific Name	Adapt.	Comments	References
white-throated sparrow	*Zonotrichia albicollis*	-	prefers brushy areas and thick undergrowth	4 22
European starling	*Sturnus vulgaris*	+	extremely adaptable to human activity; considered a pest	4 23
barn swallow	*Hirundo rustica*	+	nests almost entirely on buildings	4 15
brown thrasher	*Toxostoma rufum*	=	common in parks,suburban areas, wooded edges, dry open areas	4 9
hermit thrush	*Catharus guttatus*	=	not common on Long Island; when present, prefers pine barrens	4 7
wood thrush	*Hylocichla mustelina*	=	prefers vacant wood (trees >40 feet); may adapt of wooded suburban	4 7
rufous-sided towhee	*Pipilo erythrophthalmus*	-	may be present year round on Long Island	4 20
red-eyed vireo	*Vireo olivaceus*	=	found in parks and suburban areas with shade trees and undergrowth	4 23
black-and-white warbler	*Mniotilta varia*	-	builds nests under shrubs and/or trees	4 18
blue-winged warbler	*Vermivora pinus*	-	primarily abandoned and overgrown field, and thickets	4 14
chestnut-sided warbler	*Dendroica pensylvanica*	-	prefers first growth woods, with some open brush area	4 19
cedar waxwing	*Bombycilla cedrorum*	+	prefers open woodlands, orchards and residential areas	4 23 32
whip-poor-will	*Caprimulgus vociferous*	-	nocturnal; prefers open woods with adjacent fields	4 12
Eastern wood-peewee	*Contopus virens*	=	prefers suburban areas, parks and villages with shade trees	4 15
American woodcock	*Philhela minor*	-	prefers moist woodland and thicket near open fields	4 30
downy woodpecker	*Picoides pubescens*	=	found in parks and suburban areas	4 14
hairy woodpecker	*Picoides villosus*	=	found mainly in deciduous forests	4 14
red-bellied woodpecker	*Melanerpes carolinus*	=	prefers forest openings; mostly found on Long Island north shore	4 14
Carolina wren	*Thryothorus ludovicianus*	=	associated with woodland thickets and brushy areas, often near water	4 9
house wren	*Troglodytes aedon*	=	found in suburban areas and gardens; nests in crevices of buildings	4 9
Mammals				
big-brown bat	*Eptesicus fuscus*	+	roosts in structures; found throughout LI; hunts over water	1 29
hoary bat	*Lasiurus borealis*	=	roosts in trees, sometimes found in parks	45
Keen's bat	*Myotis keenii*	+	roosts in buildings, crevices and bark; more common on eastern LI	1 29
little-brown bat	*Myotis lucifugus*	+	roosts in buildings and man made structures; hunts over water	1 29
red bat	*Lasiurus borealis*	-	feeds in marsh area; nests within 1000 yards of marsh in trees	1 29
silver-haired bat	*Lasionycteris noctivagans*	-	prefers wooded areas near water, primarily during summer months	1 29
Eastern chipmunk	*Tamis striatus*	=	prefers open woods, thickets, and rocky areas	1 29
Eastern cottontail	*Sylvilagus floridanus*	=	will adapt to suburban areas, if there is sufficient cover	1 29
white-tailed deer	*Odocoileus virginianus*	-	requires range of one-half square mile	1 25 29
red fox	*Vulpes vulpes*	-	builds den in wooded areas with loose-sandy soil and good drainage	1 29
Eastern mole	*Scalopus aquaticus*	=	tunnels underground	1 29
meadow-jumping mouse	*Zapus hudsonicus*	=	found around water in pine barrens; prefers open areas with grasses	1 29
white-footed mouse	*Peromyscus leucopus*	=	common to most all habitats; does not adapt well to human activity	1 29
Virginia opossum	*Didelphis virginiana*	=	common in suburban areas, woods, marsh and coastal areas	1 29
racoon	*Procyon lotor*	+	nocturnal; very adaptive; found in urban and forest areas	1 29

Common Name	Scientific Name	Adapt.	Comments	References
masked shrew	*Sorex cinereus*	=	tunnels underground; common in wood and wet habitats	1 29
short-tailed shrew	*Blarina breuicauda*	=	tunnels underground; abundant in a variety of habitats	1 29
striped skunk	*Mephitis mephitis*	=	prefers mixed wood & brush within 2 miles of water; not expected on LI	1 29
Eastern gray squirrel	*Sciurus carolinensis*	=	found in parks, urban and suburban areas; very adaptable	1 29
meadow vole	*Microtus pennsylvanicus*	=	tunnels underground; prefers open woodland	29 45
pine vole	*Microtus pinetorum*	=	tunnels underground; prefers sandy soil in woods and field; can swim	1 29
long-tailed weasel	*Mustela frenata*	-	prefers dense wood, but may appear in all land habitats near water	1 29
woodchuck	*Marmota monax*	-	appears primarily in scrub woods and brushy areas; not common on LI	1 29
Herptiles				
Eastern garter snake	*Thamnophis sirtalis*	=	occupies a variety of habitats	38 40
eastern hognose snake	*Heterodon platyrhinos*	=	sandy soil and sunny roadside; feeds on herptiles and insects	38
eastern milk snake	*Lampropettis d. triangulum*	=	occupies a variety of habitats	38 39

Pine Oak Species - Adaptability and Comments

Common Name	Scientific Name	Adapt.	Comments	References
Birds				
gray catbird	*Dumetella carolinensis*	=	abundant around parks, urban and suburban areas	4 9
black capped chickadee	*Parus atricapillus*	=	abundant around parks, urban and suburban areas	4 11
brown-headed cowbird	*Molothrus ater*	=	lays eggs in other bird's nests; some stay during winter	4 6
brown creeper	*Certhia familiaris*	-	prefers predominantly deciduous wooded areas	4 9
American crow	*Corvus brachyrhynchos*	=	extremely adaptable; omnivorous	4 11
yellow-billed cuckoo	*Coccyzus americanus*	-	avoids heavy urban areas; prefers wooded open or edges for nests	4 12
mourning dove	*Zenaida macroura*	=	abundant around parks, urban and suburban areas	4 8
house finch	*Carpodacus mexicanus*	+	nests almost entirely on buildings; considered a pest species	4 20
purple finch	*Carpodacus purpureus*	-	inhabits parks, suburban areas, and coniferous forests	4 20
common flicker	*Colaptus auratus*	=	abundant around parks, suburban and urban areas	4 14
great-crested flycatcher	*Myiarchus crinitus*	-	prefers deciduous forests and deciduous open woodland	4 15
common grackle	*Quiscalus quiscula*	=	adapts well to urban and suburban habitats	4 6
ruffed grouse	*Bonasa umbellus*	-	prefers dense cover, thick woods; avoids humans	4 8
broad-winged hawk	*Buteo platypterus*	-	avoids humans; nests only in dense forests; prefers to be near water	4 16
Cooper's hawk	*Accipiter cooperii*	-	no atlas sightings (non-breeder) on LI; needs extensive woodland	4 17
red-tailed hawk	*Buteo jamaicensis*	-	needs 100 foot radius undisturbed area for nest	4 16
sharp-shinned hawk	*Accipiter striatus*	-	avoids humans; nests in heavily forested areas	4 16
blue jay	*Cyanocitta cristatta*	=	extremely adaptable to human activity and other stresses	4 10
Northern (dark-eyed) junco	*Junco hyemalis*	-	prefers forested area with elevation >300 meters; no LI atlas record	4 21
Eastern kingbird	*Tyrannus tyrannus*	=	very adaptable to human activities; prefers open areas	4 15
golden-crowned kinglet	*Regulus satrapa*	-	prefers spruce vegetation; no atlas sightings on Long Island	4 7
ruby-crowned kinglet	*Regulus calendula*	-	occurs as non-breeding species; present during migration	4 7
Northern mockingbird	*Mimus polyglottos*	+	prefers to nest near humans	4 9
white-breasted nuthatch	*Sitta carolinensis*	=	abundant in parks, urban and suburban areas	4 9
northern oriole	*Icterus galbula*	=	prefers deciduous woodland and shade trees	4 6
ovenbird	*Seiurus aurocapillus*	-	prefers open forest floor and woodlot greater than 35 acres	4 19
common screech owl	*Otus asio*	=	nocturnal; nests in hollow trees, abandoned buildings, nest boxes	4 17
great-horned owl	*Bubo virginianus*	-	nocturnal; rare in wooded areas of less than 20 acres	4 17
long-eared owl	*Asio otus*	-	nocturnal; prefers dense forested areas near water	4 17
American robin	*Turdus migratorius*	=	very adaptable; abundant in parks; nests in man-made structures	4 7
yellow-bellied sapsucker	*Sphyrapicus varius*	=	nests in tree cavity; found in parks, yards and gardens	14

Common Name	Scientific Name	Adapt.	Comments	References
pine siskin	*Carduelis pinus*	=	one atlas confirmed breeding record on Long Island	4 20
fox sparrow	*Passerella iliaca*	-	boreal species, winters here in edge, thickets, brushy areas	20 21
house sparrow	*Passer domesticus*	+	prefers buildings, urban, suburban, gardens; considered a pest	4 20
song sparrow	*Melospiza melodia*	=	common to most habitats except deep forest, open field and marsh	4 22
white-throated sparrow	*Zonotrichia albicollis*	-	prefers brushy areas and thick undergrowth	4 22
European starling	*Sturnus vulgaris*	+	extremely adaptable to human activity; considered a pest	4 23
chimney swift	*Chaetura pelagica*	+	nests in chimneys, with few exceptions	4 42
scarlet tanager	*Piranga olivacea*	-	rare in wooded area of less than 50 acres; affected by fragmentation	4
brown thrasher	*Toxostoma rufum*	=	common in parks, suburban areas, wooded edges, dry open areas	4 9
hermit thrush	*Catharus guttatus*	=	not common on Long Island; when present, prefers pine barrens	4 7
wood thrush	*Hylocichla mustelina*	=	prefers vacant wood (trees >40 feet); may adapt of wooded suburban	4 7
tufted titmouse	*Parus bicolor*	=	common in suburban areas	4 11
veery	*Catharus fuscescens*	-	prefers damp forest with undergrowth; affected by fragmentation	4 7
red-eyed vireo	*Vireo olivaceus*	=	found in parks and suburban areas with shade trees and undergrowth	4 23
black-and-white warbler	*Mniotilta varia*	-	builds nests under shrubs and/or trees	4 18
black-throated blue warbler	*Dendroica caerulescens*	=	migratory, large range; forest interior specie; can adapt to suburb	18
pine warbler	*Dendroica pinus*	-	prefers pine forest; may appear in overgrown field	4 19
prairie warbler	*Dendroica discolor*	-	prefers scrub fields and open pine barrens habitat	4 19
yellow-rumped warbler	*Dendroica coronata*	-	prefers mixed and conifer forest; may be in yards	4 8
cedar waxwing	*Bombycilla cedrorum*	+	prefers open woodlands, orchards and residential areas	4 23 32
whip-poor-will	*Caprimulgus vociferous*	-	nocturnal; prefers open woods with adjacent fields	4 12
Eastern wood-peewee	*Contopus virens*	=	prefers suburban areas, parks and villages with shade trees	4 15
downy woodpecker	*Picoides pubescens*	=	found in parks and suburban areas	4 14
hairy woodpecker	*Picoides villosus*	=	found mainly in deciduous forests	4 14
red-bellied woodpecker	*Melanerpes carolinus*	=	prefers forest openings; mostly found on Long Island north shore	4 14
house wren	*Troglodytes aedon*	=	found in suburban areas and gardens; nests in crevices of buildings	4 9
Mammals				
big-brown bat	*Eptesicus fuscus*	+	roosts in structures; found throughout LI; hunts over water	1 29
hoary bat	*Lasiurus borealis*	=	roosts in trees, sometimes found in parks	45
Keen's bat	*Myotis keenii*	+	roosts in buildings, crevices and bark; more common on eastern LI	1 29
little-brown bat	*Myotis lucifugus*	+	roosts in buildings and man made structures; hunts over water	1 29
red bat	*Lasiurus borealis*	-	feeds in marsh area; nests within 1000 yards of marsh in trees	1 29
Eastern pipistrelle	*Pipistrellus subflavus*	=	found near water in open woods, also found in buildings	1 29
silver-haired bat	*Lasionycteris noctivagans*	-	prefers wooded areas near water, primarily during summer months	1 29
Eastern chipmunk	*Tamis striatus*	=	prefers open woods, thickets, and rocky areas	1 29
Eastern cottontail	*Sylvilagus floridanus*	=	will adapt to suburban areas, if there is sufficient cover	1 29

Common Name	Scientific Name	Adapt.	Comments	References
white-tailed deer	*Odocoileus virginianus*	-	requires range of one-half square mile	1 25 29
red fox	*Vulpes vulpes*	-	builds den in wooded areas with loose-sandy soil and good drainage	1 29
Eastern mole	*Scalopus aquaticus*	=	tunnels underground	1 29
house mouse	*Mus musculus*	+	lives in association with man, not expected away from buildings	1 29
meadow-jumping mouse	*Zapus hudsonicus*	=	found around water in pine barrens; prefers open areas with grasses	1 29
white-footed mouse	*Peromyscus leucopus*	=	common to most all habitats; does not adapt well to human activity	1 29
Virginia opossum	*Didelphis virginiana*	=	common in suburban areas, woods, marsh and coastal areas	1 29
racoon	*Procyon lotor*	+	nocturnal; very adaptive; found in urban and forest areas	1 29
masked shrew	*Sorex cinereus*	=	tunnels underground; common in wood and wet habitats	1 29
short-tailed shrew	*Blarina breuicauda*	=	tunnels underground; abundant in a variety of habitats	1 29
striped skunk	*Mephitis mephitis*	=	prefers mixed wood & brush within 2 miles of water; not expected on LI	1 29
Eastern gray squirrel	Sciurus carolinensis	=	found in parks, urban and suburban areas; very adaptable	1 29
southern-flying squirrel	Glaucimys volans	-	common in deep mixed, deciduous and coniferous woods	1 29
pine vole	Microtus pinetorum	=	tunnels underground; prefers sandy soil in woods and field; can swim	1 29
long-tailed weasel	Mustela frenata	-	prefers dense wood, but may appear in all land habitats near water	1 29
woodchuck	Marmota monax	-	appears primarily in scrub woods and brushy areas; not common on LI	1 29
Herptiles				
common gray treefrog	Hyla versicolor	-	prefer mossy trees near ponds	33 37
red-backed salamander	Plethodon cinerus cinerus	-	terrestrial, prevelent in moist situations	34 36
Eastern tiger salamander	Ambystoma tigrinum tigrinum	-	needs fishless pond or vernal pond with 500' vacant radius to breed	36 38
marbled salamander	Ambystoma opacum	=	moist to sandy areas; lays eggs in fall in low spots wet by rain	34 36 38
Eastern garter snake	Thamnophis sirtalis	=	occupies a variety of habitats	38 40
eastern hognose snake	Heterodon platyrhinos	=	sandy soil and sunny roadside; feeds on herptiles and insects	38
eastern milk snake	Lampropettis d. triangulum	=	occupies a variety of habitats	38 39
Eastern spadefoot toad	Scaphiopus holbrooki	-	nocturnal; burrows in sandy soil; eats insects, worms; gardens, etc.	33
Fowler's toad	Bufo woodhousei fowleri	-	found in suburban areas, gardens; breeds in shallow permanent ponds	33 37
Eastern box turtle	Terrepene carolina	-	terrestrial based species	41

Appendix D-6
NYSDEC Collection License

82-20-162 (9/95)—7e

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE • SPECIAL LICENSES UNIT
50 WOLF ROAD, ALBANY, NEW YORK 12233-4752

LICENSE NUMBER LCP99-633

NEW YORK STATE FISH AND WILDLIFE LICENSE

1. License Type LICENSE TO COLLECT OR POSSESS

2. Licensee:

SHANA M. LACEY
NELSON, POPE AND VOORHIS, LLC
572 WALT WHITMAN ROAD
MELVILLE NY 11747

3. DOB 4/12/74

4. Fee 10.00

5. Effective Date 9/10/99

6. Expiration Date 9/30/00

7. County SUFFOLK

8. Region 1

PAGE 1 OF 2

9. STATUTORY AUTHORITY ECL 11-0515(1), 6 NYCRR PART 175

10. CONDITIONS (All conditions on the reverse side and any attached conditions apply to this license.)

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SEP 16 1999
NELSON & POPE, LLP

A. The licensee and/or designated agents are authorized to collect, temporarily possess and release at point of capture small mammals, amphibians and reptiles for species inventory purposes, excepting those species which are listed in New York as Endangered or Threatened species.

B. No endangered/threatened species may be collected or possessed pursuant to this license. Incidental captures of Endangered or Threatened species are to be reported by the licensee within 96 hours to: NYS DEC Endangered Species Unit, Wildlife Resources Center, 108 Game Farm Road, Delmar, New York 12054 (518) 478-3057.

C. Specimen collections may be undertaken in Nassau and Suffolk Counties, at locations where the licensee and/or designated agents have obtained land owner permission to conduct such collections. Collected specimens of small mammals, amphibians and reptiles are to be held for the minimum time necessary for the purpose of identification and subsequently are to be released unharmed at the point of capture.

D. Specimens may be collected by live box traps, drift fence, pit fall traps, hoop traps and by hand capture. Fixed traps are to be clearly labeled with the name and address of the licensee and must be checked at least once in each twenty-four hours.

E. The licensee and/or designated agents shall notify the appropriate Regional Environmental Conservation Officer at least 48 hours prior to any collecting activity, (516) 444-0250.

ORIGINAL

82-20-162 (9/95)—7e

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF FISH AND WILDLIFE • SPECIAL LICENSES UNIT
50 WOLF ROAD, ALBANY, NEW YORK 12233-4752

LICENSE NUMBER LCP99-633

NEW YORK STATE FISH AND WILDLIFE LICENSE

1. License Type LICENSE TO COLLECT OR POSSESS

2. Licensee:

SHANA M. LACEY
NELSON, POPE AND VOORHIS, LLC
572 WALT WHITMAN ROAD
MELVILLE NY 11747

3. DOB 4/12/74

4. Fee 10.00

5. Effective Date 9/10/99

6. Expiration Date 9/30/00

7. County SUFFOLK

8. Region 1

PAGE 2 OF 2

9. STATUTORY AUTHORITY ECL 11-0515(1), 6 NYCRR PART 175

10. CONDITIONS (All conditions on the reverse side and any attached conditions apply to this license.)

F. Not later than sixty (60) days prior to the expiration date of this license, the licensee shall submit a report of all activities conducted under the authority of this license to: NYS DEC Endangered Species Unit, Wildlife Resources Center, 108 Game Farm Road, Delmar, New York 12054. The report will list all animals captured, including number of each species collected, locations and dates of capture, and the final disposition of collected specimens.

G. The licensee may designate agents to conduct activities authorized by this license. Such designations must be in writing and the licensee must maintain an accurate list of agents designated pursuant to this license and such list must be on file with the NYS DEC Special Licenses Unit. The licensee is responsible for all actions taken by designated agents under this license.

H. The licensee must submit a written request for renewal of this license to the NYS DEC Special Licenses Unit, 50 Wolf Road, Albany, New York 12233-4752, within the month prior to the expiration date of this license. The written request must include the licensees correct address.

I. This license is deemed expired in the date of expiration listed above, unless otherwise notified by the department.

APPENDIX E

CORRESPONDENCE

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
CHARLES J. VOORHIS, CEP, AICP • ARTHUR J. KOERBER, P.E. • VINCENT G. DONNELLY, P.E.
VICTOR BERT, P.E. • JOSEPH R. EPIFANIA, P.E. • ROBERT G. NELSON, JR., P.E.
PAUL M. RACZ, P.L.S.

May 9, 2000

Riverhead Central School District
700 Osborne Avenue
Riverhead, New York 11901
Attn: Mr. Carlson

Re: Proposed LumberYard

Dear Mr. Carlson:

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 the proposed construction of a 135,200 SF home improvement superstore with hypothetical consideration of additional uses that could occupy the balance of the site, potentially including, a 200 seat 6,500 SF restaurant and 45,500 SF of permitted or specifically permitted uses with attendant site improvements. The 21.21 acre subject property is located north of the intersection of Old Country Road (CR 58) and Kroemer Avenue (see attached location map). We do not anticipate that school-age children will be generated as a result of this project.

I am writing to obtain information regarding school district facilities and characteristics, which may be pertinent to the project. Specifically, I am requesting the following:

- Names and locations of the schools within the district;
- Current enrollments of each school;
- Overall school district expenditures, on a per-student basis;
- Projected enrollments at each school.

Your responses will be included in the DEIS for review by the Town. If you have any additional information or comments which would be pertinent please include it. If you should have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

John C. Armentano

John C. Armentano
Environmental Planner

Enc.

RECEIVED
MAY 18 2000
NELSON & POPE, LLP

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188
(631) 427-5665 • FAX (631) 427-5620 • www.nelsonpope.com

	ENROLLMENT	PROJECTED ENROLLMENT
RIVERHEAD HIGH SCHOOL 700 HARRISON AVENUE RIVERHEAD, NEW YORK 11901	1,205	1,229
RIVERHEAD MIDDLE SCHOOL 600 HARRISON AVENUE RIVERHEAD, NEW YORK 11901	986	1,006
ROANOKE AVENUE ELEM. SCHOOL 549 ROANOKE AVENUE RIVERHEAD, NEW YORK 11901	394	402
PHILLIPS AVENUE SCHOOL 141 PHILLIPS AVENUE RIVERHEAD, NEW YORK 11901	433	442
RILEY AVENUE SCHOOL 374 RILEY AVENUE CALVERTON, NEW YORK 11933	465	474
AQUEBOGUE ELEM. SCHOOL 499 MAIN ROAD AQUEBOUGE, NEW YORK 11931	310	316
PULASKI STREET SCHOOL 300 PULSAKI STREET RIVERHEAD, NEW YORK 11901	726	741
	4,519	4,609

	1999-00	2000-01
BUDGET	55,339,482	59,609,031
EXPENDITURES PER CHILD	12,246	12,932

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
CHARLES J. VOORHIS, CEP, AICP • ARTHUR J. KOERBER, P.E. • VINCENT G. DONNELLY, P.E.
VICTOR BERT, P.E. • JOSEPH R. EPIFANIA, P.E.• ROBERT G. NELSON, JR., P.E.
PAUL M. RACZ, P.L.S.

April 19,2000

Riverhead Police Department
210 Howell Avenue
Riverhead, New York 11901
attn: Chief Joseph Gratten

Re: Proposed Lumber Yard

Dear Chief Gratten:

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 the proposed construction of a 115,000 SF home improvement superstore with hypothetical consideration of additional uses that could occupy the balance of the site, potentially including, a 225 seat 6,500 SF restaurant and two other industrial structures of 30,000 SF and 6,000 SF. The subject property is located north of the intersection of Old Country Road (CR 58) and Kroemer Avenue and is currently vacant woodland (see attached location map).

I am writing to obtain information regarding the Riverhead Police Department facilities and services that may be pertinent to the project. Specifically, I am requesting the following:

- Precinct in which the project site is located;
- Location of the stationhouse;
- Patrol sector assigned to the site.

Your responses will be included in the DEIS for review by the Town of Riverhead. If you have any additional information which would be pertinent (e.g., Will there be a change in the amount of protection necessary with this change in land use? Is it expected that additional patrol cars will be necessary, or that additional personnel would be needed?), please include it.

If you should have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

John C Armentano

John C. Armentano
Environmental Planner

enc.

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188
(631) 427-5665 • FAX (631) 427-5620 • www.nelsonpope.com

TOWN OF RIVERHEAD
Police Department
210 HOWELL AVENUE, RIVERHEAD, NEW YORK 11901-2515
Joseph Grattan
Chief of Police
Emergency Dial 911
Administration 631-727-4500
Fax 631-727-8630

April 25, 2000

Nelson, Pope & Voorhis, LLC
572 Walt Whitman Road
Melville, NY 11747-2188

ATT: MR. JOHN C. ARMENTANO

Dear Mr. Armentano:

I am in receipt of your letter in which you inquire about police services that would be necessary at a proposed lumberyard on Old Country Road (Route 58).

The entire area, as shown on your map, lies within the Town of Riverhead; therefore, the Riverhead Town Police would provide all police services. The address of the Police Department is 210 Howell Avenue, Riverhead, New York, 11901. The patrol sector presently assigned to the site is sector 603.

The current state of the land in question is vacant woodland. It is impossible to accurately place a number of the additional calls that will come to our department; however, based on previous experience, it may well be noted that calls for service will increase somewhat.

I hope this information is helpful to your project. Should you have any further questions, please feel free to contact me.

Sincerely,

Joseph Grattan

Joseph Grattan
Chief of Police

RECEIVED
APR 2 ? 2000 JA
NELSON & POPE, LLP

JG/ma

CC: file

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
CHARLES J. VOORHIS, CEP, AICP • ARTHUR J. KOERBER, P.E. • VINCENT G. DONNELLY, P.E.
VICTOR BERT, P.E. • JOSEPH R. EPIFANIA, P.E. • ROBERT G. NELSON, JR., P.E.
PAUL M. RACZ, P.L.S.

April 20, 2000

Riverhead Fire District
24 East 2nd Street
Riverhead, New York 11901
attn: Board of Fire Commissioners

Re: Proposed Lumber Yard

Dear Sirs:

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 the proposed construction of a 115,000 SF home improvement superstore with hypothetical consideration of additional uses that could occupy the balance of the site, potentially including, a 225 seat 6,500 SF restaurant and two other industrial structures of 30,000 SF and 6,000 SF. The subject property is located north of the intersection of Old Country Road (CR 58) and Kroemer Avenue and is currently vacant woodland (see attached location map).

I am writing to obtain information regarding the Riverhead Fire District facilities, services, and capabilities which may be pertinent to the project. Specifically, I am requesting the following:

- The location of the 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;
- Ambulance capabilities

Your responses will be included in the DEIS for review by the Town; if you have any additional information which would be pertinent, please include it. Finally, if you feel that this project may have an adverse impact on the District's ability to provide services, or may require additional equipment purchases or firefighter training, please indicate this.

If you should have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

John C Armentano

John C. Armentano
Environmental Planner

enc.

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188
(631) 427-5665 • FAX (631) 427-5620 • www.nelsonpope.com

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
CHARLES J. VOORHIS, CEP, AICP • ARTHUR J. KOERBER, P.E. • VINCENT G. DONNELLY, P.E.
VICTOR BERT, P.E. • JOSEPH R. EPIFANIA, P.E. • ROBERT G. NELSON, JR., P.E.
PAUL M. RACZ, P.L.S.

April 20, 2000

Town of Riverhead Sanitation Department
210 Howell Avenue
Riverhead, New York 11091

Re: Proposed Lumber Yard

Dear Sir or Madam:

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 the proposed construction of a 115,000 SF home improvement superstore with hypothetical consideration of additional uses that could occupy the balance of the site, potentially including, a 225 seat 6,500 SF restaurant and two other industrial structures of 30,000 SF and 6,000 SF. The subject property is located north of the intersection of Old Country Road (CR 58) and Kroemer Avenue (see attached location map).

I am interested in the solid waste facilities and programs available to such a development. The entire project is anticipated to generate approximately 766 lbs. of solid waste per day. Specifically, I am requesting the following information:

- The yearly tonnage of solid waste disposed of at this 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 this facility will accept waste from the project; and are there any waste regulations specific to these uses which should be considered in connection with this application?
- Information regarding the operations of the transfer station and final destination of solid waste received by this facility.

Your responses will be included in the DEIS for review by the Town. If you have any additional information that would be pertinent, please include it.

If you should have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

John C Armentano

John C. Armentano
Environmental Planner

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188
(631) 427-5665 • FAX (631) 427-5620 • www.nelsonpope.com

TOWN OF RIVERHEAD
SANITATION DEPARTMENT
200 HOWELL AVENUE
RIVERHEAD, NEW YORK, 11901

John F. Reeve
Sanitation Superintendent

(631) 727-3200
Ext. 391

May 17, 2000

John C. Armentano
Environmental Planner
Nelson, Pope & Voorhis, LLC
572 Walt Whitman Road
Melville, NY 11747-2188

Re: Proposed Lumber Yard
N. of intersection of CR 58
& Kroemer Ave

Dear Mr. Armentano:

Waste disposal and recycling material is disposed of through a private facility, Crown Sanitation, which is licensed and permitted through the New York Department of Environmental Conservation. The actual yearly tonnage is not known to the Town as well as any percentages.

Confirmation in regard to the acceptence of waste from the project and and waste regulations specific to these uses should be worked out with Crown Sanitation, Inc.

Information regarding the operations of the transfer station and final destination of solid waste should also come from, Crown Sanitation, Inc., P. O. Box 974, Riverhead, NY 11901, Attention: Frank Rossano, President or Peter Rossano, Vice President. (Phone: 631-727-3939).

Very truly yours,

John F. Reeve
Sanitation Superintendent

RECEIVED
MAY 18 2000
JA
NELSON & POPE, LLP

JFR:ch

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
CHARLES J. VOORHIS, CEP, AICP • ARTHUR J. KOERBER, P.E. • VINCENT G. DONNELLY, P.E.
VICTOR BERT, P.E. • JOSEPH R. EPIFANIA, P.E. • ROBERT G. NELSON, JR., P.E.
PAUL M. RACZ, P.L.S.

April 19, 2000

Riverhead Water District
District Manager
1035 Pulaski Street
Riverhead, NY 11901

Re: Proposed Lumber Yard

Dear Sir or Madam:

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 the proposed construction of a 115,000 SF home improvement superstore with hypothetical consideration of additional uses that could occupy the balance of the site, potentially including, a 225 seat 6,500 SF restaurant and two other industrial structures of 30,000 SF and 6,000 SF. The subject property is located north of the intersection of Old Country Road (CR 58) and Kroemer Avenue (see attached location map). It is anticipated that the project will require 12,790 gallons of water daily.

I am writing to obtain information in regard to the above-referenced water supply facilities which may be pertinent to the project. Specifically, I am requesting the following:

- The most recent water quality test results for each wellfield;
- A Letter of Water Availability for the project;
- Water district map
- The nearest wellfields to the site.

Your responses will be included in the DEIS for review by the Town; if you have any additional information which would be pertinent, please include it.

If you should have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

John Armentano

John Armentano
Environmental Planner

enc.

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188
(631) 427-5665 • FAX (631) 427-5620 • www.nelsonpope.com

RWD

Riverhead Water District, 1035 Pulaski Street, Riverhead, N.Y., 11901
(516) 727-3205 Fax: (516) 369-4608

DATE: May 15, 2000

SUBJECT: Availability of public water to RIVERHEAD PROPERTIES.

LOCATION: SUFFOLK COUNTY TAX MAP # 0600-119-1-Lots 1.1 & 1.2 (NOTE: These parcels used to be lot 1); Location: North side of Route 58 (Old Country Road), Riverhead, NY, 11901; TOWN OF RIVERHEAD.

ATTENTION: John Armentano, Nelson, Pope & Voorhis, LLC, 572 Walt Whitman Road, Melville, NY, 11747-2188; TEL. #: 631-427-5665; FAX #: 631-427-5620

RECEIVED
MAY 17 2000 JA
NELSON & POPE, LLP

Dear Mr. Armentano,

The above mentioned property is currently within the boundaries of the Riverhead Water District and can be served by same. Currently the Riverhead Water Districts meets all Federal and New York State Drinking Water Standards. The nearest well of the Riverhead Water District to this site is Well #2 which is located on Pulaski Street approximately 2.5 miles to the East/South East of same. Distribution maps of the Riverheads Water District can be purchased from H2M of Melville through Dennis Kelleher (631-756-8000-ext. 1410).

If I can be of further service please do not hesitate to contact me.

Sincerely Yours,

Gary J. Pendzick

Gary J. Pendzick
Superintendent
Riverhead Water District

cc mp
BHC
C:\MSOFFICE\WINWORD\RWD\RWDCOM2000\LETTER\AVAILLTR\NELSONPOPE001.DOC

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
CHARLES J. VOORHIS, CEP, AICP • ARTHUR J. KOERBER, P.E. • VINCENT G. DONNELLY, P.E.
VICTOR BERT, P.E. • JOSEPH R. EPIFANIA, P.E.• ROBERT G. NELSON, JR., P.E.
PAUL M. RACZ, P.L.S.

April 19, 2000

Gas Marketing Department
Brooklyn Union Gas
448 East Main Street
Patchogue, NY 11772
Attn: Susan Montano

Re: Proposed Lumber Yard

Dear Mr. Montano:

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 the proposed construction of a 115,000 SF home improvement superstore with hypothetical consideration of additional uses that could occupy the balance of the site, potentially including, a 225 seat 6,500 SF restaurant and two other industrial structures of 30,000 SF and 6,000 SF. The subject property is located north of the intersection of Old Country Road (CR 58) and Kroemer Avenue (see attached location map).

I am writing to obtain information in regard to the natural gas supply capabilities in the vicinity of the project. Specifically, I am requesting the following:

- The location(s) and sizes of the nearest natural gas lines in the vicinity;
- Confirmation that BUG will serve the site.

Your responses will be included in the DEIS for review by the Town; if you have any additional information which would be pertinent, please include it.

If you should have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

John Armentano
Environmental Planner

enc.

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188
(631) 427-5665 • FAX (631) 427-5620 • www.nelsonpope.com

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
CHARLES J. VOORHIS, CEP, AICP • ARTHUR J. KOERBER, P.E. • VINCENT G. DONNELLY, P.E.
VICTOR BERT, P.E. • JOSEPH R. EPIFANIA, P.E.• ROBERT G. NELSON, JR., P.E.
PAUL M. RACZ, P.L.S.

April 19, 2000

Mr. Ron Angst
Corporate Sales and Marketing Department
Long Island Power Authority
1393 Veteran's Memorial Highway
Hauppauge, New York 11788

Re: Proposed Lumber Yard

Dear Mr. Angst:

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 the proposed construction of a 115,000 SF home improvement superstore with hypothetical consideration of additional uses that could occupy the balance of the site, potentially including, a 225 seat 6,500 SF restaurant and two other industrial structures of 30,000 SF and 6,000 SF. The subject property is located north of the intersection of Old Country Road (CR 58) and Kroemer Avenue (see attached location map).

I am writing to obtain information in regard to electric service. Specifically, I am requesting the following:

- The location and capacity of the electric lines serving the site or area;
- Confirmation that LIPA will serve the project.

Your responses will be included in the DEIS for review by the Town; if you have any additional information which would be pertinent, please include it.

If you should have any questions or require additional information, please do not hesitate to contact me.

Sincerely,

John Armentano

John Armentano
Environmental Planner

enc.

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188
(631) 427-5665 • FAX (631) 427-5620 • www.nelsonpope.com

LIPA
Long Island Power Authority
117 Doctors Path
Riverhead, NY 11901

May 23, 2000

Mr. John C. Armentano
572 Walt Whitman Road
Melville, NY 11747-2188

Re: Proposed Lumber Yard
LIPA Ref. # 66822-040

Dear Mr. Armentano:

As requested, please be advised that the LIPA will provide gas and electric 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 me at (631)548-7031 if you require any further information.

Very truly yours,

for

Michael Randazzo
Design Engineer
Electric Design & Construction

MR/ks

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MAY 25 2000 JA
NELSON & POPE, LLP

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
CHARLES J. VOORHIS, CEP, AICP • ARTHUR J. KOERBER, P.E. • VINCENT G. DONNELLY, P.E.
VICTOR BERT, P.E. • JOSEPH R. EPIFANIA, P.E. • ROBERT G. NELSON, JR., P.E.
PAUL M. RACZ, P.L.S.

April 19, 2000

Western Suffolk Electric Design and Construction
Keyspan
1650 Islip Avenue
Brentwood, NY 11717
Attn: Mr. Bob Parkinson, Regional Supervisor

Re: Proposed Lumber Yard

Dear Mr. Parkenson:

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 the proposed construction of a 115,000 SF home improvement superstore with hypothetical consideration of additional uses that could occupy the balance of the site, potentially including, a 225 seat 6,500 SF restaurant and two other industrial structures of 30,000 SF and 6,000 SF. The subject property is located north of the intersection of Old Country Road (CR 58) and Kroemer Avenue (see attached location map).

I would appreciate your consideration of the project and any information you may have regarding your ability to provide electric service to the site following construction. The proposed project is in the planning stage, and your input will be important in design and review of the project. It is understood that future contact would be necessary to discuss specific utility needs. Thank you for your time and consideration of this request.

Sincerely,

John C Armentano

John C. Armentano
Environmental Planner

Enc.

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188
(631) 427-5665 • FAX (631) 427-5620 • www.nelsonpope.com

NELSON, POPE & VOORHIS, LLC
ENVIRONMENTAL • PLANNING • CONSULTING
CHARLES J. VOORHIS, CEP, AICP • ARTHUR J. KOERBER, P.E. • VINCENT G. DONNELLY, P.E.
VICTOR BERT, P.E. • JOSEPH R. EPIFANIA, P.E.• ROBERT G. NELSON, JR., P.E.
PAUL M. RACZ, P.L.S.

April 20, 2000

Mr. James Warren
New York State Office of Parks,
Recreation and Historic Preservation (OPRHP)
Historic Preservation Field Service Bureau
Peebles Island
PO Box 189
Waterford, NY 12188-0189

Re: Proposed Lumber Yard

Dear Mr. Warren:

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 the proposed construction of a 115,000 SF home improvement superstore with hypothetical consideration of additional uses that could occupy the balance of the site, potentially including, a 225 seat 6,500 SF restaurant and two other industrial structures of 30,000 SF and 6,000 SF. The subject property is located north of the intersection of Old Country Road (CR 58) and Kroemer Avenue. See attached location map (Riverhead7.5 minute quadrangle USGS Topographic Map).

I am interested in determining if this site has archaeological sensitivity that should be considered in our impact analysis. I have attached a location map for your use. If you have any questions at all, I may be reached at (516) 427-5665. I appreciate your attention to this matter.

Sincerely,

John C Armentano

John C. Armentano
Environmental Planner

Enc.

572 WALT WHITMAN ROAD, MELVILLE, NY 11747-2188
(631) 427-5665 • FAX (631) 427-5620 • www.nelsonpope.com

OFFICE OF PARKS · RECREATION · HISTORIC PRESERVATION
NEW YORK STATE
Bernadette Castro
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

May 5, 2000

John C. Armentano
Environmental Planner
Nelson, Pope & Voorhis, LLC
572 Walt Whitman Road
Melville, New York 11747-2188

Dear Mr. Armentano:

Re: <u>SEQRA</u>
Home Improvement Store/Old Country Road Off
Kroemer Avenue
Riverhead, Suffolk County
00PR1564

Thank you for requesting the comments of the Office of Parks, Recreation and Historic Preservation (OPRHP). We have reviewed the project in accordance with the New York State Parks, Recreation and Historic Preservation Law, Section 14.09.

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 Registers 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
Director

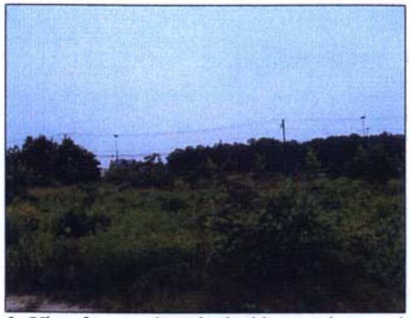
RLP:bsd

RECEIVED
MAY 12 2000 JA
NELSON & POPE, LLP

APPENDIX F

PHOTOGRAPHS OF PROJECT SITE

VIEWS FROM THE PROJECT SITE



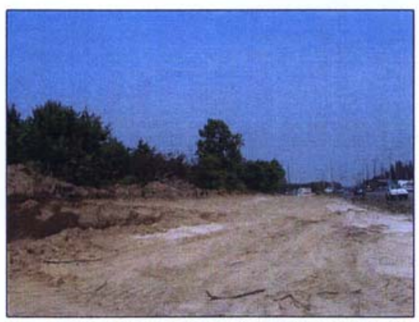
6. View from project site looking south towards Route 58.

7. View of western property line, looking north.

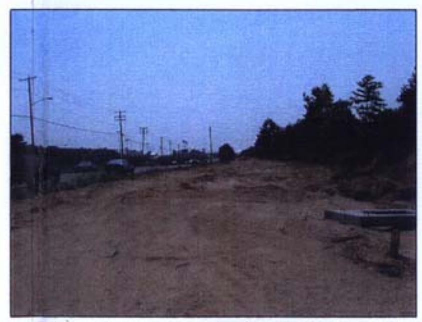
8. View of western property boundary looking south.

9. View of western property boundary in northern portion of the site.

10. View of the project site looking south from the southwestern corner of the property.



11. View of the southern property boundary from west of Kroemer Avenue on Route 58, looking east.

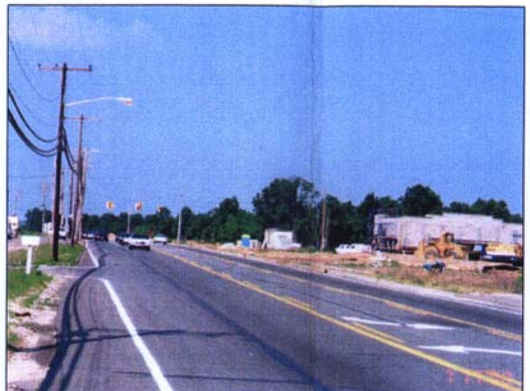


12. View of the project site from north side of 58 at Kroemer Avenue, looking west.

13. View of the project site from CR 58 looking north.

VIEWS OF THE PROJECT SITE

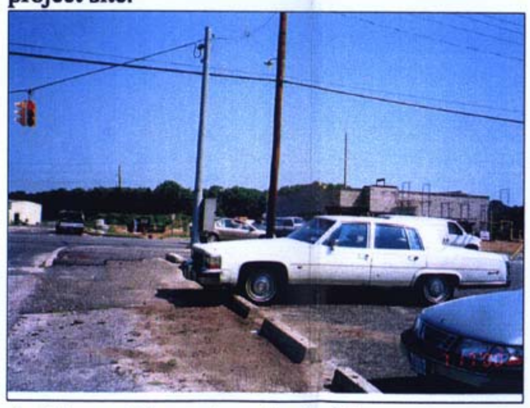
1. View of the project site looking east on CR 58. Site is beyond the fence (on the left), which is on the NYSDOT property.



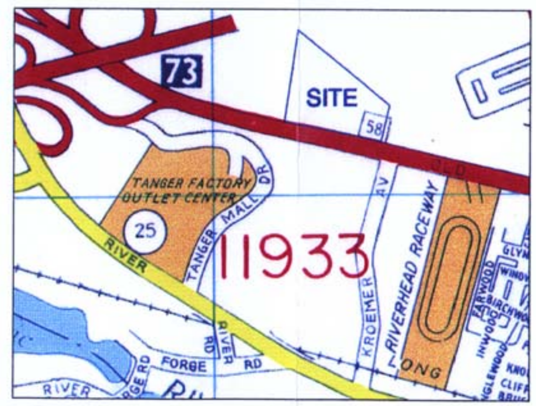
2. View of the project site from the north side of CR 58, looking west. Construction of Applebee's Restaurant is apparent at the eastern end of the project site.

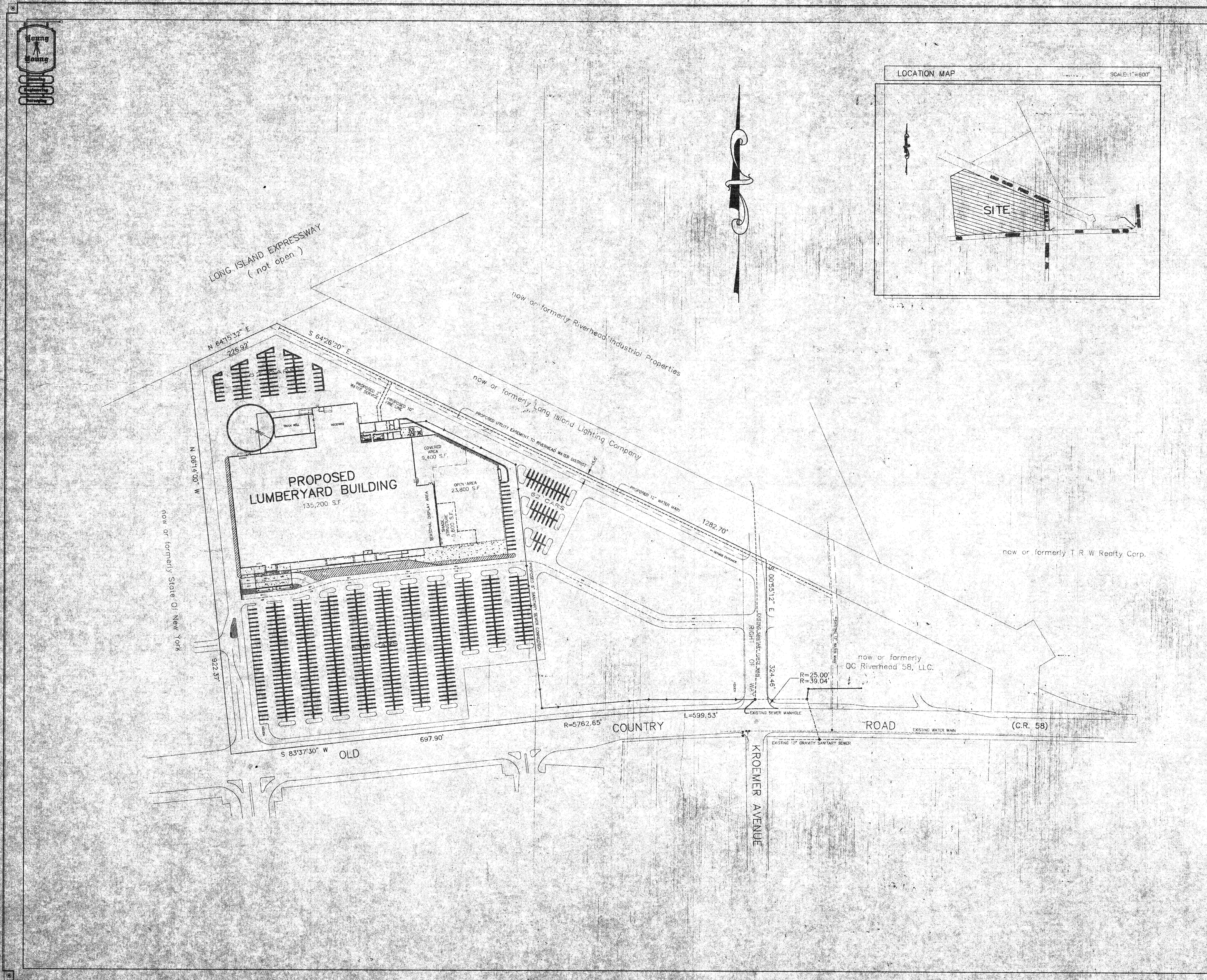
3. View of the project site looking north from Kroemer Avenue at the intersection of CR 58.

4. View of the project site looking northwest from Kroemer Avenue at the intersection of CR 58.



5. View of the project site looking northeast from Kroemer Avenue at the intersection of CR 58.





Young & Young, Land Surveyors
400 Ostrander Avenue, Riverhead, New York 11901
516-727-2303

Alden W. Young, P.E & L.S. (1908-1994)
Howard W. Young, Land Surveyor
Thomas C. Wolpert, Professional Engineer
Kenneth F. Abruzzo, Land Surveyor
John Schnurr, Land Surveyor

SITE DATA

AREA = 21.2078 ACRES

LUMBERYARD BUILDING = 135,200 SQ. FT.
COVERED AREA = 9,400 SQ. FT.
OPEN AREA = 23,800 SQ. FT.
SHADE STRUCTURE = 5,600 SQ. FT.

PARKING CRITERIA & CALCULATION

LUMBERYARD –

BUILDING	= 135,200 SQ. FT.
COVERED AREA	= 9,400 SQ. FT.
TOTAL FLOOR AREA	= 144,600 SQ. FT.

RIVERHEAD CODE = ANY COMMERCIAL OR BUSINESS USE NOT OTHERWISE EXPRESSLY PROVIDED FOR. = 1 PER 300 SQUARE FEET OF FLOOR AREA

PARKING SPACES REQUIRED = 144,600 SQ. FT./ 300 = 482
PARKING SPACES PROVIDED = 654

SANITARY DESIGN CRITERIA & CALCULATION

CRITERIA

GROUNDWATER MANAGEMENT ZONE = III
METHOD OF WATER SUPPLY = PUBLIC
METHOD OF SEWAGE DISPOSAL = PUBLIC

DESIGN

LUMBERYARD BUILDING = 135,200 SF @ 0.04 GPD/SF = 5,408 GPD

TOTAL DESIGN FLOW = 5,408 GPD

CONNECT TO SANITARY SEWER OF THE RIVERHEAD SEWER DISTRICT

LUMBERYARD BUILDING
HEADRIVER LLC
At: CALVERTON Town of: RIVERHEAD
Suffolk County, New York

Suff. Co. Tax Map: 600 (District) 119 (Section) 1 (Block) 1 (Lot)

CONCEPTUAL SITE PLAN 28

MAY 15, 2000
APR. 14, 2000
MAR. 22, 2000
MAR. 16, 2000
NOV. 2, 1999
SEP. 15, 1999
AUG. 19, 1999
JUL. 28, 1999
APR. 9, 1999
MAR. 30, 1999
MAR. 11, 1999
JAN. 22, 1999
JAN. 11, 1999
DEC. 18, 1998
NOV. 16, 1998
DATE : JULY 22, 1998
SCALE : 1"= 100'
JOB NO. : 98-0402
SHEET NO. : 1 OF 1
DWG. NO. : 980402csp28.2