Adopted by
Planning Board 9/17/92

CLERK

MASTER PLAN

LOWER ALLOWAYS CREEK TOWNSHIP
SALEM COUNTY, NEW JERSEY

MASTER PLAN

TOWNSHIP OF LOWER ALLOWAYS CREEK
SALEM COUNTY, NEW JERSEY

PREPARED FOR:

PLANNING BOARD
TOWNSHIP OF LOWER ALLOWAYS CREEK
P.O. BOX 212
HANCOCK'S BRIDGE, NEW JERSEY 08038

PREPARED BY:

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TOWNSHIP OF
LOWER ALLOWAYS CREEK
SALEM COUNTY, NEW JERSEY

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LOWER ALLOWAYS CREEK TOWNSHIP
PLANNING BOARD
P.O. Box 212, Hancocks Bridge, NJ 08038
Phone (609) 935-1311

Resolution of Adoption of the
Master Plan
of the Township of Lower Alloways Creek

WHEREAS, the Municipal Land Use Act (NJSA 40:55D-5) provides that a Master Plan shall be a composite of one or more mapped and written proposals recommending the physical development of the municipality which the Planning Board shall either adopt as a whole or severally after public hearing; and

WHEREAS, the Planning Board of Lower Alloways Creek Township, Salem County, New Jersey has prepared a Master Plan; and

WHEREAS, a public hearing was conducted on September 17, 1992 pursuant to the procedures mandated by the Municipal Land Use Act: and

WHEREAS, The Planning Board after carefully considering the evidence presented at the hearing determined that the Master Plan proposed is in the best interest of Lower Alloways Creek Township, the following resolution was made on motion duly seconded, and unanimously carried as recorded in the minutes of the Planning Board;

THEREFORE BE IT RESOLVED, that the Master Plan of Lower Alloways Creek Township, Salem County, and State of New Jersey, adopted January 23, 1979, be amended in each and every respect as reflected in the Master Plan attached to this Resolution.

DATE: September 17, 1992

Lower Alloways Creek Township
Planning Board

ATTEST: Gladys A. Hogate
Gladys A. Hogate,
Secretary

Robert R. Parkell
Robert R. Parkell,
Chairman

TOWNSHIP OF
LOWER ALLOWAYS CREEK
MASTER PLAN

TABLE OF CONTENTS

HOUSING..... 1

CIRCULATION..... 18

UTILITY SERVICE..... 28

COMMUNITY FACILITIES..... 36

RECREATION..... 43

CONSERVATION..... 51

HISTORIC PRESERVATION PLAN..... 83

RECYCLING..... 91

LAND USE..... 95

HOUSING PLAN

INTRODUCTION

This Master Plan Housing element for the Township of Lower Alloways Creek is based upon the requirements of the Fair Housing Act of 1985 and amendments to the Municipal Land Use Law contained in Chapter 222 of the Laws of 1985 which became effective on July 2, 1985. The act requires that by August 1, 1988 every municipality must have adopted a master plan housing element.

The Lower Alloways Creek Housing Plan is designed to achieve the goal of providing access to affordable housing to meet present and prospective housing needs, with particular attention to low and moderate income housing, for the period 1989-1995. The Fair Housing Act requires the inclusion of the following items in this master plan element:

A. An inventory of the municipality's housing stock;

B. A projection of the municipality's housing stock for the next six years;

C. An analysis of the municipality's demographic characteristics;

D. An analysis of the existing and probable future employment characteristics of the municipality;

E. A determination of the municipality's present and prospective fair share for low and moderate income housing and its capacity to accommodate its present and prospective housing needs, including its fair share for low and moderate income housing; and

F. A consideration of the lands that are most appropriate for construction of low and moderate income housing and of the existing structures most appropriate for conversion to, or rehabilitation for low and moderate income housing.

G. Techniques for providing for low and moderate income housing.

A. INVENTORY OF HOUSING STOCK

Data from the 1980 Census was utilized to form the basis for an evaluation of the Township's housing stock. In particular, information concerning age, condition, purchase or rental value, ownership, occupancy status and housing type was analyzed and used to determine the availability of housing opportunities for low and moderate income households. An important aspect of this examination is the determination of substandard units which are suitable for rehabilitation.

1. Age of Housing Stock

Total Occupied Housing Units 565
(Including seasonal and migratory units)

Years Constructed	Number*	Percent
1970-March 1980	136	24.1
1960-1969	64	11.3
1950-1959	37	6.5
1940-1949	29	5.1
Prior to 1939	299	53.0
TOTAL	565	100.0

Source: US Census of Population and Housing, 1980.

For comparison purposes, data from the 1980 Census was used to compare the age of the Township's housing stock to that of the County. As of 1980, approximately 53 percent of the Township's housing was constructed prior to 1939. This compares to 42 percent for the County of Salem. This data suggests that the age of the local housing stock is significantly older than the housing in the County as a whole. The Second World War is typically used as a date to differentiate between "old" and "new" housing.

As demonstrated by the Census data, the age of housing stock in both the Township and the County is relatively old, reflecting the significance of the region's rural character and early settlement patterns. Due to the considerable age of much of the Township's housing stock, many units have required significant maintenance efforts. In spite of the aged condition of many of the structures, housing in Lower Alloways Creek maintains a relatively high resale value. As a result, housing age alone is not considered a good indicator of building condition.

To be considered deficient or substandard, a unit must be at least forty (40) years old and have at least one other negative housing characteristic. In the absence of the unit-age qualification, two or more negative structural characteristics signal housing deficiency.

Residential Construction and Demolition Permits
January 1980 - May 1989

	Units Authorized By Building Permits	Units Demolished	Net Change
1980	3	0	+3
1981	4	0	+2
1982	2	0	+2
1983	2	1	+1
1984	4	0	+4
1985	5	0	+5
1986	5	0	+5
1987	9	5	+4
1988	6	*	+6
1989 (Jan-Apr)	3	*	+3
TOTAL	43	6	+37

*Demolition data not available.

2. Condition of Housing Stock

Total Housing Units	570
Lack of Complete Plumbing Facilities	27
Lack of Complete Kitchen Facilities	17
Lack of Central Heating Facilities	60
1.01 or More Persons per Room	10

"Lack of complete plumbing facilities" for exclusive use refers to complete facilities used by another household, some but not all plumbing facilities, or no plumbing facilities. Adequate kitchen facilities include a sink with piped water, a stove and a refrigerator.

"Lacking central heating" includes room heaters with and without flue, fireplaces, stoves, portable room heaters or no heating equipment. These factors are typically used to indicate substandard and deficient housing units which are potentially capable of rehabilitation. At the community level, non-exclusive use of complete plumbing, kitchen facilities and the absence of central heating determine deficient housing units. Taken collectively, these deficiency characteristics represent about eighteen (18) percent of the total housing stock. A suspected overlap of these deficiencies within a confined segment of the housing stock would modify this percentage downward and slightly reduce the number of affected units.

However, due to the lack of specificity in the available data, the exact number of units affected is not possible to determine. The presence of the two most important indicators, lack of plumbing and kitchen facilities, suggests that a total of 44 units could have been established as deficient in the Township in 1980.

	Units	Percent
Standard Units	526	92
Substandard Units	44	8

3. Purchase or Rental Value

A review of 1980 housing values and rentals was completed in an evaluation of the availability of affordable housing.

Total Owner-Occupied Housing Units (owner-occupied)	494
Median Value of Owner-Occupied Non-Condominium Housing	$34,500

OWNER-OCCUPIED NON-CONDOMINIUM HOUSING

Value	Units	Percent
Less than $10,000	18	6.3
$10,000 - $14,999	26	9.2
$15,000 - $19,999	23	8.1
$20,000 - $24,999	37	13.0
$25,000 - $29,999	18	6.3
$30,000 - $34,999	22	7.7
$35,000 - $39,999	29	10.2
$40,000 - $49,999	46	16.2
$50,000 - $79,999	49	17.3
$80,000 - $99,999	11	3.9
$100,000 - $149,999	5	1.8
$150,000 - or More	0	0
TOTAL	284	100.0

Source: 1980 US Census of Population and Housing.

Total Renter-Occupied Units by Contract Rent	54
Median Contract Rent	$130

RENTER-OCCUPIED HOUSING

Rent	Units*	Percent
Less than $50	0	0.0
$50- $99	9	16.7
$120 - $119	11	20.4
$140 - $139	5	9.3
$140 - $149	1	1.9
$150 - $159	5	9.3
$160 - $169	0	0.0
$170 - $199	7	12.8
$200 - $249	3	5.5
$250 - $299	3	5.5
$300 - $399	1	1.9
$400 - $499	0	0.0
$500 or more	0	0.0
No Cash Rent	9	16.7
TOTAL	54	100.0

*These figures do not include single-family units located on 10 or more acres or vacant rental units.

Source: 1980 US Census of Population and Housing.

The median housing value for owner-occupied non-condominium housing units recorded for the County was two (2) percent higher than that recorded for the Township in 1980. The Census recorded a median County value of $35,200 and a Township value of $34,500 for this occupancy status and unit type. However, the median contract rent for the County was also higher at $169 per month, whereas the Township exhibited a $130 monthly rent. It should be noted that these rental values do not include utility costs.

4. Total Occupied Housing Units 515

	Number	Percent
Owner-Occupied	439	85
Renter-Occupied	76	15

Source: 1980 US Census of Population and Housing.

When compared to the County, the Township exhibits a greater proportion of owner-occupied units; 85 percent for the Township compared to 72 percent in the County. The data indicates that a very small percentage of the Township's housing is occupied by renters. Based on recent trends, it is anticipated that the disparity between owner-occupied and rental units will continue unless a concerted effort is made to develop more rental units in the Township. This view is substantiated by both the limited number of rentals available and the probability that most new construction will be single-family detached housing.

5. Occupancy Status

Total Housing Units* 565

	Number	Percent
Occupied Units	515	91
Vacant Units	50	9

*Does not include seasonal and migratory units.

Source: 1980 US Census of Population and Housing.

The Township contains a very small percentage of vacant housing units. This is due primarily to the increased demand for housing, the lack of additional supply and the propensity of homeowners to maintain their units. The County vacancy rate in 1980 was about seven (7) percent compared with a nine (9) percent rate reported in the Township. This data suggests that an adequate supply of housing is as much a regional issue as it is a local concern.

The demand for rental units is demonstrated by vacancy rate of forty-four (44) in the Township. The demand for rental units in the County is slightly less than in the Township as demonstrated by a 47 percent rental vacancy rate in the County. These percentages are derived from a comparison of the total vacant units and the number of vacant rental units and suggest that both the County and the Township have an adequate supply of rental housing to meet both present and near-term future demand.

6. Housing Type

Total Housing Units 565

	Number	Percent
Single-Family	529	93.6
2 Units	16	2.8
3-4 Units	0	0.0
5 or more units	2	0.4
Mobile Homes	18	3.2
TOTAL	565	100.0

Means Rooms per Unit 6.1

*Includes vacant, seasonal & migratory units.

Source: 1980 US Census of Population and Housing.

Single family subdivision is the most common form of residential development in the Township. Even though there has been a growing interest in attached housing such as town-houses, condominiums and garden apartments, these housing types occupy only a small part of the entire housing stock. In 1980, almost 94 percent of the Township's housing stock was single-family units, compared with 78 percent for the County. Analyses of available building permit authorizations indicate that all permits issued between January 1980 and December 1987 were for single-family homes.

7. Units Affordable to Low and Moderate Income Households

Using data from the 1980 Census, an analysis of the opportunity for low and moderate income households to participate in the Township's housing market was completed. A moderate income household is defined as having a gross income equal to or greater than 50 percent but less than 80 percent of the median gross household income for the Township. Low income households could earn up to 50 percent of the median income.

The median household income in South Harrison in 1980 was $17,472. Applying the above income definitions establishes $13,978 as the maximum for a moderate income household and $8,736 as the maximum income for a low income household.

The Council on Affordable Housing has established 28 percent of gross monthly income as the appropriate housing allowance for purchased housing. This percentage includes interest, taxes, insurance and condominium fees, if applicable. Such percent, however, does not include expenditures for utilities. For the purposes of estimating available housing expenditures for low and moderate income households, a down payment of 10 percent and an interest rate of 11 percent for a 30-year term was assumed.

Application of the above criteria yields yearly housing expenditures of $2,446 and $3,912 or monthly expenditures of $204 and $326, respectively for low and moderate income households. Applying the interest rates and monthly carrying costs noted above, establishes $21,420 and $34,230 as the maximum housing values available to low and moderate income households, respectively.

An alternate method of determining values of affordable housing that is commonly used is to multiply gross income by a factor of 2.5. Applying this method to the previously determined maximum income values yields similar values for housing of $21,840 and $34,945 for low and moderate income households. These figures are consistent with those calculated in the previous paragraph.

Referring to the 1980 data on median housing values indicates that a maximum of 84 units would have been available for purchase by low income households and an additional 60 units to moderate income households. These numbers represent 16 percent and 12 percent of the total non-rental units in the Township, which would have been affordable on the open market to households of low and moderate income in 1980.

For rental properties, COAH has established 30 percent of gross income as the maximum to be used for rent. Applying this percentage to previously established yearly maximum incomes for low and moderate households yields $2,621 and $4,193 as the maximum annual expenditures for rent. Reducing these numbers to a monthly expenditure results in rents of $218 and $349 per month, respectively.

Reference to the 1980 Census reveals that of the 54 rental units which reported rent in 1980, 42 units were affordable to a low income household of four, 3 units were affordable to moderate income households and 9 units were available for no cash rent.

Although the figures cited above were adequate for purposes of comparison in 1980, they are not indicative of present conditions. In order to determine the current availability of housing for low and moderate income persons, the uncapped Department of Housing and Urban Development income figures adopted by COAH in April 1991 were consulted. These figures indicate that the median 4-person household income in Salem County was $41,280 in 1991. Utilization of this income figure and application of COAH guidelines for unit affordability yields maximum monthly mortgage allowances of $482 and $771 and housing values of $50,568 and $80,931 for low and moderate income households, respectively. Based on these figures, the maximum rent for 4-person families would be $516 for low income and $826 for moderate income households.

Household Income

Household Size	1 Person	2 Person	3 Person	4 Person	5 Person	6 Person	7 Person	8 Person
Moderate	23,240	26,560	29,880	33,200	35,272	37,512	39,424	41,500
Low	14,525	16,600	18,675	20,750	22,045	23,445	24,640	25,938

Source: Uncapped HUD Estimates (1/28/91).

B. PROJECTION OF MUNICIPAL HOUSING (1989-1995)

The Township's future housing stock is expected to increase steadily over the six-year planning period. Housing stock int eh Township increased by 111 units between 1970 and 1980. Based on the number of residential building permits issued since 1980, it is evident that construction of new housing is responding to population growth and is increasing accordingly.

The 1980 Census reported a total of 565 year-round housing units, including seasonal and migratory units. Adding the 37 units authorized for construction between January 1980 and April 1989 raises the total number of housing units to 602 assuming the permitted units are actually constructed.

Population projections prepared by Salem County in 1981 predicted a Township population of 1,736 in 1990 and 1,839 in the year 1995. Based on a July 1987 provisional population estimate of 1,589, it appears that these projects over-state the actual population growth occurring in the Township. Based on recent growth trends, a 1995 projection of 1,637 appears more appropriate. At 2.64 persons per household, the 1995 population would require a total of 620 dwelling units.

*Source: 1980 Census of Population and Housing
New Jersey Department of Labor
Delaware Valley Regional Planning Commission

C. DEMOGRAPHIC CHARACTERISTICS

The following is a summary of the Township's demographic characteristics. An evaluation of household size, income, age and sex of the population was completed using 1980 Census data.

1. Household Size

Total Population	1,547
Total Households	515
Total Families	411
Married Couple Families	360
Single Person Households	50
Female Headed Households	31
Male Headed Households	19
Non-Family Households	107
Persons per Household	3.00

Source: 1980 US Census of Population and Housing.

An analysis of the Township's demographics indicates that 88 percent of the Township's households were married couple families, whereas in the County 63 percent of the households were of this type. The percentage of single person households evident in the Township and the County was 10 percent and 19 percent, respectively in 1980.

A review of the household size data for Lower Alloways Creek indicates a primary demand for 2 and 3-bedroom units. The average household size of 3.00 persons per unit is slightly larger than the average for the County (2.86) and is indicative of the single-family households which continue to typify residential development in the Township.

2. Income

Median Household Income	$17,472
Median Family Income	$20,985
Per Capita Income	$6,245

Poverty Rate (Persons)	14.2 Percent
Poverty Rate (Families)	8.5 Percent

INCOME DISTRIBUTION

	Families		Households	
	Number	Percent	Number	Percent
Less Than $2,500	14	3.4	22	4.3
$2,500 - $4,900	19	4.6	42	8.2
$5,000 - $7,499	27	6.6	43	8.3
$7,500 - $9,999	30	7.3	44	8.5
$10,000 - $12,499	31	7.5	44	8.5
$12,500 - $14,999	19	4.6	19	3.7
$15,000 - $17,499	31	7.5	45	8.7
$17,500 - $19,999	21	5.1	21	4.1
$20,000 - $22,499	33	8.4	42	8.2
$22,500 - $24,999	35	8.5	41	8.0
$25,000 - $27,499	38	9.2	40	7.8
$27,500 - $29,999	31	7.5	31	6.0
$30,000 - $34,999	28	6.8	30	5.8
$35,000 - $39,999	28	6.8	28	5.4
$40,000 - $49,999	19	4.6	19	3.7
$50,000 - $74,999	4	0.9	4	0.5
More than $75,000	2	0.7	2	0.3
	411	100.0	487	100.00

MEDIAN $20,985 (Families) $17,472 (Households)

Source: 1980 US Census of Population and Housing.

The median family income for the County was $20,498 in 1980, which when compared to the Township indicates that the local standard of living was about 2 percent higher than the overall County average. Similarly, the County had poverty rates higher than the Township for families and persons.

3. Age

Median Age:	32.1
Male	31.3
Female	33.0

PERSONS BY SEX & AGE

	Total	Female
Under 1 Year	29	16
1 and 2 Years	40	25
3 and 4 Years	30	15
5 Years	18	5
6 Years	15	9
7 to 9 Years	71	42
10 to 13 Years	118	54
14 Years	33	15
15 Years	26	10
16 Years	37	14
17 Years	40	12
18 Years	37	19
19 Years	25	13
20 Years	20	13
21 Years	36	19
22 to 24 Years	60	25
25 to 29 Years	89	46
30 to 34 Years	116	57
35 to 44 Years	190	97
45 to 54 Years	170	83
55 to 59 Years	85	44
60 to 61 Years	22	9
62 to 64 Years	49	26
65 to 74 Years	119	63
75 to 84 Years	51	27
85 Years and Over	21	14

Source: 1980 US Census of Population and Housing.

SUMMARY OF POPULATION DISTRIBUTION

		Total	Percent
Males under 5	43		
Females under 5	56	99	6.4
Males 5-13	108		
Females 5-13	110	218	14.1
Males 14-17	86		
Females 14-17	48	134	8.7
Males 18-21	55		
Females 18-21	61	116	7.5
Males 22-29	81		
Females 22-29	83	164	10.6
Males 30-44	151		
Females 30-44	148	299	19.3
Males 45-64	164		
Females 45-64	162	326	21.1
Males 65 & Over	87		
Females 65 & Over	104	191	12.3

The age profile in the Township is fairly typical of national trends which generally show the largest segment of the population in the 30-44 year old age group. This age category runs a very close second to residents whose ages range from 45-65 years. Individuals in the 5-13 year age group which can be attributed to the children of "baby boom" families and those over 65 years are also significant.

4. Sex

PERSONS 15 YEARS AND OLDER BY MARITAL STATUS

	Total	Single	Married	Separated	Widowed	Divorced
Male	602	160	376	14	26	26
Female	591	117	374	7	70	23

Source: 1980 US Census of Population and Housing.

D. EXISTING AND PROBABLE FUTURE EMPLOYMENT

Current and projected employment within the Township was analyzed using available data.

1. Existing Employment

Total Labor Force	660
Total Employed	622

Source: 1980 US Census of Population and Housing.

Statistics available from the New Jersey Department of Labor indicate that the Township's labor force has averaged 714 persons from 1985-1988. The total labor force has grown steadily during this period from 699 in 1985 to 730 in 1988. The number of persons employed has grown at a similar rate during this four-year period.

The steady increase in the size of the Township's labor force, and the number of individuals employed indicate that the sources of employment are maintaining their economic integrity and that additional employment opportunities can be anticipated. The decrease in the number of persons unemployed in the unemployment rate also suggest that the Township's economic base is improving. The overall unemployment rate has dropped from 4.6 percent in 1985 to 2.9 percent in 1988.

E. PRESENT AND PROSPECTIVE FAIR SHARE FOR LOW AND MODERATE INCOME HOUSING

1. Council on Affordable Housing Precredited Fair Share Need

a.	Indigenous Need	23
b.	Re-allocated Present Need	0
c.	Prospective Need	0
d.	COAH Credits	
	Filtering	0
	Residential Conversion	0
Spontaneous Rehabilitation	0	
	Total Pre-Credited Need	23

2. Credits*

Zero (0) credits have been established for Lower Alloways Creek.

3. Net Fair Share Housing Need: 1989-1995

A.	Precredited Need:	23
B.	Credits:	0
	Net Fair Share Need	23

*Credits may be established for any dwelling units which have been rehabilitated since April 1980 and are presently occupied by low/moderate income persons.

4. Council on Affordable Housing Fair Share Determination

In May 1986, COAH completed an analysis of State-wide housing need and allocated fair share housing numbers to all municipalities in the State. Lower Alloways Creek was assigned a total fair share need of 23 low and moderate income units for the six-year planning period of 1987 to 1993. These units were identified as "indigenous need" which means that they were substandard and occupied by low and moderate income households.

The Township's indigenous need may be addressed through the rehabilitation of existing substandard units or through the construction of new homes which incorporate affordability controls to assure their access by low and moderate income persons.

F. LANDS MOST APPROPRIATE FOR LOW & MODERATE INCOME HOUSING

In Lower Alloways Creek, those lands which appear most appropriate for low and moderate income housing are those which have access to either existing or planned infrastructure improvements. Also, due to the cost of single family detached housing, areas which permit more intense residential development would be most conducive to the construction of housing which would be affordable to persons of low and moderate income.

The recent installation of sewerage facilities in the villages of Canton and Harmersville enhances the capability of these areas to provide affordable housing opportunities. However, the minimum lot area requirements for residential construction in the village areas may present a cost factor which effectively discourages construction of affordable housing.

Another area which appears especially appropriate for low and moderate income housing is the extreme northern portion of the Township. This area, adjacent to the City of Salem, exhibits a number of characteristics including vacant developable land area, access to existing and potential infrastructure improvements and compatibility of land uses which suggest it may be an appropriate area for the construction of low/moderate income units.

G. TECHNIQUES FOR PROVIDING FOR LOW AND MODERATE INCOME HOUSING

N.J.S.A. 52:27D-311 requires municipalities to implement techniques which provide realistic opportunities for providing its fair share of low and moderate income housing. The aforementioned statute recites eight possible techniques but permits municipalities to select any other technique(s) which will satisfy the requirements of the statute. It is also noted that nothing in the act shall require the Township to raise or expend revenues in order to provide low and moderate income housing.

In an effort to provide funding to qualified homeowners, the Township shall advise applicants of the availability of monies for rehabilitation of deficient housing units. The Housing Officer shall maintain an update file on funding availability and provide the requisite application forms to prospective recipients of state funds.

* * *

CIRCULATION PLAN

PURPOSE

The purpose of the Circulation Plan Element is to show the location and types of facilities for all modes of transportation required for the efficient movement of people and goods into, about, and through the municipality, taking into account the functional highway classification system of the Federal Highway Administration and the types, locations, conditions and availability of existing and proposed transportation facilities.

INTRODUCTION

The organization of this study involves a series of investigative discussions in which several aspects of the transportation network are analyzed. This study will document the characteristics of the existing road network with particular attention to those situations where the present system appears to be deficient. Plans by Salem County and/or the Township to improve the local road network will also be examined.

As will be demonstrated, the adequacy of a community's transportation system has a direct relationship to municipal land use planning. The transportation system greatly influences the type and intensity of growth, and the ability of the community to operate efficiently. If the implications of this relationship are understood, it will act as another parameter in both the allocation of future land uses and the need for improvements to the road system. In addition to analyzing the transportation system, policies will be recommended which will help alleviate existing inadequacies and mitigate future problems.

The conversion or redevelopment of land areas for commercial, residential or industrial purposes, depends upon accessibility. Historically, proximity was the only way to achieve this necessary requirement for urbanization. Homes and business establishments were located so as to require the least amount of travel time between trip destinations. Travel time, in turn has been determined by the prevailing level of technology in that period of history. The antecedents of today's scattered nodes of development were strongly influenced by the prevailing transportation modes of the period. Horse and wagon transportation 100 years ago required that the settlements be compact and closely spaced. Other towns had their geneses in the location of railroad stations. Today, the attenuated growth along many of the state and county roads is attributable to the location preferences of todays automobile era.

All vehicular trips are made for some purpose, and the best index of this human activity is land use. While one of the chief determinants of residential location is convenient access to employment, an entrepreneur generally prefers locations adjacent to high volumes of traffic, possibly at the intersections of major roads with access to other commercial or industrial locations within the region. Chronologically, the majority of new residential and commercial construction has taken place along the existing road networks. As the population continues to grow and the attendant level of traffic increases, conflicts become more critical and an overburdening of the existing transportation network is encountered. We often hear a great deal about what is considered to be the transportation "problem." Essentially, it is a summation of all of the aspects of the present highway system about which people don't like.

1. Accidents: These are probably the most dramatic and costly conflicts of the transportation problem. Between January 1987 and June 1990 a total of 187 accidents were reported in the Township resulting in one fatality. Twenty nine percent of these accidents occurred on local roads.

2. Congestion: People do not like to waste time. Wasted time results in excessive operating costs for the automobile and is also extremely upsetting.

3. Inefficient Investment: People do not like paying taxes to have roads constructed and maintained. Transportation improvements should carefully be analyzed to insure that the cost of the improvements does not exceed the anticipated benefits.

4. Clutter: As mentioned above, the very fact that transportation networks act as a catalyst for residential and commercial development has spurred the construction of strip highway commercial development which is often aesthetically unpleasing, detracts from the natural aesthetic beauty of the surrounding area, and, in many instances, is the chief cause for increased traffic accidents.

5. Strain, Discomfort and Noise: Motorists using highways and residences abutting highways are often subjected to the nuisances generally associated with heavily traveled roads. The dust and dirt, the air pollution, the excessive noise and the vibrations of heavy trucks subject travelers and residents alike to excessive strain and discomfort.

Ideally, all of the listed elements of a circulation system should be addressed in the formulation of future transportation improvements and in the allocation of future land uses. However, there rarely will be one totally satisfying solution to transportation problems since in a balanced community businesses, residences, recreational and other centers must exist together; thus, a certain amount of conflict is inherent. It is the task of those in a planning role to minimize this conflict by segregating certain land uses and densities and planning for a circulation system which, on the whole, will best serve the community for the present time and for the future as well.

In order to move traffic efficiently and safely, a community needs: (1) a road network which meets the needs of the community and region, (2) a road hierarchy based on trip purpose to eliminate conflicts; (3) adequate roads to meet the generated demand; (4) well-designed roads and intersections and (5) roads in good condition. The analysis which follows will focus on each of these individual requirements.

TRAFFIC GENERATORS

Some land uses give rise to greater volumes of traffic than others. Some are more continuous generators through the day or at specific times of the day. Still others only intermittently generate large volumes of traffic. On the basis of these specific characteristics, it is possible to sort traffic generators into three general groups. First are the business and commercial uses which can be expected to generate relatively continuous amounts of traffic throughout the day. Then, there are uses like industry or schools which can be expected to give rise to increased amounts of traffic at the beginning and close of their respective days, with relatively small amounts during other hours. Finally, there are community uses such as churches which give rise to traffic only at intervals.

There are relatively few traffic generators in Lower Alloways Creek Township. The school, post office, and the few commercial establishments while they are generators of traffic, generate only small amounts of traffic which is almost purely local. Similarly, the school, the churches and the agricultural activity generate but small amounts of traffic. With the exception of the nuclear facilities at Artificial Island, the main generators of the Township's traffic lie outside the community in regional commercial and employment centers.

Road Network

The evolution of the road network in Lower Alloways Creek Township has been influenced primarily by the needs of early commerce and trade activities, and by environmental constraints. Due to the Township's unique geographic location, and the fact that there are no State or Federal highways in Lower Alloways Creek, traffic patterns are almost purely local in nature. Residents in Lower Alloways Creek have access to several collector and local roads to access various parts of the Township and points beyond.

There are three basic circulation patterns which are evident in most, if not all, communities. The internal circulation system is characterized by all trips which have both their origin and destination in the Township. This system generally has lesser speed requirements and more stops and turning movements than the patterns of longer trips.

The road network for thru-traffic, which represents the second circulation pattern, is characterized by traffic which neither originates nor terminates in the Township. This traffic pattern is perhaps best illustrated by traffic movements on Salem-New Bridge-Canton Road. Although this road does not conform with the limited access highways generally associated with this type of traffic movement, it does provide a direct link from Salem City to Greenwich in Cumberland County.

The local circulation pattern is comprised of trips which originate or terminate in the Township. This is the third circulation pattern and a hybrid of the previous two and includes trips by a residents for work, for shopping and entertainment purposes. Although there is not a clearly defined internal circulation system in the Township the existing road network appears adequate to handle present levels of demand.

Without exception, all of the secondary roads in Lower Alloways Creek Township are under the jurisdiction of Salem County. These roads were constructed to connect major highways and population centers at a time when the County was more sparsely developed. As growth has continued in the Township, these roads have been used increasingly to provide direct access to new subdivisions which have developed adjacent to these rights-of-way.

Significant improvements to the Township's road network have been completed in recent years. Many of these were undertaken in response to the increased traffic generated by construction activity at Artificial Island. The realignment of Cuff Road and reconstruction of Hancock's Bridge and Alloway Creek Neck Roads are relatively recent examples of such improvements. The overlaying of Cuff Road and the installation of guard rail is an improvement anticipated this year. In recognition of the "Emergency Evacuation" routes the redesign and widening of New Bridge Road appears warranted. These routes are depicted on Plate 1. Plans are also being developed for a general upgrade of Main Street in Canton. This will include curb, gutter, sidewalks and drainage improvements. The County is presently assessing the need for repairs for New Bridge.

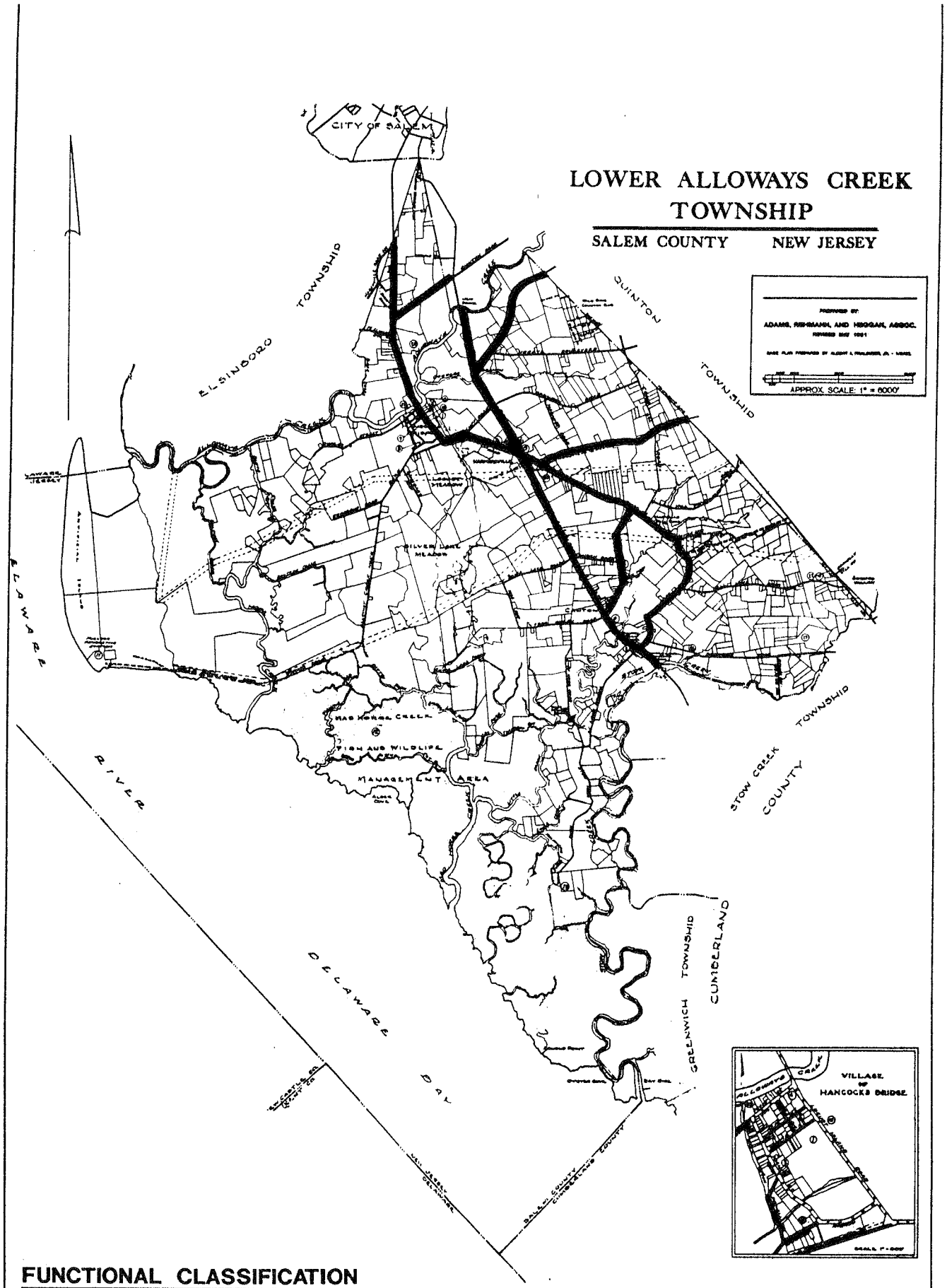
FUNCTIONAL CLASSIFICATION

Functional Classification is a system developed by the Federal Highway Administration for describing roads based on the type of services they are intended to provide. Road systems function most efficiently when their design is based on trip purpose. When roads are required to serve several functions the system often becomes inhibited.

All residential streets can be described in terms of relative movements of through traffic and property access. Because residential streets serve different functions, streets, should be classified in a street hierarchy system with design tailored to function. Such a system offers numerous advantages:

- Safety - Fast traffic is kept out of neighborhoods.
- Municipal Efficiency - Priorities can be assigned by municipal officials to maintain operations including the routing of snow plows and buses.
- Residential Quality - Traffic restricted on roads immediately adjacent to residences promotes quieter, safer, more pleasant neighborhoods.
- Land Use Efficiency - Overbuilding of roads is avoided, lowering maintenance costs, housing costs and adverse impact on the environment.

Each of the various roads in Lower Alloways Creek Township is designed to perform a different type of function in the overall transportation network. For planning purposes, roads are generally classified as three major types: arterial, collector or local. Each of these types defines a certain range of function.



FUNCTIONAL CLASSIFICATION

▬ — COLLECTOR

ALL OTHERS — LOCAL

PLATE 2

Local streets should function primarily as access points to abutting properties, both for vehicles and pedestrians. These streets are the lowest order streets in the hierarchy and are designed to carry only traffic generated on the street itself. The elimination of through traffic promotes safety and a desirable neighborhood environment.

Collector streets, in theory, should gather traffic from the local streets before the design capacity of the local streets is exceeded. This traffic is then funnelled to traffic generators such as shopping centers or other commercial areas, or to arterial roads. Depending on the volume, source and composition of the traffic, collector roads may be broken down into major or minor collectors. Major collectors are those roads which run between arterial roads or link major traffic generators with the arterial network. Traffic characteristics of this type of collector tend to have a higher percentage of trucks than minor collectors. On the other hand, minor collectors tend to carry primarily residential traffic and lower volume. Because of these lower volumes and non-commercial characteristics, minor collectors may be designed with lesser right-of-way widths and road surface bearing capacities.

Finally, arterial roads have, as their primary function, the transport of regional traffic characterized by high volumes, extended destinations or substantial number of commercial vehicles. Ideally, arterial and collector roads should have limited or strictly regulated access points to insure an uninterrupted flow of traffic and to enhance public safety.

These functional classifications are clearly ideal types since they rarely exist in true form. A problem which is becoming more acute in many rural communities including Lower Alloways Creek is the occurrence of most closely spaced driveways abutting the residential properties which have developed in a "ribbon residential" pattern. Since these roadways are performing a collector road function, this development pattern will lead to future problems when traffic volumes increase. This pattern of development also poses difficulties with respect to the efficient use of land parcels located behind the front properties.

In addition to the roadway functional classifications, which appear on Plate 2, the Salem County Planning Board recommends an 86 foot right-of-way for its "major collector" roadways and a 66 foot right-of-way for its "minor collector" roadways.

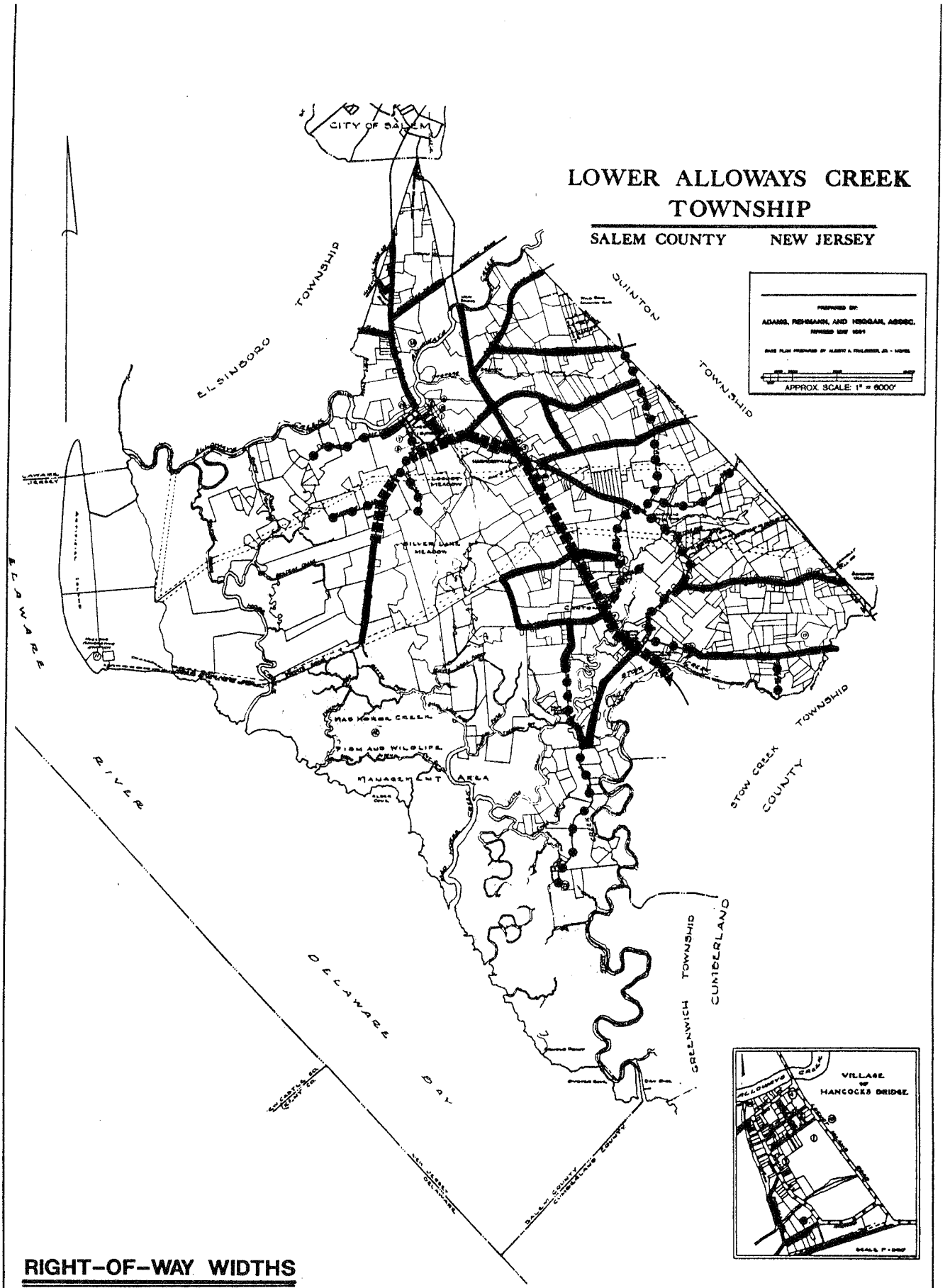
JURISDICTION OF ROADS

Generally, the volume of traffic and the function that a road performs are revealed by the political jurisdiction which has control of its design and maintenance. To a great extent, this general rule is evident in Lower Alloways Creek Township where the most significant transportation routes are those under County jurisdiction. County jurisdiction of these roadways should be expected because the roads act as a link between the major highways and regional population concentrations. The following roads are under the jurisdiction of Salem County: New Bridge, Harmersville-Canton, Beasely Neck, Harmersville-Pecks Corner, Maskells Mill, Friendship, Salem-Hancock's Bridge, Hancock's Bridge-Harmersville, Hancock's Bridge-Quinton and Fort Elfsborg. All of the remaining roadways in Lower Alloways Creek Township are under local jurisdiction or are privately maintained.

The essential conclusion of the jurisdictional pattern of the roadways in Lower Alloways Creek Township is that it reflects the rural and undeveloped character of the municipality. A development trend which is becoming more problematic is that the County roads are being called upon not only to funnel traffic between concentrations of development and the major highways, but are also being called upon to provide direct access to uses along their frontage. Given the fact that almost all of the major roads in the Township are under Salem County jurisdiction, it is extremely important that the municipal and county planning processes are coordinated. This coordination is necessary to insure that appropriate improvements are made to the roads which are consistent with the Township's land development strategy.

STREET RIGHT-OF-WAY WIDTHS

Shown on Plate 3 are the estimated street right-of-way widths throughout Lower Alloways Creek Township as discerned from tax map information. This roadway characteristic also gives an indication of the volume and function performed by the highway network. It should be noted that street right-of-way widths are not synonymous with the paved area of a roadway which is referred to as the "cartway width". The right-of-way width includes the paved area, or cartway, the shoulders and the sidewalks, if present. Generally speaking state and federal roadways have the widest right-of-way widths. A view of the information presented on Plate 3 indicates that the other roadways within the Township, whether under local or county jurisdiction, reflect a wide array of widths.



RIGHT-OF-WAY WIDTHS

- 31'-40'
- 41'-50'
- 61'-70'

PLATE 3

In most cases, no roadway should have a right-of-way width less than fifty (50) feet. These roads should perform only the basic local traffic function of providing access to abutting properties; no through traffic should be part of the traffic flow. When a roadway is called upon to handle through-traffic volumes, such as a connector road between major highways or residential concentrations, the required right-of-way should be at least sixty (60) feet and sometimes more.

Since many roads in the Township are required to handle through-traffic volumes in addition to providing access to abutting properties, it is clear that the existing right-of-way widths of most of the roads are deficient. In fact, all of the Salem County roadways have right-of-way widths less than fifty (50) feet in the Township. Certain Township roads also require additional right-of-way acquisition. As part of the development review process the Township should require sufficient land dedication to assure a 50-foot right-of-way width.

TRAFFIC VOLUME & CAPACITY

Of the major problems confronting the various levels of government, those that relate to traffic and its circulation are of primary concern. The reason for such concern is that the efficiency and safety with which one can move about within a community or from one community to another determines to a great extent the desirability of the area. The advent of the automobile and growth in our dependence on it combined with a shift in the local economy from a self-dependent agrarian economy to one which is reliant on the earnings of a work force that must seek employment outside the limits of the Township have both had an effect on the roads and the traffic patterns within the Township.

The ability of highways to carry large volumes of traffic is controlled by several factors. The number of traffic lanes, sight distances, proportion of trucks, operating speeds and roadway clearance are some of the more important elements which affect road capacity. Two-lane roads can carry as many as 5,000 cars per day but only at the expense of traffic tie-ups and delay. Roads which carry this much traffic on a regular basis require four lanes for moving traffic, preferably divided by a median strip.

Actual traffic volume is determined from road counts which are mathematically converted to Average Annual Daily Traffic (AADT) figures to estimate the average daily traffic on a road. Seasonal changes in traffic are eliminated in AADT figures. However, the relationship of peak hour volume to road capacity is more meaningful, since it indicates when the flow of the system is specifically inhibited by congestion. Unfortunately, there is little empirical data available regarding recent traffic flows in Lower Alloways Creek.

Preliminary discussions with Salem County and a review of available traffic count data suggest that none of the roadways in Lower Alloways Creek Township have excessive traffic volumes.

ROAD CONDITIONS

For the most part, the primary roads traversing the Township are in good condition, are adequately paved and, have traffic lane markings and shoulders. Some local and private roads have very rough surfaces, are in poor condition and show signs of weathering and age such as pot holes and crumbling edges or are unimproved dirt roads. The heavy trucks moving materials to and from Artificial Island for the construction of the generating plant have hastened the deterioration of some of the Township's roads. However, resurfacing and maintenance activities have generally provided good road surfaces.

Roads which have been recently resurfaced are constructed with high quality paving materials which should withstand normal traffic conditions for an extended period. Other roads are surfaced primarily with minimal pavement which is considered practical only on roads having low traffic volumes. These roads are bituminous treated sand on a base of gravel or broken stone or both. Such road construction is satisfactory for the low traffic volumes although the cost of maintenance is higher than for better grade construction. However, the initial cost of higher grade construction far exceeds the maintenance costs inherent in the use of the lower grade road surface.

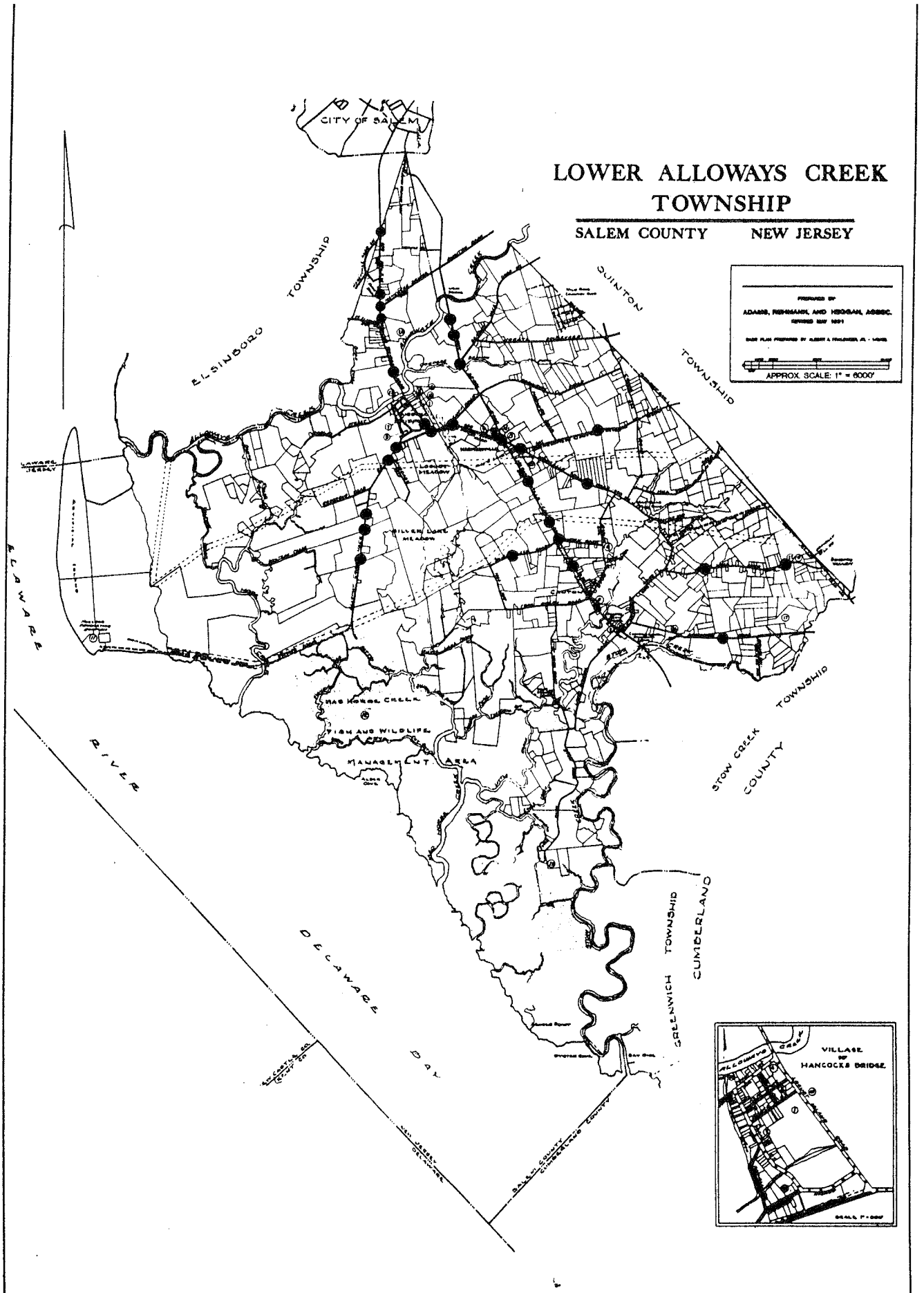
Hazardous traffic conditions, in addition to poor road surfaces, include poorly designed intersections and limited clear sight distances. Data obtained from the Township Police Department indicates certain locations where, by virtue of the frequency of accidents, may be hazardous. These locations are shown on Plate 4.

PUBLIC TRANSPORTATION

There are no major transportation facilities located within Lower Alloways Creek Township. Residents rely on the inter-regional bus facilities located in Salem and the air and rail services in Wilmington and Philadelphia for long distance commercial travel. Rail and truck freight service are available in Salem and in Bridgeton.

CONCLUSION & RECOMMENDATIONS

The basic conclusion of the Circulation Plan is that the Township and County must coordinate their planning processes to ensure an efficient transportation system. Of course, should changes to the County's plan appear advisable as a result of the municipal planning process, the Township should recommend that such changes be made. It is also evident that additional rights-of-way will need to be acquired along many of the roadways in the Township to allow for the reconstruction and widening of certain roads in the future.



ACCIDENT LOCATIONS

● SELECTED ACCIDENTS - 1985 AND 1987

PLATE 4

There are two primary techniques for the acquisition of future rights-of-way. One, the dedication process, is accomplished through site plan and subdivision approval. By this procedure, a local developer is required to dedicate the right-of-way width to the proposed standard as a condition of development approval. The second process, reservation, is also accomplished through the local review process. The reservation requirement is appropriate when the proposed right-of-way width is in excess of what will be required to accommodate the traffic generated by the development. This situation may occur as a result of minor subdivisions along collector or arterial roads. In these instances, the Planning Board may require a reservation of the right-of-way. This will necessitate increased building setbacks (measured form the proposed right-of-way) so that when the need arises to widen the road, the right-of-way will have been preserved.

The following specific recommendations are made with respect to the formulation of pedestrian and vehicular circulation policies in the Township:

1. Adopt minimal standards for the construction and improvement of Township roads.

2. Adopt a bike trial plan on the Official Map to encourage developer assistance in constructing same.

3. In order to retain the rural, low density character of the areas outside of Hancock's Bridge, Canton and Harmersville, collector and arterial streets should not be widened or realigned unless traffic volumes require such action.

4. Road improvements should not be initiated to "open" rural lands for development.

5. Access codes should be implemented to prevent traffic congestion and safety problems. These codes should be drafted to provide an efficient balance between access and mobility. Specific requirements to encourage shared access and to provide on-site turnarounds should be considered.

* * *

UTILITY SERVICE PLAN

PURPOSE

The purpose of the Utility Service Plan is to describe existing facilities and show the future general location of water supply and distribution facilities, drainage and flood control facilities, sewerage and waste treatment, solid waste disposal and provision for other related utilities.

GENERAL CONSIDERATIONS

Because sizeable portions of Lower Alloways Creek Township are environmentally sensitive, road locations, grading, and structural siting must be carefully selected. For example, it is intended that any new development be oriented toward the interior of a tract, and not stripped along the frontage of existing roads. Such development should be designed to integrate natural features to the greatest extent possible, while simultaneously buffering the most sensitive environmental areas from development impacts. Major roads should be along the periphery, not through a neighborhood, and there should be a minimum number of street and driveway intersections along those roads that can be expected to increase in importance. By avoiding environmentally sensitive lands, homeowners and the Township will minimize maintenance costs resulting from wet basements, erosion and frost action on foundations and paving. Protection of environmentally sensitive areas will also enable Township residents to experience the benefits of preserving the water-related areas for agricultural and recreational uses, while at the same time enjoying the aesthetic benefits associated with major tracts of open space, woods and topographic relief.

WATER SUPPLY AND DISTRIBUTION

The provision for an adequate and safe supply of drinking water is essential for the orderly and planned development of any community. This supply system must be capable of providing not only the average quantity and quality requirements of existing residents, but must also be sufficient to meet emergency conditions and the needs of future development.

Groundwater is the primary source of supply for all consumptive uses in Lower Alloways Creek. All domestic water supplies are obtained from private wells which are generally two inches in diameter and range from 75 to over 300 feet in depth. The Mt. Laurel-Wenonah Formation is the aquifer most commonly utilized in the Township. Water from this aquifer generally requires treatment for domestic uses for the removal of hardness. Although the amount of water used is far less than the amount that naturally exists, contamination, localized over-use and the dependency of natural environments place limits on the amount of water that is available for use.

Salem County is within the Atlantic Coastal Plain and is underlain by interbedded aquifers and aquicludes which are characterized by their gentle slope to the southeast, away from the Delaware River. Since geologic formations determine the availability of groundwater, it is important to understand the basic relationship between geology and groundwater availability. The most productive aquifer in the County is the Raritan and Magothy Formations, which supply about seventy-five (75) percent of the groundwater used. Aside from the limited incidences of salt water intrusion water from most parts of this aquifer is of good chemical quality.

The potential for pollution of local ground water supplies from septic system failures has been partially addressed by the construction of public sewerage in the village areas. Implementation of the new State standards regulating the design and construction of individual onsite septic systems will also help mitigate future ground water pollution incidents associated with individual septic systems. In the development of the Land Use Plan the Township will assess the ability of soils to assimilate septic effluent as it evaluates the development capability of various areas.

As with sewerage facilities the design and construction of new water supply facilities should be integrated with the overall arrangement of community facilities and serve to reinforce the desired plan of development. The Township should become familiar with the Well Head Protection Program, currently being developed by NJDEP and its implication for public supply wells. The primary purpose of this program is to minimize the potential for well pollution through controls on existing or potential pollutant discharges. Although the Magothy-Raritan Formation has provided the Township with its primary supply of potable water in the past, continued utilization of this supply source has prompted regional concerns relative to the long-term viability of the underlying aquifer system. In an effort to address these concerns, the Division of Water Resources established a second water supply critical area, which included Camden County and portions of Burlington, Gloucester, Salem, Cumberland, Monmouth, and Ocean Counties. Water Supply Critical Area No. 2 defines an area which overlies a groundwater aquifer which the State feels has been overdrawn by water pumpage to a degree which warrants its designation as a critical area under the provisions of NJAC 7:19-6.10 et. seq. Although Lower Alloways Creek is not directly impacted by the identification of Critical Area No. 2, Township officials should be cognizant of the need to utilize this finite resource efficiently. The Township should encourage the use of water-conserving devices in all new construction to make the best use of groundwater resources.

SEWAGE AND SANITARY WASTE TREATMENT

The management of growth in Lower Alloways Creek Township is to a large extent dependent upon the location and capacity of sewer infrastructure. Like water supply, wastewater collection and disposal is considered to be a Township service which is provided in order to protect the quality of the environment and maintain the health of residents. With the possible exception of transportation improvements, the greatest potential impact of new growth will be the increased stress upon the environment and its capability to assimilate the wastewater produced by new development. Once wastewater collection systems are constructed in a given area, growth will surely follow, bringing with it the demand for other local services and infrastructure. For this reason, sewer service areas must be carefully defined and be consistent with areas proposed for new development. The wastewater management constraints of areas serviced by onsite treatment facilities must also be recognized in the development of a reasonable land use plan.

Although the majority of the Township's land area is reliant on individual septic systems, the three village areas where development is most intense have public sewerage. Extended aeration systems which provide secondary treatment have been constructed in Hancocks Bridge, Harmersville and Canton. These systems were designed with substantial excess capacity which will enable them to accommodate significant new development without necessitating the need for facility expansion. The Canton system which was made operational in May 1990 has the greatest potential for servicing new growth. The Harmersville system, which was constructed primarily to service the Leisure Arms Complex, has the least capability for accommodating new development and is also the oldest of the three systems.

The federal "Water Pollution Control Act Amendments" of 1972 established area wide agencies to prepare and implement Water Quality Management (WQM) Plans to protect local water resources. All sewerage facilities plans must be in conformance with the Lower Delaware WQM Plan, which specifically delineates sewer service areas. The original 208 Plan for Salem County did not delineate any areas in Lower Alloways Creek for sewer service. The areas shown in that plan were primarily those municipalities with existing sewer systems including Woodstown, Penns Grove, Salem City and Carneys Point. Amendments to the Lower Delaware Water Quality Management Plan which permitted the Township to construct these treatment works were approved by the NJDEP in 1985.

In those areas where residents depend exclusively on the use of conventional on-site systems for the disposal of septage, there have been isolated cases of septic system failure. A primary factor which has been shown to cause onsite septic systems to malfunction is the siting of these systems on lots which are too small to allow adequate drainage fields. On-site systems on these lots may predate the current regulations governing setbacks from lot lines and private wells thereby making remedial action more difficult. When repairs are made to these systems, they should be improved to current state standards. Finally, septic tanks should be pumped out regularly to ensure proper operation, especially in problem areas.

In an effort to prevent contamination of groundwater, the Township should discourage the construction of onsite septic systems where conditions prevent adequate assimilation of effluent. The Township should also seek to discourage the location of onsite disposal systems on lots which have good soils, but are not large enough to allow an adequate drain field. Careful analyses of not only groundwater conditions, but also soil characteristics is necessary to site these systems properly. Although the Salem County Health Department is the entity responsible for approving the location and design of septic systems, the Township can provide some guidance on these issues.

The installation of onsite septic systems should conform to the following recommended standards:

1. Depth to Seasonal High Water Table: At least four feet.

2. Percolation Rate: Should not exceed 3 minutes/inch or be slower than 60 minutes/inch or equivalent permeability rating.

3. Slope: Should not exceed 15 percent.

4. Flood Prone: Installation should not be permitted in areas subject to flooding.

5. Surface Water: Septic systems should not be located within at least 50 feet of a stream, open ditch, lake, wetlands or other water course.

6. Well Location: Septic system disposal beds shall not be permitted within 100 feet of any well.

With respect to utilities, the provision of public sewerage is most critical because of the direct relationship between the availability of this service and the resultant pattern of land use. Because of the water-related constraints to development and the subsurface clay and marl conditions in some areas, onsite septic systems will curtail the amount of development the land is able to sustain. The issue is not whether a few isolated homes can be erected on smaller lots, but whether large blocks of land can support onsite wells and septic systems without having a cumulative adverse impact on groundwater quality.

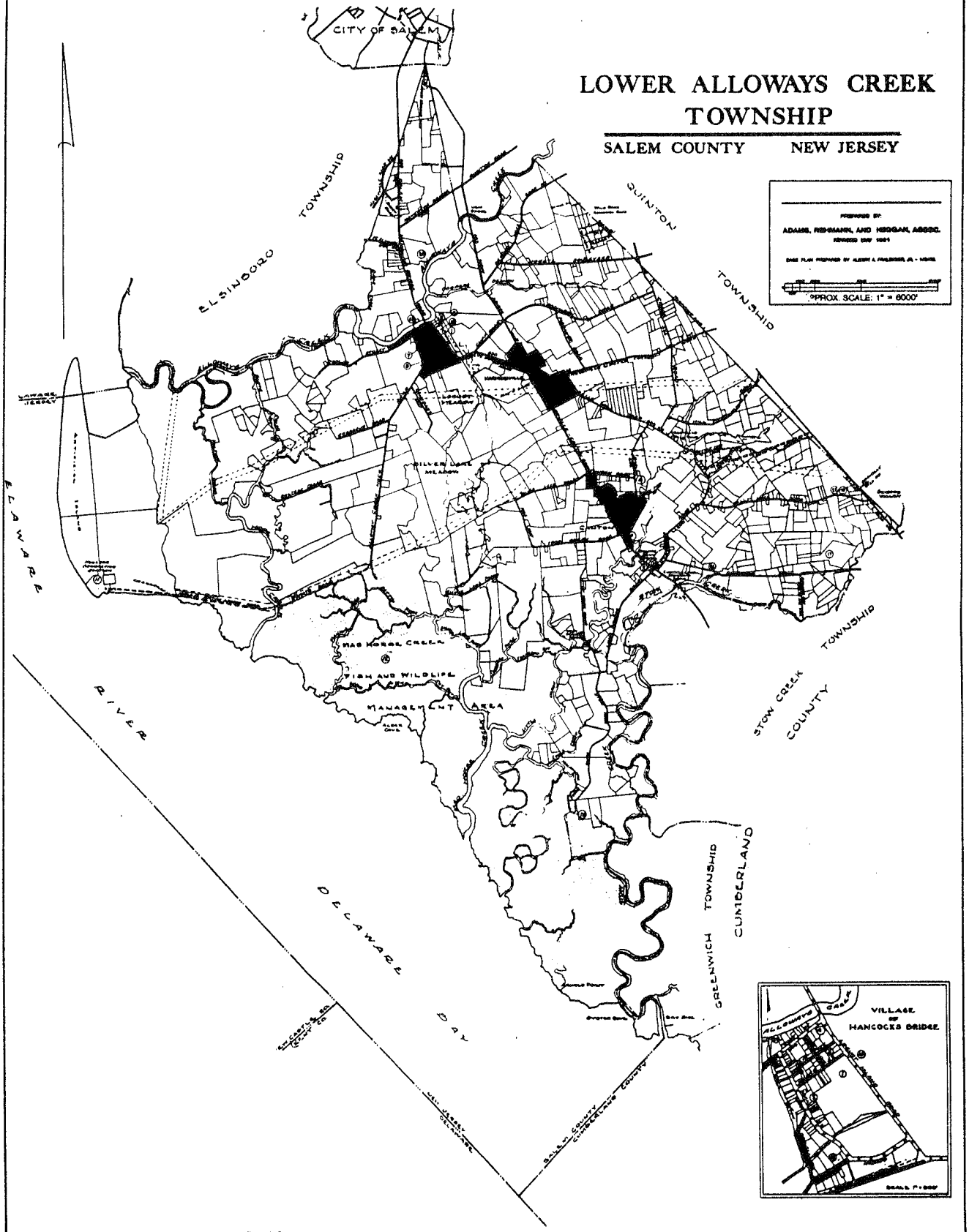
In addition, a recurring land use concept which will be emphasized in the Master Plan is the encouragement of non-residential and mixed use development in well defined areas or nodes. This overall land use theme will allow large tracts of land to remain as open space while reducing the amount of public improvement that will require perpetual maintenance, e.g., streets, stormwater and wastewater systems, curbs, sidewalks, parks, and similar support facilities which may otherwise be required.

Wastewater Projections

Both the Hancocks Bridge and Canton sewage treatment plants were constructed with a design capacity of 50,000 gallons per day (gpd). The Harmersville treatment system located at the Leisure Arms Complex on New Bridge Road has a design capacity of 15,000 gpd and is the first system built and put into operation. All of these treatment works are owned and operated by the Township of Lower Alloways Creek.

The design capacities and flow characteristics of the three plants is depicted in Table 1. As of March 1991 these three systems were treating wastewater from approximately 250 homes including the apartments and Community Building at the Leisure Arms Complex for a combined flow of 48,750 gpd. Using 200 gpd as the average sewerage flow from a single-family residence, the three systems have the capacity to serve a total of 575 homes which is 325 more than presently served.

The 1990 Census indicates that the local population has grown by twenty (20) percent between 1980 and 1990. The 1990 population is 1,858. Although this growth represents the entire Township, we will assume that the village areas have grown at a rate equal to the remainder of the Township. Under this premise we conclude that the existing sewer areas presently serve 675 residents in 250 dwellings. Continuation of the twenty (20) percent growth rate in the village areas would utilize all existing reserve capacity by 2005.



SANITARY SEWER SYSTEMS

SHADED AREAS REPRESENT
EXISTING SEWER SERVICE AREAS.

PLATE 5

TABLE 1

WASTEWATER TREATMENT FACILITIES

Location	Design Capacity	Existing Flow*	Reserve Capacity
1. Hancocks Bridge (98)	50,000 gpd	19,600 gpd	30,400 gpd
2. Harmersville (66)	15,000 gpd	11,950 gpd	3,050 gpd
3. Canton (86)	50,000 gpd	17,200 gpd	32,800 gpd

NOTE: Numbers in parenthesis represent dwelling units served.

DRAINAGE AND FLOOD CONTROL

As development continues, the need to protect sensitive environmental areas becomes more acute. In an effort to maintain the effectiveness of natural drainage areas and to provide other less obvious benefits, it is recommended that the Township use flood plains, wetlands, areas of erodible soils, aquifer recharge areas, streets and similar features to separate future developments. Such boundaries can be used to separate different intensities of residential uses, and to buffer residential from industrial or large-scale commercial uses. Drainage rights-of-way should be preserved and the number of roads crossing flood plains should be minimized. Homes and other uses should not encroach upon flood plains. A minimum number of roads should cross flood plains and wetland areas to avoid costly bridge construction projects and minimize bridge and road maintenance costs. The preservation of flood plains and aquifer recharge areas offer the opportunity to generate recreation areas convenient to homes while providing open space buffers between residential development and agricultural areas. Retaining these water resources will also serve farm irrigation needs and increase opportunities to recharge underground aquifers in an area dependent upon groundwater supplies.

The management of stormwater is a serious concern which becomes more critical as development continues. Stormwater management systems serve to protect the public welfare, and control runoff to prevent or mitigate physical injury, property loss and disruption of activity which may occur after a storm. In addition to its protective function, a drainage system can enhance water supply by enabling stormwater to replenish local water resources by percolating into the ground. Given these critical functions, it is important that drainage systems be carefully planned.

In view of the problems associated with individual, site specific systems, a change in drainage design philosophy is reflected in the recommendations of much of the current literature. There is a growing recognition that drainage control is best approached within a regional management context, that a non-structural systems be encouraged, and that system capacity reflect system demand.

Strategies for dealing with stormwater have been evolving over time. Today, there is greater acceptance of the need for a managed regional approach. The objectives of stormwater management have also expanded. In addition to serving its traditional protective role against storm-related dangers, the drainage system has become recognized as an important element in water supply and quality. The State of New Jersey has issued water management manuals specifying techniques to control water quantity while protecting water quality.

Major new emphasis is now being placed on the identification and application of non-structural engineering techniques. A non-structural system is consistent with natural resources and processes, and can be designed to improve the effectiveness of natural systems. Natural overland flows, open channels, swales and large ponds are seen as important drainage control elements with auxiliary benefits which should be encouraged.

SOLID WASTE MANAGEMENT

Because the management of solid waste poses serious problems throughout the State, the "New Jersey Solid Waste Management Act" of 1975 requires that each county in the State formulate a management plan which will show how solid waste disposal needs will be met. In addition to providing for environmentally sound disposal, the plan must promote the maximum practical use of resource recovery.

The Township of Lower Alloways Creek in cooperation with Mannington, Elsinboro and Quinton Townships have developed an inter-municipal solid waste program. TOLACQEM, as the coalition has been named, provides weekly pick-up of domestic solid waste and bi-weekly pick-up of recyclable materials. In 1990, the Township generated 975.6 tons of waste which was landfilled.

In an effort to reduce the amount of refuse which is landfilled, the State adopted the "New Jersey Recycling Act" of 1981. All counties are required to reduce the amount of landfilled material by 20 percent as of November 1990. As an incentive for municipal governments to participate in a recycling program, the State offers tonnage grant awards. The amount of money refunded to a municipality is directly related to the success of their recycling program. Lower Alloways Creek presently recycles newspaper, clear glass, aluminum cans and plastic. Newspaper and glass represent the items recycled most and accounted for 150 tons each for the years 1989 and 1990.

OFF-TRACT IMPROVEMENTS

The Township Committee may, by Ordinance, adopt regulations requiring a developer, as a condition for approval of a subdivision or site plan, to pay his pro-rata share of the cost of providing only reasonable and necessary water, sewerage and drainage facilities, and easements therefore, located outside the property limits of the subdivision or development but necessitated or required by construction or improvements within such subdivision or development.

These regulations shall establish fair and reasonable standards to determine the proportionate and pro-rata amount of the cost of such facilities that shall be borne by each developer or owner within a related and common area, which standards shall not be altered subsequent to preliminary approval.

UTILITY SERVICE RECOMMENDATIONS

The following recommendations are based on an analysis of utility services in the Township and represent realistic policy objectives which should be pursued:

1. Areas designated for rural residential or agricultural uses in the Land Use Plan should not be serviced by public sanitary sewers.

2. Subject to a state grant for the purpose, a Stormwater Management Plan should be developed as required by law.

3. The Township should develop rational policies to guide the extension of sewerage facilities.

4. In view of the more stringent septic regulations, the Township should make plans to connect the Elementary School to public sewer.

* * *

COMMUNITY FACILITIES PLAN

PURPOSE

The purpose of the Community Facilities Plan is to show the location and type of educational or cultural facilities, historic sites, libraries, hospitals, fire houses, police stations and other related facilities, including their relation to the surrounding areas.

PUBLIC SCHOOLS

The Lower Alloways Creek School District has prepared several master plans for education facilities over the years, the most recent being the 1990 Facility Master Plan. This Plan includes all aspects of local education from the Township's demographic base to a review of the educational programs and an analysis of the physical facilities.

School Characteristics -

The Lower Alloways Creek Elementary School is within the village of Canton on Main Street. The site is reasonably central to all points within the Township, and is not burdened by high nearby traffic levels which may pose a safety hazard. The 12 acre site is visually pleasing and is an ideal location for such a facility.

The Lower Alloways Creek School District consolidated several separate schools within the Township into one school at its current location in September, 1958. This school opened with nine classrooms, an all-purpose room used as a cafeteria, and a boiler room. Expansion in 1971 added three more classrooms, a library and new boiler room. In 1974, six new classrooms were added as well as new spaces for industrial arts, home economics, music and art. Also finished in this year was a new gymnasium-auditorium. New administrative offices and a uniform brick exterior were completed in late 1974. Still more additions were completed by 1975 including a bus garage, playing fields for hockey/ soccer and football and a basketball court. Additional facility improvements include a science health education room, an instructional media center, a compensatory mathematics and reading room a special education room, and a new cafeteria/kitchen.

School Enrollment -

The present student population is about 270 students from pre-K-8. High school students attend Salem High School. Due to the decreased birth rate in the Township the greatest enrollment growth over the next five years will be in grades 5-8, while enrollments in grades K-4 will be diminished. Overall enrollment for the entire school is expected to peak in the next two years and then decline until 1994-95. Grades seven and eight are expected to peak in the 1992-93 and 1993-94 school years and then begin to decrease in enrollment.

While there are no other public schools, nor private schools within the District, approximately ten resident students attend private schools outside the Township.

School Facility Plan -

Planning for school facilities and their improvements is the responsibility of the Board of Education. No major changes in school facilities or programs are contemplated at this time. School facilities are adequate for the present student body and programs are educationally and fiscally sound.

Consequently, it would appear that a major capital improvement program for school facilities at the existing or new sites will not be required for grades kindergarten through eight. Additionally, it is extremely unlikely that during the next five-year period that the District will elect to build its own high school. The following factors contribute to this conclusion:

1. Lower Alloways Creek is expected to have a maximum high school age population of 244 students in all categories during the next five years. This number of students is insufficient to justify an independent high school.

2. If the District were to develop a high school to serve its own students as well as those of neighboring Quinton and Elsinboro, the maximum school size would be about 700. It seems unlikely that Mannington which also sends students to Salem high School would elect to participate in such an effort since it is relatively more distant. Seven hundred students might be sufficient to justify a new high school, however, the loss of this many students would probably jeopardize the educational process at Salem High School.

Consolidation of K-8 among Lower Alloways Creek, Elsinboro and perhaps Quinton would more than likely require an additional facility in Lower Alloways Creek to which Elsinboro and perhaps Quinton would send their students. It is not clear that this would achieve a net regional educational benefit. In turn, it is very unlikely that Lower Alloways Creek would elect to send its students (K-8) in whole, or in part, to other school sites outside the District through some form of regional consolidation of grades kindergarten through eight. In view of the present situation and the anticipated demographic changes, the existing facilities will continue to service Township students for the foreseeable future.

TOWNSHIP ADMINISTRATIVE OFFICES

The Township Municipal Building is centrally located on the corner of Second Street and Locust Island Road in Hancocks Bridge. This facility which was constructed in 1975 and added to in 1985 houses all Township administrative offices, including police and emergency management. Two lighted baseball fields and four lighted tennis courts are located adjacent to the Municipal Building on the same 33 acre tract.

The existing municipal complex is adequate to service the existing population and it appears capable of accommodating all municipal service needs for the foreseeable future. As population increases, the Township should continue to evaluate the service capabilities of its municipal complex and associated services and make whatever adjustments are required.

POLICE DEPARTMENT

The Police Department is located in the Municipal Building in Hancocks Bridge. The Department is comprised of 13 officers, 5 civilian dispatchers and 1 records manager. According to the Police Chief the Department handles approximately 5,500 calls for service annually. Police personnel have access to seven marked patrol vehicles and a new advanced communications system which was installed for emergency management purposes. Emergency assistance can be provided to/by neighboring departments through mutual aid arrangements and by State Police at the Woodstown and Bridgeton Barracks.

According to the Chief, Police facilities and staffing are adequate to handle existing and foreseeable future service needs. The centralized location of this Department allows the Police to respond quickly to calls throughout the Township.

FIRE SERVICE

Lower Alloways Creek Township is served by a volunteer fire company with two stations located in Canton and Hancocks Bridge which are manned by approximately 50 active members. In the event of a serious fire, additional fire companies can be called to assist from neighboring municipalities through the Salem County Call Board. The Hancocks Bridge Fire Station was added to in 1975 and now consists of a 3-bay garage, office, kitchen, mechanics room and recreation room. The old engine room is used for meetings, dances, dinners and other community events. The major emergency equipment items kept at the Hancocks Bridge facility include a pumper, tanker and brush trucks.

Since the U.S. Coast Guard has become less prominent in the Delaware Bay, the Township's rescue boats have become increasingly important. Of the approximately 160 call in 1990, 75 percent were for water rescues. The 25-foot Boston Whaler has dewatering pumps and a tow bar and often assists the Marine Police. The 14-foot Polar Craft is more often used in the smaller creeks and ditches to assist distressed boaters.

The Canton Station on Smick Road also houses a 14-foot Polar Craft boat, 2 pumpers, a rescue truck and a 200 gallon foam trailer for chemical, gas and oil fires. A scuba trailer is also kept in Canton and contains equipment sufficient to outfit ten divers. The Canton facility was constructed in 1980 and consists of 3 bays and an office.

The Hope Creek and Salem nuclear generating stations at Artificial Island rely on 24-hour protection services provided by the on-site fire department. This department is comprised of 31 paid personnel who are responsible for all property under control of the utility company. Mobil equipment at this station consists of a Class A pumper, two state-certified ambulances, and a boat. A recent addition to the mobil equipment is a trailer equipped for hazardous materials response.

Water for fighting fires comes primarily from the fire company equipment or from accessible surface water. Fire hydrants exist only at the nuclear generating facilities at Artificial Island. To date there have been no major problems in either getting adequate water to fight fires or in sustaining water pressure.

Fire underwriter organizations suggest standards for the location of fire stations based on the type and density of development. A generally accepted standard for stations covering areas which are predominantly commercial and industrial is a maximum service radius of three-quarters of a mile. For stations covering predominantly residential development, a one-half mile service radius is recommended, and a three mile radius recommended in outlying areas with low densities.

Long-range plans for fire protection should continue to include the review of site plans and subdivision proposals to assure that fire hydrants are provided and no fire safety hazards are inherent in the design. In addition, a consistent program to keep equipment up-to-date, a long-range purchasing program to expand the inventory of equipment, and the expansion of membership in the volunteer organizations should assure the Township of adequate fire protection. Finally, the location of new fire stations must be anticipated as development continues.

FIRST AID SQUADS

The Township has two volunteer first aid squads which are housed with the respective fire companies in Hancocks Bridge and Canton. The Township purchased a new Mobil Medic rescue vehicle in 1989 which is kept in Hancocks Bridge. A back-up rescue vehicle is kept at the Canton facility. Assistance is available through the county mutual aid system. Present facilities are adequate, but new stations must be anticipated as the Township continues to develop.

PUBLIC WORKS DEPARTMENT

The office of the Superintendent of Public Works is located in the Road Department Garage and Maintenance Facility in Harmersville. This facility houses all administrative and operational functions. The original garage, built around 1975, includes eight bays and an office. In 1981 an approximately 10,000 square foot bus garage was built on the site. This building is used primarily for storing vans, buses and other heavy equipment. A pole building with carpenter shop has also been added to the site. In addition to the Superintendent, the department employs a staff of 28 and has 40 vehicles of various types and sizes. Vehicles and equipment are replaced in accordance with a schedule reflected in the Capital Improvements Program.

Most of the Township's normal maintenance (streets, drainage facilities, buildings and grounds, and vehicles) and some of the construction of new facilities are done by the Public Works Department. Public works personnel are responsible for maintenance of local roads, collection of solid waste and recyclables, and for maintenance of the Township's wastewater treatment facilities. Lower Alloways Creek provides all equipment and personnel necessary to operate the solid waste coalition which includes Quinton, Mannington, Elsinboro and Lower Alloways Creek Townships.

The Township maintains a public boat ramp at the end of Main Street in Hancocks Bridge. This ramp provides access to Alloways Creek and is available to residents possessing a valid sticker. The ramp is also used by the fire and rescue squads to launch rescue boats. The State of New Jersey maintains a public boat ramp at the end of Stow Neck Road which provides access to Stow Creek and the Mad Horse Creek within the Mad Horse Creek Wildlife Management Area.

LEISURE ARMS

The Leisure Arms complex is located adjacent to the Road Department Garage in Harmersville. Leisure Arms was constructed in 1979 and consists of 29 detached single-family dwelling units. Although the existing units occupy only a small portion of the site's total area, the Township has no immediate plans to add any new dwelling units to this complex. The independent-living facilities at this complex are available to Township residents based on a rating system which considers the individual's age and length of residency in the Township. The fee charged per resident is ultimately based on the ability to pay.

The Township also provides senior citizen transport for medical purposes and for the lunch program at the Leisure Arms Community Center. Both of these programs have been well-received by the local community and constitute extraordinary efforts by the Township to serve senior residents. The medical transport program is partially subsidized with funding from the Salem County Office on Aging.

Regularly scheduled bus trips to various destinations are also available to all residents. The Township absorbs the transportation costs for these trips which may be for two or three days and include New York City and Williamsburg as destinations.

VISITING NURSE

The Visiting Nurse is primarily responsible for providing health education and services to residents of the Township. Transporting individuals to medical appointments is an additional service provided. These health-related services are critical to the well being of residents, especially those who need personal medical guidance. First aid and medical screening is also provided to Township personnel by the Visiting Nurse.

The office of the Visiting Nurse is located at the Leisure Arms complex. Established over twelve years ago, this service has responded to the changing needs of residents and are considered well-suited to residents needs.

SWIMMING POOL COMPLEX

In January 1982, the Township opened a recreational facility on Maskells Mill Road which includes an enclosed swimming pool, baseball field and walking track. The 25 meter pool contains two diving boards and an infant wading pool. The building has a retractable roof and includes locker/stream rooms, a fitness room, a multi-purpose room and offices. This facility is open year-round and requires a nominal membership fee from residents. The complex is also open to non-residents on a membership basis.

POST OFFICE/BANK

The Hancocks Bridge Post Office has been at its present location on Locust Island Road for approximately 20 years. This facility serves only the Hancocks Bridge area. All other mail delivery in the Township is provided via the post office in Salem City.

There are presently no banks located within Lower Alloways Creek Township. Although Security Savings Bank did operate a small office next to the post office building until 1989, this facility was closed due to lack of business. Residents' banking needs are now met by facilities in adjacent municipalities.

COMMUNITY FACILITIES RECOMMENDATIONS

The following recommendations are based on an analysis of various community facilities and relate to Township planning goals and objectives. The proposals are listed by function rather than by order of priority.

1. Future developers of large-scale residential projects should provide the Township with a projection of student population to allow the Township maximum flexibility in meeting future school needs.

2. Plans should be developed as needed for the expansion of the Municipal Building to adequately accommodate the expanding functions which will be necessitated by continued development.

3. Future large scale developments should be required to project the need for additional protection services including fire, rescue and police necessitated by their occupants.

4. The Township should institute a program to revise the land use map as development occurs. This information will assist Township Officials in determining when and where additional community facilities are needed.

* * *

RECREATION PLAN

PURPOSE

The purpose of the Recreation Plan is to show a comprehensive system of areas and public sites for recreation.

INTRODUCTION

Lower Alloways Creek Township is provided with significant public land holdings for many types of recreational activities. At the present time, there is a total of 9,750 acres of various public recreation and open space facilities in the Township. Table 2 summarizes the size and characteristics of these areas.

One of the purposes of this section is to establish open space and recreation standards for new subdivisions. Developers of new subdivisions may choose to improve existing facilities rather than construct redundant facilities. Current recreational facilities will be evaluated in order to establish standards and needs in anticipation of future development.

Recreation takes many forms, it can be organized or impromptu, active or passive, educational or just for fun. The success of a Township's recreational facilities is usually measured by how well they accommodate the various recreational needs of residents, and the number of residents who use them.

Developed municipal recreation consists of the facilities adjacent to the Municipal Building in Hancock's Bridge, the Municipal Pool in Harmersville, and the fields at the Elementary School in Canton. The total acreage devoted to recreation at these three sites is estimated to be about 32 acres.

GOALS

The goals of this recreation plan are:

1. To continue to provide sufficient active and passive recreational opportunities for the present citizens of the Township, and to establish a mechanism by which recreation needs of future residents can be met.

2. Where possible, to link open space together to provide a trail network with sidewalks and bikeway paths throughout the Township.

3. To utilize the existing municipal facilities to the greatest practical extent.

The achievement of these goals will best be realized with a coordinated effort on the part of the local governing body, school board and other community organizations.

RECREATIONAL STANDARDS

The following proposed standards were established by the National Recreation and Park Association (NRPA) and are intended to serve as a guide to planning, not as an absolute blueprint. The NRPA suggests that a park system, at a minimum, be composed of a "core" system of parklands, with a total of 6.25 to 10.5 acres of developed open space per 1,000 population. Monitoring and assessment of the recreational preferences expressed by Township residents is essential to the provision of adequate recreation opportunities.

Community Park -

Community parks are generally seen as areas exhibiting diverse environmental quality which may include areas suited for intense recreational facilities, such as athletic complexes, or for recreation activities such as walking, viewing and picnicking depending on site suitability. Typical service areas for community parks include several neighborhoods usually within a 1-2 mile radius.

A minimum of ten (10) acres per 1,000 people and a minimum tract size of 25 acres is recommended for these areas. Larger tracts are preferable to smaller scattered sites. Land with mature vegetation, high scenic qualities, historical significance, or other unique characteristics are especially appropriate for inclusion in this category.

Although the Township owns over 300 acres of land, most of the parcels do not meet the minimum area recommended for district parks or conservation areas. A more detailed assessment of the tracts which do meet the minimum size standard should be undertaken if an interest in this type of recreational facility is demonstrated. Due to the number of large parcels within the Township held by the New Jersey Department of Environmental Protection, a cooperative arrangement between the Township and State to develop a district park or conservation area may be appropriate for further inquiry.

Neighborhood Playgrounds -

Neighborhood parks and playgrounds are areas used for intense recreational activities, such as field games, court games, crafts, playground apparatus, picnicking and other activities. These facilities generally have a service area with a one quarter to one half mile radius to serve a population up to 5,000 (a neighborhood). The most desirable tract size be used for a neighborhood park is fifteen (15) acres. These sites should be easily accessible to neighborhood population with safe walking and bike access.

A minimum standard of two and one-half (2.5) acres per 1,000 residents is recommended for neighborhood playgrounds. Playground facilities should include separate areas for age groups 1-5, 6-10 and 11-15. Equipment for these areas should be based on the specific recreation needs of these respective groups.

The area for the 1-5 age group should have a sand area, small swings, static play animals, small sliding board, etc. A sitting area for parents should be provided in close proximity to the play areas. Space to operate tricycles should also be available in this area.

Play areas for children ages 6-10 should include equipment for more active recreation such as: slides, see-saws, balance beams, whirls, rope climbing areas and chin-up bars. Children aged 11-15 are generally more interested in active spaces such as: a general use field where a frisbee or football can be thrown, bicycle paths, hills and jumps. Landscaping should be utilized in the design of these playgrounds to provide shade and to separate the different activity areas.

Mini-Park -

These facilities typically include specialized facilities that serve a concentrated or limited population or specific group such as tots or senior citizens. With a service area of less than one quarter mile these parks should be located within neighborhoods in close proximity to residents. The most desirable size for mini-parks is one acre and a typical service standard is one quarter to one half acre per 1,000 population.

Bike/Pedestrian/Bridle Paths -

Township-wide bikeway/pedestrian routes are an integral part of a comprehensive recreation system. Bikeways are generally reserved for the exclusive or semi-exclusive use of bicycles. Although ideally bikeways are separated from streets and sidewalks, they can take one of the following forms: 1) bicycle paths designed specifically to satisfy the physical requirements of bicycling; 2) bicycle lanes at the edge of streets reserved and marked for the exclusive use of bicycles; and 3) shared or bicycle compatible roadways which are designed to accommodate the shared use of the roadway by bicycles and motor vehicles. The bikeway network should be designed to provide a safe circulation alternative within the Township which will link private, public and commercial areas with different neighborhoods. Linkage of the village areas with the public facilities such as the municipal pool and school represent a design arrangement which should be pursued as the Township develops.

The bikeway program should be considered as a part of the future development of the Township. When development is proposed adjacent to a proposed Master Plan bikeway, the developer should submit a proposed bike trail alignment as part of the subdivision application.

One of several designs which relates to bike path construction consists of an 8-foot wide hard surface path separated from vehicular traffic. Alternatively, these bike paths can be incorporated into the existing right-of-way depending on the volume and speed of vehicular traffic.

Any pre-developed areas in which construction of new bike paths is not feasible should employ the use of sidewalks as bike paths. These sidewalks should have curb depressions where necessary to permit access. Clear visibility is required at all intersections. One mile of trail for each 300 persons is a recommended standard for bike paths.

In instances where a bike or pedestrian crossing is proposed at a location other than at a designated intersection, all safety measures appropriate to the degree of traffic should be employed. Open space trails -one mile per 3,000 persons-are recommended.

Sidewalks are usually parallel to and separate from the street and used as a pedestrian walkway. The primary function of sidewalks is to provide for safe pedestrian movement and as play areas for children. Sidewalks can be an important element in the recreational system since they serve as walking and hiking trails for all age groups.

Because installation of sidewalks raises development costs and increases impervious area, provision of sidewalks should be carefully evaluated and based on need. As a general rule sidewalks should be provided along streets used for pedestrian access to schools, parks, shopping and transit stops.

Bridle paths may be an appropriate recreational amenity in some parts of the Township. These paths should be isolated from other traffic and would be most suitable where they could be linked to other trails or access points. Easements from individual property owners may be necessary in order to develop an integrated bridle path system.

Optional Facilities -

Various standards have been developed for other recreational activities which may be appropriate in Lower Alloways Creek.

Canoeing - one person per quarter mile of stream. One-half mile of stream per canoe.

Fishing - one acre of public access to a lake; one boat per dock per lake; one parking space per two fishermen.

These recommended standards do not preclude commercial indoor activities such as tennis, ice skating, roller skating, squash, racquet ball or health clubs.

The desired recreation/open space standards should be detailed in the development regulations and implemented through the approval process by requiring the construction and dedication of recreational facilities at a rate proportional to need as described. The specific mix of recreation facilities should be ultimately determined by the Planning Board.

A trust fund should be established as necessary for public acquisition of land and development of facilities. The fund would administer voluntary contributions made by subdividers in lieu of providing facilities.

The following chart is recommended as a measure of value for voluntary contributions should a developer choose to contribute funds rather than construct new facilities. The cost figures in this chart should be updated every two years.

Type	Cost
Baseball	$30,000.00
Basketball Court	20,000.00
Football Field	25,000.00
General Use Field	20,000.00
Playground with Tot Lot	35,000.00
Soccer Field	25,000.00
Softball Field	30,000.00
Tennis Court	35,000.00
Trail (8' wide bituminous)	5.00 per linear ft.
Parkland	40,000.00
Associated Lighting	40,000.00
Associated Parking	20,000.00
Associated Landscaping	20,000.00

Maintenance -

The associated costs of recreation maintenance must be budgeted lest the public's investment in open space be wasted. The Township may consider the voluntary establishment of a financial instrument which would cover the costs of maintenance of any public facilities donated.

TABLE 2

INVENTORY OF PUBLIC RECREATION/OPEN SPACE SITES

Municipal Complex

4 - tennis courts (lighted)
1 - baseball field
1 - softball field (lighted)
picnic area

Municipal Boat Ramp

Located at the foot of Main Street (for residents only).

Pool Complex

1 - indoor swimming pool
1 - outdoor walking track (3/4 mile)
1 - baseball field

Elementary School

1 - hockey/soccer field
1 - football field
1 - basketball court
2 - little league fields

State Fish & Wildlife Management Areas

Mad Horse Creek (boat ramp)
Maskells Mill Pond

Historic Sites

Hancock House - 1728
  Enlarged (1734)
Log Cabin - Township owned museum (Canton)

In addition to the above listed facilities, the Township also sponsors bus trips for residents to various destinations. These bus trips include day trips and overnight excursions to Longwood Gardens, Philadelphia, New York City, Williamsburg and other attractions. Transportation costs associated with these trips are borne by the Township.

Hunting and fishing, both fresh and salt water, are popular recreation activities in Lower Alloways Creek. Expansive wetland areas and several private hunting preserves offer plentiful opportunities to sportsmen. The Mad Horse Creek Fish and Wildlife Management Area includes approximately 5,826 acres of tidal marsh and upland habitat. This area provides salt-water fishing, waterfowl, pheasant and rabbit hunting with a boat ramp at the creek. The State also owns 47 acres around Maskell's Mill Pond which includes a 33 acres pond. Fishing and boating are favorite activities at this site. In addition to the boat ramps at the end of Stow Neck Road and Main Street, there is a commercial boat ramp on Poplar Street in Hancocks Bridge which provides access to Alloways Creek and points beyond via Mill Ditch.

Area golfers can find a challenging 27-hole golf course at the Wild Oaks Country Club. This public facility opened in 1974 and, in addition to the golf course, includes a restaurant and club house. Approximately 10 single-family residences have been constructed in conjunction with the golf course.

RECREATION NEEDS

Public land for recreational activities includes land maintained by the State, the Township and by the public school system. The available amount of land in these categories is generally adequate for the intended purposes, now and in the near future.

This inventory indicates the location and type of recreation facilities in the Township. The Township's recreation needs are derived from a comparison of established standards and population. Future recreational needs are based upon population projections and are identified in the following chart.

RECREATION PLAN

Following are the major recommendations of the Recreation Plan element (see also Conservation Plan for additional recommendations relating to recreation and open space):

1. Existing streamways and/or woodlands should serve as the basic linkage between major recreational play areas and/or school site facilities. These linkages can provide pedestrian and/or public paths linking neighborhood residential areas one to the other.

2. The Land Use Plan element and land use policies should be revised to permit both cluster and planned unit development in areas with public sewer.

These two development techniques will provide for the dedication and/or setting aside of lands for public and/or common open space purposes.

The amount of land to be required for open space/recreational purposes within the planned unit development provisions should be at least 25 percent of the total site. This land should be located and be of such character as to be usable for the recreation purposes intended. These provisions should provide between 3,000 and 5,500 square feet of open space per dwelling unit. By using these zoning techniques, the Township accomplishes:

- The establishment of convenient and necessary open space areas concurrent with residential development.

- The saving of tax revenues which then can be allocated to other capital project expenditures.

3. As part of the municipal recreation complex, construction of a recreation facilities building should be considered. This facility would include space for multi-purpose recreation programs, activities and offices.

4. Access to the existing Township recreation facilities should be continuously monitored to assure the availability of these facilities to residents on a priority basis.

5. Each existing village area and all new major housing development should be provided with a recreational minimum service. This service should include, at the least, a playground and playfield.

6. Ordinances regulating the development and design of open space/recreation areas should be implemented. These ordinances should include improvement standards, and address ownership and maintenance responsibilities.

* * *

CONSERVATION PLAN

PURPOSE

The purpose of the Conservation Plan is to provide for the preservation, consideration, and utilization of natural resources. These efforts shall include to the extent appropriate, energy, open space, water supply, forests, soil, marshes, wetlands, rivers and other waters, fisheries.

INTRODUCTION

Among the specified purposes enumerated within the Municipal Land Use Law (MLUL) for the implementation of land development controls are the following:

1. To secure safety (of the municipality) from fire, flood, panic and other natural and man-made disasters,

2. To promote the establishment of appropriate population densities and concentrations that will contribute to the well being of persons, neighborhoods, communities and the regions and preservation of the environment, and

3. To promote the conservation of open space and valuable natural resources and to prevent urban sprawl and degradation of the environment through improper use of land.

In light of the above stated purposes of the MLUL, the logical starting point of any municipal land management plan is with an inventory of the resources and naturally-occurring conditions within the municipality. Such an inventory will not only provide a reasonable basis for determining the location of those land areas most suited for development, but also to identify those areas which require conservation and/or protection so that the basic purposes of the land management program are eventually realized. As presented within this section, the primary objective of the land use element of a master plan consists of the identification of those natural conditions and resources occurring within the municipality, and an evaluation of the "opportunities and constraints" which they exercise on the development potential of the land areas therein. Together with input from the other sections of the land use element, the interpretative data from a natural resource inventory helps provide the framework required by law, for determining within this element of the master plan, the standards of population density and development intensity appropriate for the municipality

The Conservation Plan provides the Planning Board with essential information which must be considered in formulating any future plan for the physical development of Lower Alloways Creek Township. The physical characteristics information is most critical in rural municipalities such as Lower Alloways Creek where there are no public water facilities and only limited public sewerage facilities.

The analysis of the municipality's physical characteristics is organized as a series of separate investigations, each dealing with a particular environmental factor. Each section discusses the intrinsic characteristics associated with each of the factors and relates the characteristics to the capacities and limitations of the lands to absorb future community development.

PHYSIOGRAPHY

Lower Alloways Creek Township is situated entirely within the inner portions of the geological province known as the Atlantic Coastal Plain physiographic province. Consisting of alternating clay, silt, sand, and gravel the Coastal Plain is characterized by generally flat contours which are only occasionally interrupted by low and gently rolling land masses. Land elevations within Lower Alloways Creek rise from sea level to not more than 30 or 40 feet in the eastern part of the Township. In the extreme eastern portion of the Township the land surface has a pronounced slope and reaches 120 feet above sea level. The topography of Lower Alloways Creek does not pose any significant problems for future development.

CLIMATOLOGICAL CONDITIONS

Climatic data is relevant to an environmental inventory primarily because of the effect climate has upon other parameters, such as the amount and seasonal distribution of rainfall, which in turn affects streamflow, vegetation, soils, water quality, and groundwater levels. Likewise, temperature data is important for determining the duration of the growing season for crops and indigenous vegetation species, and the ability of soils to absorb, drain, or retain water.

Climatic records for Salem County were complied at the Wilmington Weather Bureau Station located at the Greater Wilmington Airport in New Castle, Delaware. The Station is located approximately ten miles west of Lower Alloways Creek. Climatological data has been collected at this location since 1931 and generally presents the weather conditions of the entire county.

Salem County has a humid and temperate climate, which is substantially influenced by the moderating effects on temperature and precipitation by the Atlantic Ocean and Delaware Bay. As a result, winters are milder and summers are cooler than for interior locations at the same latitudes. This is evident in a comparison of temperatures between inland sections of the county and areas along the coast. The moderating effect is caused by land and sea breeze circulation patterns which create a thermal differential when larger scale weather systems are not dominating the wind patterns. The influence which the ocean imparts on local climatic conditions decreases rapidly with distance from the shore.

Lower Alloways Creek Township has an average annual rainfall of 44.5 inches per year, with the monthly distribution of that precipitation relatively even throughout the year (see Table 3). The month of highest precipitation occurs in August with an average of 5.22 inches of rainfall, and the months of lowest precipitation occur in June and February with respective averages of 3.27 inches and 3.25 inches. The amount of precipitation can vary on an annual basis due to the variability of tropical storm patterns travelling northward (see Table). One of the largest rainfalls witnessed in recent decades occurred in July of 1952 when 6.24 inches of rain fell in twenty-four hours. Winds in Salem County generally come from two different directions. In winter, the prevailing direction is from the northwest or the west-northwest, while in summer this shifts to a southerly direction. The mean hourly speed for the entire year is 8.9 miles per hour. March definitely is the windy month with a mean hourly speed of 11.2 miles per hour from the south.

The length of the growing season is 192 days. The average date of the last killing frost is May 7, and the first in Autumn is October 2. While these facts appear precise, they are again an average drawn from many years of data which vary over a wide range. Farmers and gardeners are often not aware that the probability of frost occurrences after the so-called "last day of killing frost" is still 50 percent, since average dates represent median values. Actually the chances of later frosts are much higher since the tables refer to standard level observations and not to the plant habitat which may be only several inches above the ground surface. In the absence of circulating breezes, temperatures can vary 5-10 degrees F or more between the ground surface and the 6 foot height where temperatures are normally recorded. New Jersey data indicates that, even within relatively small areas, differences of about five weeks exists between the dates of first and last frosts in coastal locations versus inland valleys. Under favorable terrain and soil-moisture conditions, the number of frosts near the ground may be a multiple of the 6 foot value, and since the "critical temperatures" indicative of plant tissue damage vary considerably with species, varieties, and phase of development (plant sensitivity generally increasing rapidly with growth), the user of such data will have to study the particular microclimatic conditions of his fields or orchards before he will be able to take maximum advantage of the data.

TABLE 3

AVERAGE MONTHLY TEMPERATURE AND PRECIPITATION

	Temperature		Precipitation
	(°F)		(inches)
January	36.0		3.63
February	35.7		3.25
March	41.1		4.06
April	49.9		3.46
May	59.5		3.53
June	69.0		3.27
July	74.2		4.04
August	73.7		5.22
September	68.4		3.49
October	58.7		3.42
November	48.3		3.73
December	38.3		3.47
Mean Annual Temperature	54.4	TOTAL	44.56

SOURCE: U.S. Department of Commerce, Decennial Census of United States Climate, Climatic Summary of the United States, Supplement for 1951 through 1960 New Jersey, NJ. 86-24.

TABLE 4

AVERAGE RAINFALL INTENSITY

Storm Frequency (Years)	Storm Duration (minutes)	Mass Rainfall	Average Rain Fall Intensity (Inches/Hour)
2	15	0.81	1.50
	30	1.00	
	60	1.50	
	120	1.75	
5	15	0.90	1.75
	30	1.40	
	60	1.75	
	120	2.00	
10	15	1.12	2.25
	30	1.70	
	60	2.25	
	120	2.60	
25	15	1.25	2.75
	30	1.90	
	60	2.75	
	120	3.10	

The average rainfall (intensity in inches/hour) for frequencies of 50 and 100 year storms is 3.25 and 3.75 respectively for Salem County.

SOURCE: U.S. Department of Commerce, Weather Bureau records.

The vegetative growing season is actually much longer then the "frostless season" since plant growth generally starts when the average temperature rises above 43 degrees F, and dormancy begins in the fall when the average temperature falls below this biological threshold. Individual plant species have their own critical periods based upon individual tolerances to temperature.

GEOLOGY AND GROUNDWATER

The geology of an area is a major determinant of available groundwater resources, and also serves as parent material for local soils. The relationship between the Township's geology and groundwater resources will be explained in this section while the relationship between geology and soils will be discussed in a later section.

Lower Alloways Creek is located within the Atlantic Coastal Plain physiographic province. The unconsolidated sediments of the Coastal Plain comprise a stratigraphic sequence of intended sands, silts, gravels and clays, which generally dips toward the southeast. The Township is underlain by a thick sequence of terrestrial and marine strata deposited on a precretaceous basement surface. The lowermost sedimentary units underlying the site consist of early Cretaceous strata which are non-marine in origin. A series of stratigraphic units referred to as the Potomac Group represent the early Cretaceous sediments.

The Upper Cretaceous strata consist of a sequence of formations which record the change from non-marine deposition. These stratigraphic units are the Raritan and Magothy Formations, as well as the formations of the Matawan and Monmouth Groups.

The Raritan Formation is primarily continental in origin. The Magothy Formation is both continental and marine in origin. Lateral changes in character of individual beds, similar lithologies and sparseness of data make it difficult to differentiate between these units. The Raritan and Magothy Formations include the unconsolidated material that is above the bedrock and below the Merchantville Formation. The Raritan Formation is composed of light-colored quartzose sand and some gravel and variegated clays. The Magothy Formation typically consists of alternating beds of fine to occasionally coarse-grained quartz sand and fine gravel.

The Matawan Group is represented by the Merchantville, Woodbury, Englishtown, Marshalltown and Wenonah Formations. The Merchantville Formation is a strongly silty to clayey sand in which quartz is the major constituent. The term marl frequently appears in the drillers' descriptions of this formation. The Merchantville Formation is as much as 85 feet thick, has a width of outcrop ranging from 1/2 to 1 1/2 miles and dips southeastward at about 45 feet per mile.

The Woodbury clay is overlain conformably by the Englishtown Formation, where the latter is present and is overlain unconformable by the Marshalltown Formation where the Englishtown is absent. Late Cretaceous marine fossils are abundant in the Woodbury clay. The width of the Woodbury outcrop ranges from 1 to 2 miles. This formation has a thickness of as much as 90 feet and it dips southeastward at about 40 feet per mile.

The Englishtown Formation is strongly silty to clayey, very fine grained, poorly to moderately sorted and typically unstratified. The Englishtown is described by well drillers as a white sand with occasional hard streaks, and an olive-gray and pale yellow clay. This formation is variable in thickness (up to 40 feet thick) and dips to the southeast at about 35 feet per mile.

Quartz and glauconite in nearly equal proportions constitute the bulk of the Marshalltown Formation. This formation is abundantly fossiliferous and is described by drillers as having a hardpan at the top of the formation and containing marl and clay. The outcrop of the Marshalltown has a width from 1/2 to 1 mile. The formation is as much as 45 feet thick and it dips to the southeast at about 35 feet per mile.

The Wenonah Formation and overlying Mount Laurel sand are often difficult to separate in subsurface geologic logs and are mapped as a single unit. They also constitute a single hydrologic entity and therefore are discussed as one unit.

Only the two oldest formations of the Monmouth Group are present in the Township. These are the Mount Laurel and the Navesink Formations. The Mount Laurel sand was deposited in a relatively near-shore environment during a marine regression, while the overlying Navesink Formation was deposited in the deeper water shelf.

The Mount Laurel consists of medium to coarse-ground quartz and glauconitic sands. The major constituents are quartz, feldspar, and glauconite. The Mount Laurel has a distinctive "salt and pepper" appearance and is noticeably fossiliferous in outcrop and frequently in subsurface.

The Navesink Formation is characteristically a glauconitic sand with varying amounts of silt and clay. This formation conformably overlies the Mount Laurel Sand. The contact with the overlying Hornerstown Sand is gradational, the transition taking place within a few feet. This formation is commonly described by drillers as marl or greensand although they may also indicate the presence of clay, silt, sand, shells, or pebbles. The combined thickness of the Navesink and Hornerstown Sand ranges from 30 to 52 feet. The formation dips southeasterly at approximately 35 feet per mile.

The Tertiary strata in the Township consist of Hornerstown, Vincentown and Kirkwood Formations. The Vincentown and Hornerstown stratigraphic units consist predominantly of glaucointe sand deposited in an inner and mid-shelf marine environment. These units are unconformable overlain by the near-shore marine regressive sand and clay of the Kirkwood Formation. The thickness of this formation ranges from 14 to 20 feet in the Township and consists of fine-to-medium sand and 25-40 percent silt.

The Vincentown Formation conformably overlies the Hornerstown Sands. Because of the erosional relief on its upper surface, both the thickness of the Vincentown Formation and the elevation of its upper contact is somewhat variable. The Vincentown consists of highly fossiliferous beds, limesand, limstone, sandstone, and slightly glauconitic and micaceous quartz sand. This formation has an estimated maximum thickness of about 160 feet.

The Kirkwood Formation is typically characterized by thick beds of dark-colored clays, some silt, and layers of fine-grained micaceous quartz sand. The lower part of the formation is mostly thickbedded, very fine-to fine grained sand and is typically micaceous. Drillers logs indicated that the Kirkwood is primarily a clay that contains occasional fine-grained sand or shells. Well logs indicate that the formation is highly variable, consisting of about 60 percent clay or silt and about 40 percent medium-grained quartz sand. The Kirkwood unconformable overlies the Manasquan and Vincentown Formations and dips southeastward at approximately 18 feet per mile.

Interbedded aquifers and aquicludes (some of the strata may be more accurately described as aquifers rather than aquicludes) of Cretaceous, Tertiary and Quaternary ages underlie the Coastal Plain. River bed sand and gravel compose the first aquifer encountered, which is called the shallow aquifer. Grayish-brown clay belonging to the Kirkwood Formation underlies the river bed sand and gravel. The Kirkwood clay is underlain by a second aquifer, composed of the basal sand of the Kirkwood Formation, and the upper sands of the Hornerstown formation. A direct hydraulic connection exists from one sand layer to the next; therefore, for analytical purposes, the combination of these three sand units is referred to as the Vincentown Aquifer.

This formation has been developed for domestic and farm supplies. Reported well yields range from 5 to 175 gallons per minute (gpm). The Kirkwood is recharged by precipitation on its outcrop area and in areas where it is overlain by permeable sections of the Cohansey Sand or materials of Quaternary age. Much of the water that recharges the aquifer in and near the outcrop is discharged locally to nearby streams. Few data on the chemical quality of Kirkwood water are available, however, available data suggests that the water may be used for most purposes with little or no treatment.

The Mount Laurel and Wenonah Sands, referred to herein as the Mount Laurel-Wenonah aquifer, are separated from the overlying Vincentown Formation by a 40 foot thick aquitard, consisting of Hornerstown and Navesink formations. These two formations function as one aquifer and is an important source of water for future development. This formation is the primary water supply currently utilized in Lower Alloways Creek.

Clayey and semiconfining Hornerstown Sand and Navesink Formation underlie the water table aquifer and have a combined thickness of about 32 feet. The top of the Wenonah and Mount Laurel aquifer which underlies the Hornerstown and Navesink Formations occurs at about 84 feet below land surface. This aquifer is about 90 feet thick and is underlain by the confining Marshalltown and older formations.

Groundwater recharge to the Wenonah and Mount Laurel aquifer, downdip from the outcrop, is derived mainly from vertical leakage from overlying aquifers. In the outcrop area some recharge occurs as well as discharge to local streams draining the area. Water from this aquifer generally requires treatment for use in domestic and most industrial supplies. Treatment for the removal of hardness is also common.

Underlying the Mount Laurel-Wenonah aquifer are the Marshalltown Formation; the Englishtown sand; the Woodbury clay; the Merchantville clay; and the Raritan and Magothy Formations. From this group only the Raritan and Magothy Formations constitute a significant aquifer in Lower Alloways Creek. The remaining formations are aquitards and aquicludes.

The Raritan and Magothy Formations are considered as a single unit because there is evidence that the aquifers in them are connected with each other. The Magothy Formation is overlain by clay layers which prevent groundwater movement from shallow aquifers. The Raritan Formation is underlain by impermeable zones which prevent hydraulic communication with deeper aquifers. The combined Raritan-Magothy Formations have a maximum thickness of 475 feet near the outcrop area.

Yields of up to 860 gallons per minute from individual wells have been reported in the outcrop area along the Delaware River. The major sources of recharge in the outcrop area include precipitation, infiltration from surface water bodies, and leakage from underlying or overlying formations. The natural zones of discharge are also located in the outcrop areas. Chemical analyses indicate that most of the water from parts of the aquifer not contaminated by salt water is of good chemical quality.

The geologic characteristics within the Township provide opportunities for land mining activities to extract sand, clay and gravel. Although this industry is not significant, land mining activities have the potential to degrade water quality and adjacent roadways if not regulated properly. The Township should consider the need for extractive industries and develop the necessary regulations to control adverse impacts to the environment.

WETLANDS

The Wetlands Act of 1970 (N.J.S.A. 30:9A-1 et seq.), the companion Wetlands Order and the recently enacted New Jersey Freshwater Wetlands Protection Act together form the most restrictive of the environmental protection controls in the State of New Jersey. Plate generally indicates the location of wetlands, as delineated by the United States Department of the Interior National Wetlands Inventory (NWI), within Lower Alloways Creek Township. Approximately 54 percent or 16,500 acres of the Township's total land area can be classified as either surface water or wetlands. Precise information concerning the degree to which any particular property is affected by the Wetlands Act is recorded in the Office of the Salem County Registrar of Deeds and is indexed as a judgment. A copy of the order and notification of the wetlands determination has been sent to owners of all properties so affected and interested persons may inspect the official county records. The County Planning Department has copies of the NWI maps for Lower Alloways Creek which show the general location of all freshwater wetlands. A wetlands overlay map at a scale of 1" = 2,000' was prepared as a component of this Master Plan and is available for review at the Municipal Building.

Coastal wetlands act as a physical barrier absorbing the impact of coastal storms. Freshwater wetlands serves many important functions including the protection of drinking water supplies, flood and storm damage protection, erosion control and habitat for a myriad of fish and wildlife species. By filling the wetlands to accommodate new community development, this buffering effect and important natural habitats are lost. Residential and commercial development located on filled wetlands is extremely susceptible to wave and water damage due to its proximity and lack of protection from flood waters.

In years past, wetlands presented sufficiently insurmountable obstacles for development and urbanization was diverted to other undeveloped areas; thereby insuring the retention of the wetlands in their natural state. However, as land has become more scarce and the demand for developable acreage has increased, the continued protection of wetlands has been jeopardized. Moreover, modern engineering and construction techniques have enabled marshes and wetlands to be filled for the purposes of accommodating new development. Unfortunately, where this accommodation has occurred, the intrusion into the wetlands has unleashed entirely new sets of environmental problems. As an example, pesticides used for mosquito control have been applied indiscriminantly over wetlands and non-wetlands areas alike. Research by the New Jersey Department of Environmental Protection has discovered a number of persistent (non-biodegradable) pesticides present in wetlands' vegetation. The repeated dosages have only increased the concentrations of the pesticides in fish, water fowl and other members of the wetlands ecological system. This continual and persistent pesticide application may have long-term detrimental effects to man as well as to the environment.

Recognizing the long-range value of the wetlands for social, economic and aesthetic purposes, and the ever increasing threat of their loss, the State of New Jersey enacted both the Wetlands Act of 1970 and the accompanying Wetlands Order to insure that future development in the coastal areas will be compatible with the protection of this unique environment. In recognition of the importance of the State's freshwater wetlands, the New Jersey Freshwater Wetlands Protection Act was passed into law in July 1987.

Activities which now or may in the future take place on coastal wetlands fall into two general categories, both of which require permits from the Commissioner of the New Jersey Department of Environmental Protection. A third category consists of "prohibited activities," for which no permission will be granted, including waste and sewage disposal and, with some exceptions, the application, disposal or storage of pesticides.

Regulated activities requiring a permit are differentiated on the basis of their potential impact on the wetlands. Those which pose only a minimal threat to the environment are termed "Type A" activities and include:

1. Cultivation and harvesting of naturally occurring agricultural or horticultural products;

2. The excavation of a small "mooring slip;"

3. The maintenance or repair of bridges, roads or utilities (repairs necessitated by a natural disaster do not require a permit; however, the Commissioner must be notified within seven days after the initiation); and,

4. The construction of catwalks, piers, footbridges and observation decks provided they are constructed on pilings and the width of the structure is not more than twice the clearance between the structure and the surface of the wetlands.

Regulated activities which have the potential of disrupting the environment to a greater degree are classified as "Type B" activities and include:

1. The installation of utilities;

2. The excavation of boat channels and mooring basins;

3. The construction of impoundments;

4. The construction of seawalls;

5. The diversion or appropriation of water;

6. The use of pesticides, except those applied directly to the skin or clothing of an individual for the purpose of repelling insects;

7. The driving or causing to pass over or upon wetlands any mechanical conveyance which might alter or impair the natural contour of the wetlands or the natural vegetation; and,

8. The construction of any structure, filling or excavation except as otherwise provided in the Wetlands Order.

The permit application procedure for "Type A" activities is less severe than that which is required for "Type B" activities. Essentially, an applicant for a "Type A" activity must notify the local governing body of the municipality in which the property is located and describe the proposed activity. A copy of this notification is then sent with the completed application form to the Department of Environmental Protection. Since the "Type B" activities pose greater threats to the wetlands environment, a more detailed application procedure is specified. In addition to the information contained in "Type A" applications, applicants for a "Type B" permit are required to submit a detailed Environmental Impact Statement and a public hearing must be held by the Department of Environmental Protection.

The following activities are exempt from the requirement of a freshwater wetlands permit and transition area requirements unless such permit is required by another state regulatory agency:

1. Normal farming, silviculture and ranching activities, harvesting for the production of food and fiber, or upland soil and water conservation practices;

2. Construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance of drainage ditches.

3. Construction or maintenance of farm roads or forest roads constructed and maintained in accordance with best management practices to assure that flow and circulation patterns and chemical and biological characteristics of freshwater wetlands are not impaired.

4. Normal harvesting of forest products in accordance with a forest management plan approved by a State Forester;

5. Areas regulated as a coastal wetland pursuant to P.L. 1970, C.272.

6. Projects for which (1) preliminary site plan or subdivision approvals from the local authorities pursuant to the "Municipal Land Use Law" prior to the effective date of the Act, (2) preliminary site plan or subdivision applications have been submitted prior to June 8, 1987, or (3) permit applications have been approved by the U.S. Army Corps of Engineers prior to the effective date of the Act.

7. The exemptions in subsections 1-3 shall not apply to any discharge of dredged material into a freshwater wetland.

Practically all other activities in wetlands are regulated by NJDEP including:

1. Excavation, removal, or dredging of aggregate material of any kind;

2. Drainage or disturbance of the water level or water table;

3. Dumping or filling of any materials;

4. Driving of pilings;

5. Placing of obstructions;

6. Destruction of plant life that would alter the character of the freshwater wetland.

In addition to strict regulation of activities in identified wetland areas, the Act also calls for the development of a system to classify freshwater wetlands based upon criteria which distinguish among wetlands of <u>exceptional</u> resource value, <u>intermediate</u> resource value and <u>ordinary</u> resource value. The particular resource value assigned to a wetland is based on their utilization by threatened or endangered species, associated water quality and vegetation density or diversity.

This classification system is critical to the establishment of transition areas (buffers) which are intended to protect wetland environments from the effects of development. The State has determined the width of transition areas as follows:

1. No greater than 150 feet nor less than 75 feet for a freshwater wetland of exceptional resource value;

2. No greater than 50 feet nor less than 25 feet for a freshwater wetland of intermediate resource value.

Wetlands exhibiting an ordinary resource value are not subjected to any transition area requirements. The absence of State-mandated buffer requirements does not necessarily preclude the Township from instituting such buffers if desired. Local ordinances may be more restrictive than the Act in their effect on wetlands properties.

SOILS AND COMMUNITY DEVELOPMENT

Soils have inherent characteristics which pose various kinds and degrees of limitations for community development. The Soil Survey Of Salem County, prepared by the United States Department of Agriculture, Soil Conservation Service (1969), recognizes eighteen (18) major soil types in Lower Alloways Creek.

Table 5 summarizes the kinds and degrees of limitations for development presented by each soil type. The first column of the table identifies the U.S.D.A. map publication symbol while the second column gives the name of the specific soil series.

It should be understood and emphasized that the discussion and mapping of soils requires a certain degree of generalization. The information presented herein provides significant and useful criteria concerning the developmental suitability of different portions of the Township, which information must be factored into the overall planning process. However, upon development of any particular lot or area of the Township, more specific information will be necessary which can only be accomplished with on-site soil sampling and testing.

The criteria used for rating the developmental suitability of the various soils in the Township are as follows:

On-Site Disposal of Septic Effluent -

Although residents in Canton, Hancocks Bridge and Harmersville have access to public sewer, the remainder of the Township continues to rely on individual septic systems. Recognizing that the extension of sewerage throughout the Township is unlikely in the near future special attention must be given to the ability of soils to adequately accommodate septic disposal systems. To function properly, septic systems require soils with good, but not excessive, drainage which can absorb septic effluent yet filter it sufficiently to prevent contamination of the potable ground water sources.

The septic suitability of local soils is indicated on Table 5. A septic suitability overlay map at a scale of 1" = 2,000' was prepared as component of this Mater Plan and is available for review at the Municipal Building. The criteria which were used to rate the degree of limitation (slight, moderate or restrictive) for septic system are: high or seasonally high water table, the susceptibility of the area to flooding, permeability, and slope. It should be understood that the risk of ground water pollution varies for any given soil and is dependent upon the permeability of the substratum. Additionally, soils with only moderately high water table levels are rated as having moderate limitations with the assumption that deep drainage will be needed in order to lower the water table.

Percolation tests performed in accordance with the standards set forth in Chapter 199 of the Public Laws of New Jersey are used in determining the suitability of a specific home site for on-site sewage disposal and in suggesting the proper design and location of the septic system.

Foundations for Low Buildings -

This rating is based upon soils undisturbed to a depth of five (5) feet and assumes the construction of single family dwellings or other structures with similar foundation requirements. Specifically excluded are buildings more than three (3) stories high or buildings with foundation loads in excess of those equal to a three (3) story dwelling.

Criteria used are: susceptibility to loading, depth to water table, allowable soil pressure and slope.

On-site investigations are needed for special placements of buildings and utility lines and for detailed designs of foundations.

Home Sites and Landscaping -

Criteria used are: natural fertility, available water capacity, natural drainage and slope.

Streets, Parking Lots and Subdivisions -

For these ratings, it is assumed that the roads will be of the hard surfaced type similar to existing roadways within the municipality. Criteria used are: flood hazard, natural drainage, slope, stoniness, rockiness, coarse fragments, texture, susceptibility to frost heave and depth to bedrock.

Athletic Fields -

These ratings are for uses such as baseball, football, and soccer activities where there is intensive traffic. It is assumed that some grading will be needed but that no soil material will be brought to the site from other sources.

Criteria used are: depth to seasonal high water table, soil texture (dust hazard and coarse fragments), soil permeability (time required for drainage after heavy rainfalls), stream overflow hazard and slope.

Parks and Play Areas -

These ratings apply to soils considered for intensive uses such as park-type picnic areas. It is assumed that most vehicular traffic will be confined to access roads. Soil suitability for growing vegetation is not a part of this guide but is an item to consider in the final evaluation of a site.

Criteria used are: flood hazard, depth to seasonal high water table, slope, stoniness and surface texture (potential traffic dust).

Lawns -

It is assumed that soil material already at the site will be used. No importation of fill or topsoil is considered in the ratings.

Criteria used are: natural fertility, available water capacity, natural drainage and slope.

Sanitary Landfills -

This rating pertains to the trench type landfills that are six to twelve feet deep and are compacted at the bottom. Disposed material is covered daily with six inches of local soil; final soil cover is at least two feet thick. Material placed in a sanitary landfill yields gases, liquids and heat as products of biological decomposition. Placement of waste below the water table results in putrefactive anaerobic decomposition with high proportions of unstable compounds. Pollution of the water table aquifer is thus inevitable.

Criteria used are: depth to water table, stream overflow hazard, texture of soil horizons from five to fifteen feet (for filtering qualities and workability) and slope. Criteria are the same for area-type landfills except that soil texture, depth to bedrock, stoniness and rockiness are not considered as important as in the trench type, since cover material is transported from other locations.

Cemeteries -

Criteria used are: depth to water table, slope and flooding.

SOIL ASSOCIATIONS

The following analysis of soil types represents a sketch of the seven soil associations found in Lower Alloways Creek and the major soils which compose them. A soil association is a landscape that has a distinctive pattern and proportion of soils. An association gives a general impression of the type of soils found in an area and their suitability for different land usage.

Tidal Marsh-Made Land Association

This association consists of organic silts subject to flooding. The soils are fine to very course dredged river materials found on the flats along the Delaware River.

> Tidal Marsh makes up approximately 52 percent of the total acreage of Lower Alloways Creek. The soil material is mostly organic matter and alluvial silts over beds of sand, clay or gravel. Tidal marsh is best suited to habitats of water fowl and muskrats. Shooting and trapping have been boosters to the economy of Lower Alloways Creek for generations. Vegetation on the marshes is governed by the salt content of the water; grasses, reeds, and sedges are the predominant vegetation. Because of the severe flooding hazard, the high water table, the extremely slow permeability and the unstable site for buildings, the marsh poses severe limitations for most uses other than preservation as wildlife sanctuaries and trapping areas. However, dredged river materials after drained and settled do have potential for commercial and industrial uses. Such treatment has provided the land for Hope Creek and Salem nuclear generating facilities. Although not a part of the Tidal Marsh-Made Land Association, fresh water marsh is similar in that it is frequently covered by water. These marshes occur inland and are mostly along the large streams which are affected by tides. In addition, there are some areas of fresh water marsh in closed depressions at higher elevations. These marshes have a much lower salt content than tidal marsh.
>
> The risk of flooding, a high water table and the unstable soil material severely limit commercial, residential, or agricultural uses of this land type. Marsh is suited to wildlife habitat and to limited production of trees.

Mattapex-Othello-Woodstown Association

This association is composed of dominantly silty, moderately to poorly drained, nearly level to gently sloping soils along the Delaware River. This association occupies approximately 21 percent of the total acreage of Lower Alloways Creek. The major soils composing this association as found in Lower Alloways Creek are:

Mattapex Silt Loam

Mattapex silt loam comprises approximately 40 percent of the area mapped as Mattapex-Othello-Woodstown Association. The surface relief of this soil varies from nearly flat (0-2% slope) to gently sloping (2 to 5% slope). The drainage varies with the degree of slope from very slow to moderately slow permeability. In the level areas, the water table is high with water standing on the surface during wet weather. The areas with increased slope have a moderately high water table with surface water standing only at the lower parts of long slopes. The soils have a high water holding capacity but a slow intake rate.

These conditions pose moderately strict limitations on disposal of sewage effluent and moderate limitations on the soils as building sites.

The natural vegetation is oak forest but most areas have been cleared and are now used for hay, pasture, corn, soybeans, vegetables, sod or nursery crops. Artificial drainage is needed if alfalfa or high-value vegetables are to be grown.

Othello Silt Loam

Approximately 40 percent of the area mapped for the Mattapex-Othello-Woodstown Association is Othello Silt Loam. This soil is similar to the Mattapex Silt Loam with more severe limitations. It has moderately slow permeability particularly in the subsoil. Othello Silt Loam usually possesses a high water table and high water holding capacity with a moderately slow intake rate which results in severe limitations on disposal of sewage effluent, and on homesites. The slope varies from 0-3%. The lack of slope adds to the problem of excess water in the soil and on the surface which severely limits the use of this soil for farming. Open ditches must be dug to remove excess water in order to farm the land. The natural vegetation is mostly oak or sweetgum, however, when the soil is properly drained, corn, soybeans, red clover, hay and pasture may be grown. The areas where this soil is found is best used as sites for ponds for irrigation, wildlife and recreation.

Woodstown Sandy Loam

Woodstown Sandy Loam comprises approximately 10 percent of this association with the remaining 10 percent being a mixture of minor soils. Woodstown Sandy Loam has moderate permeability, moderately high water table, moderate water holding capacity and a moderate intake rate. There are moderate limitations on septic fields and homesites. The slope usually ranges from 0-5%. The natural vegetation is oak but if the soil is adequately drained, vegetables, fruit and other general crops may be grown.

Mattapex-Matapeake Association

This association consists predominantly of silty, moderately well drained and well drained, level to strongly sloping soils.

Matapeake Silt Loam

Soils identified as Matapeake Silt Loam have a typical profile which exhibits a plow layer of dark-brown, friable silt loam, a subsoil of dark-brown silt, and a deeper layer of yellowish-brown sandy loam. The substratum, to a depth of 10 feet or more, is stratified, loose coarse sand and gravel. If simple erosion-control methods are used, this soil is suitable for a wide variety of crops. It has few limitations for residential, commercial and industrial uses.

Galestown-Sassafras-Berryland Association

This association is made up of sandy, excessively drained to poorly drained soils on low terraces along the Delaware River.

Pocomoke Sandy Loam

The Pocomoke series consists of very poorly drained, moderately coarse textured soils. They have a substratum of loose, sandy material that in some places is mixed with gravel. In a few areas the surface soil is mucky and thicker than normal. Drainage is needed if the soil is farmed. Due to an elevated water table, this soil has severe restrictions for on-site septic disposal and building foundations.

Sassafras-Woodstown-Fallsington Association

This association is made up of sandy, well-drained to poorly drained, nearly level to gently sloping soils: These soils cover approximately 9 percent of the total area of Lower Alloways Creek. The specific soils and their characteristics as found in Lower

Alloways Creek are as follows: (Each major soil occupies approximately 25 percent of the area mapped in Lower Alloways Creek for this association. The remaining 25 percent is made up of many minor soils).

Sassafras Sandy Loam

This soil has a gently undulating surface with slopes varying from 2 to 5 percent. Sassafras Sandy Loam is well drained, with especially rapid permeability in the substratum, and a low water table. The soil exhibits a moderate water holding capacity and moderate intake rate with slight limitations on disposal of sewage effluent on site, and use as building sites. The natural vegetation is oak with scattered pine, but most crops are able to grow. The most serious restrictions are imposed by erosion, especially in areas where time and erosion has thinned the surface layer to ten inches, or less.

Woodstown-Dragston Sandy Loam

These soils are characterized by gently sloping (0-5% slope) land with moderately high water table, moderate permeability, moderate water holding capacity and moderate intake rate. Where there is a clayey substratum (usually 40-60 inches below the surface) it is likely to limit severely the use of the area for septic fields and building sites. Natural vegetation is forest consisting mostly of oak. If the soil is adequately drained, it is suited for cultivation of vegetables, fruit, sod, nursery crops and general crops. Controls on erosion are needed on some of the long slopes.

Fallsington Sandy Loam

Fallsington Sandy Loam is nearly flat with a surface range of 0-3% slope. The soil is moderately permeable, has a high water holding capacity, moderate intake rate but a high water table which imposes severe limitations on disposal of sewage effluent and foundations for buildings. Drainage is needed before one can irrigate. The natural vegetation is pin oak, willow oak, white oak, red maple, gum trees, blueberry, and pepperbush. When the area is drained and properly irrigated, more general crops and late planted vegetables can be cultivated.

Sassafras-Evesboro-Downer Association

This association consists of soils that are sandy, on a gently sloping to a strongly sloping landform. It comprises approximately 14 percent of the area in Lower Alloways Creek. In Lower Alloways Creek, the major soils comprising the area mapped as this

association are not typical of the Sassafras-Evesboro-Downer Association, but exhibit similar characteristics.

Evesboro Sand

This soil occupies approximately 25 percent of the area mapped as this association and consists of deep, excessively drained very sandy coarse-textured loose sediments that were deposited by water and/or wind. The permeability and intake rate are rapid; moisture holding capacity and organic matter control are low; and natural fertility is very low. Though the soil is rapidly permeable, its use for disposal of septic effluent may cause pollution because the porous soil does not filter the waste properly. There are only slight limitations on buildings. The natural vegetation is pine and oak trees and low-bush blueberry. The best use for this soil is for trees, wildlife habitat or recreation. Special crops such as sweet potatoes, grapes, peaches and pumpkins may be grown but irrigation and protection against wind erosion and sandblasting must be provided. These dangers are increased due to flatness of terrain (0-5% slope).

Berryland Sand

Berryland Sand is found to make up another 25 percent of the area in this association, an unusually high percentage for this association. The surface range of this soil is nearly level. This soil is found on the low flats along most of the streams and is usually very poorly drained. Where the soil has not been artificially drained, the water table is at the surface during winter and early in spring, but stays several feet below the surface during summer. This high water table severely limits septic disposal and combined with low shear strength severely limits building sites. Berryland sand has a low natural fertility. Permeability is rapid. The water holding capacity is moderately low. The soil texture is so coarse that capillary action cannot bring water to the root zone in summer when the water table is low. The natural vegetation is red maple, pitch pine and holly and an undergrowth of high-bush blueberry. Where cultivation is tried, low grade crops may grow. The high water table also limits use for commercial or industrial use.

Galestown Sand

This soil too, makes up an unusually high percentage (25%) for this association. This soil is coarse - textured, and excessively drained. Permeability is rapid, water holding capacity is moderately low, and the

water table normally is more than 60 inches below the surface. The surface ranges in slope from 0 to 5 percent. The natural fertility and organic content are low with the soils being subject to wind erosion. Irrigation is needed for all crops other than asparagus. Tomatoes, peppers and other early vegetables are grown. There are no severe limitations on disposal of septic effluent or building sites but the wind erosion, shifting sands and natural draughty nature of the soil do limit development.

Keyport-Elkton Association

The soils in this association are loamy and silty, moderately well-drained and poorly drained, level to moderately steep soils overlying slowly permeable clays. This association occupies only 2 percent of the area in Lower Alloways Creek.

The soils found within the area designated as this association in Lower Alloways Creek are not representative of the Association. The major soil is Elkton-Bayboro sandy loam (described below), there are no major areas of Keyport soils. The area consists of a variety of silty or sandy loams spotted throughout.

Elkton-Bayboro Sandy Loam

The soils designated as Elkton-Bayboro Sandy Loam are slowly permeable except for the sandy surface layer, have a high water holding capacity, and a slow intake rate which severely limits disposal of septic effluent and foundations for buildings. The slope ranges from 0-2 percent. Organic matter and natural fertility are moderate. If the surface is drained well, some cultivation can take place. Corn, soybeans, hay and pasture are the crops best suited. The natural vegetation is willow oak, white oak and some sweetgum.

DEVELOPMENT LIMITATIONS

Generally poor surface and internal drainage conditions prevail throughout much of the Township. Internal drainage is especially important to the consideration of on-lot sewage disposal as is the presence of a high water table throughout most of the community. Only in the areas overlain with Galestown Sand and Sassafras Sandy Loam are soil conditions such that on-lot sewage systems are acceptable.

The low shear strength of most of the soils in combination with high water tables place further limitations on development. Only the areas overlain with Evesboro Sand, Galestown Sand or Sassafras Sandy Loam are suitable for structures requiring heavy foundations.

The combination of the above limitations to development and the natural amenities in vegetation and wildlife indicate that much of the Township should be preserved for conservation and recreation.

TABLE 5

LIMITATIONS FOR COMMUNITY DEVELOPMENT

Soil and Map Symbol	LAND USE: Disposal of Sewage Effluent (on-site)	LAND USE: Foundations for Low Buildings
Berryland Sand (Be, BP)	R	R
Elkton-Bayboro Sandy Loam	R	R
Evesboro Sand (EvB, EvC)	S	S
Fallsington Sandy Loam(FdA)	R	R
Galestown Sand (GaB)	S	S
Keyport Loam (K1B2, K1C2)	R	M
Keyport Sandy Loam	R	M
Mattapex Silt Loam (MgA,MsC)	M	M
Matapeake Silt Loam (MoB)	S	S
Pocomoke Sandy Loam (Ps)	R	R
Sassafras Sandy Loam (SrB, SrC)	M	S
Woodstown Sandy Loam (WmB, WsB)	M	M
Woodstown-Dragston Sandy Loam (WsB)	M	M
Freshwater Marsh (Fw)	R	R
Tidal Marsh (Tm)	R	R
Sand Pits (Sa)	S	S-M
Made Land, dredged river materials (Mf)	R	S

Key to Limitations

S - Slight ratings indicate little or no limitation, or limitations which are easily corrected by the use of normal equipment.

M - Moderate ratings indicate the presence of some limitation(s) which normally can be overcome by careful design and management at somewhat greater costs.

R - Restrictive (severe) ratings indicate the presence of limitations which normally cannot be overcome without exceptional, complex or costly measures. A restrictive rating does not necessarily render the land completely unsuitable for the use in question.

TABLE 6

LIMITATIONS FOR COMMUNITY DEVELOPMENT

	LAND USE		
	Drainage	Irrigation	Topsoil
Berryland Sand (Be, BP)	High water table;rapid permeability	Moderately low water holding capacity; high water table	Poor; Low fertility & moderately low capacity
Elkton-Bayboro Sandy Loam	Slow permea-bility	High water holding capacity rapid intake rate	Good but poorly poorly drained plastic when wet
Evesboro Sand (EvB, EvC)	Well-drained rapid permea-bility	Low water holding capacity, rapid intake rate	Poor; low fertility low water holding capacity
Fallsington Sandy Loam(FdA)	High water table, moderate permea-bility	High water table moderate water holding capacity moderate intake rate needs drainage before irrigation	Good; but high water table
Galestown Sand (GaB)	Well-drained	Moderately low water holding capacity, moder-ately rapid intake rate	Poor-low fertility moderately low water holding capacity

Mattapex Silt Loam (MgA,MsC)	Water table moderately high seasonally, moderately slow permeability of subsoil	High water holding capacity slow intake rate	Good, but moderately high water table
Othello Silt Loam (OtA)	Subsidence few outlets	High water table, high water holding capacity	Good, but high water table
Sassafras Sandy Loam (SrA, SrB)	Well-drained	Moderate water holding capacity, moderate intake rate	Good
Tidal Marsh (Tm)	Flooded daily few outlets slow permeability	Flooded daily	Flooded daily
Woodstown-Dragston Sandy Loam (WsB)	Moderate permeability water table moderately high	Moderate water holding capacity moderate intake rate	Good-water table moderately high

AGRICULTURAL CAPABILITY

In addition to development capability, the Soil Survey of Salem County has also determined the agricultural capability of Township soils. Ratings of agricultural capability were based on general limitations of a particular soil for farming, damage risk when used for ordinary field crops or sown pastures, and response to treatment. Ratings range from Class I agricultural soil to Class VIII agricultural soil. Class I soils have the least limitations for agriculture while Class VIII have the most. Classes I through IV are agricultural capabilities relating to croplands, whereas Classes V - VIII, because of their additional limitations, are capabilities relating to pasture, range, woodland, or wildlife food and cover. The eight soil classes may be individually defined as follows:

Class I soils	- Have few limitations that restrict their use
Class II soils	- Have some limitations that reduce the choice of plants or require moderate conservation practices
Class III soils	- Have severe limitations that reduce the choice of plants, require special conservation practices, or both
Class IV soils	- Soils have very severe limitations that restrict the choice of plants, require careful management, or both
Class V soils	- Are subject to little or no erosion but have other limitations, impractical to remove, that limit their use largely to pasture, range, woodland or wildlife food and cover
Class VI soils	- Have severe limitations that make them generally unsuited to cultivation and limit their use largely to pasture, woodland, or wildlife food and cover
Class VII soils	- Have very severe limitations that make them generally unsuited to cultivation and that restrict their use largely to grazing, woodland or wildlife
Class VIII soils	- Soils and land forms have limitations that preclude their use for commercial plant production without major reclamation and restrict their use to recreation wildlife, or water supply or to aesthetic purposes

For purposes of this analysis, Class I and II soils were grouped together and designated as prime agriculture lands. Class III soils remain an individual classification, denoting fair agricultural soils while Class IV and above soils were combined since they have less productive value. These groupings emerge in distinct agricultural capability patterns across the Township. Approximately half of the soils in the Township which are not classified as wetlands can be classified as prime agricultural soils. Most of the Township's prime agricultural lands are comprised of Class II soils. However, medium size parcels of Class I soils do occur in the following areas: In the vicinity of Mill Pond Road and Batter Cake lane; on the eastern side of New Bridge Road between Alloways Creek and Beasley Neck Road. Prime agricultural soils represent a scarce resource which must be conserved. Any local or statewide efforts at preserving prime agricultural soils should be primarily directed toward the large areas of prime agricultural soils within the Township.

Many of the Township's Class III soils, although not prime agricultural, are being farmed and, as the result of proper treatment, have become productive lands. This factor should be considered in relation to any future development proposal which competes for the use of these soils. Class III soils mostly occur in small to medium size parcels in the central portions of the Township.

Class IV and above soils, which are unsuitable for crop and many other agricultural activities, occur in the following areas: The Township's wetlands, along surface water bodies such as creeks and streams, and in areas of the Township with high seasonal water tables.

FARMLAND RETENTION

In Salem County, agricultural lands have been on the decline for the past two decades. In recent years this trend has accelerated due to the increased amount of residential development occurring within the County. It is expected that farm land will experience further losses in the face of continued residential and commercial development.

Lower Alloways Creek Township has an extensive and productive agricultural base. In 1976, the Salem County Planning Board estimated that approximately twenty-five (25) percent of the land area in the Township was used for agricultural purposes. Agricultural is one of the most expansive land uses in the Township, and comprised about 7,700 acres of the nearly 29,000 acres of undeveloped land area (Updated figures will be added following an analysis of existing land uses). In addition to significant areas of prime agricultural soils, the Township also contains abundant and easily obtainable sources of water, and a favorable climate. Farmers in the Township have access to local and regional markets.

These resources alone, however, cannot guarantee the continuation of agriculture. Farming must remain competitive like any other business or industry. Farmland is especially attractive for development because it is cleared, has level or gently rolling topography with good drainage and is in private ownership. If farming cannot succeed, alternative land uses, such as housing developments, can prove to be very lucrative. Mounting development pressure in conjunction with the difficulties associated with maintaining viable farming operations create a scenario for farmland conversion. The loss of farmland has been recognized as a state-wide problem, and to counter this trend, a great deal of legislation has been enacted in New Jersey.

The "Farmland Assessment Act" of 1964 was the first state commitment to farming and has become a major legislative incentive for the agricultural community. A preferential property tax on agricultural land helps to counter the effect of rising property values by lowering property taxes. Farms of five acres or more, grossing at least $500 annually during the preceding two years, can qualify for assessment at their agricultural value. Though farmland assessment benefits farmers, its effectiveness for preserving agriculture is limited to areas where high property taxes financially detract from agricultural operations. It is also subject to misuse by landowners who, while biding their time to develop their land, can gain a tax reduction without significantly contributing to the agricultural community.

In 1983 New Jersey became actively involved with the problem of decreasing farmland. The "Right to Farm Act" and "Agricultural Retention Act" were adopted authorizing and supporting local agricultural preservation efforts. The "Right to Farm Act" protects commercial farm operations from nuisance suits against recognized agricultural practices, and applies to farms eligible for farmland assessment producing $2,500 or more annually in agricultural or horticultural products. If farm activities follow recommended agricultural management practices, comply with State and Federal laws, and do not pose a direct threat to public health and safety, then a rebuttable presumption exists that the activities do not create a public or private nuisance. This gives farmers the benefit of the doubt that their farm operations are legal unless sufficient evidence can prove otherwise. Lower Alloways Creek Township has adopted a "Right to Farm" ordinance in an effort to protect agricultural operations.

The "Agricultural Retention Act" of 1983 authorizes the creation of a County Agriculture Development Board (CADB) to establish and administer agriculture retention programs for the long term encouragement of agricultural business and the preservation of agricultural land. County Agriculture Development Boards identify areas within the county where agriculture is the preferred use of land.

Landowners who are excluded from Agricultural Development Areas by the county's criteria may request a special review by the County Agriculture Development Board. The Board may waive one or more criteria to allow inclusion in an ADA if after review it is determined that the land has a reasonable chance of long-term continued agricultural production and will contribute to the success of agriculture in the County.

With the use of certain criteria, the Salem CADB recognizes that all presently farmed areas will not remain in agriculture. Large areas of actively farmed prime soils are more likely to stay in agricultural use than small, marginal, inefficiently operated farmland scattered among development. The Salem CADB generally targets the larger, more viable agricultural areas in their efforts to retain agriculture.

Farm owners in an ADA may enroll in an eight year Farmland Preservation Program with the CADB. In return for having a deed restriction placed on their land to maintain it in agricultural production for an eight year period, a farmer is eligible to apply for a fifty percent soil and water conservation grant equaling $25,000 for the first 100 acres and $60 per additional acre to a maximum of $50,000. The farmer is also eligible to sell the development rights of his land through an easement purchase program. The $50 million "Farmland Preservation Bond Act" of 1985 provides the funds for preservation programs. Approximately $55 million is allocated for soil and water conservation grants and $45 million for the purchase of development rights.

To date, Lower Alloways Creek farmers have enrolled approximately 758 acres in the eight year program. The County has also received preliminary approval on seven applications for easement purchases totalling 1,762 acres. A 475 acre farm in Lower Alloways Creek owned by Richard and Florence Wood is among the seven farms receiving preliminary approval for easement purchase.

If a municipality officially adopts an eight year Farmland Preservation Program, the benefits increase. Land within a municipally approved program cannot be rezoned to exclusive agricultural use for eleven years in order to maintain the voluntary nature of the program. The power of eminent domain cannot be exercised to acquire land in a municipally approved program without the Governor's approval, and public funds cannot be used for non-agricultural development. Agricultural uses of water and energy are exempt from emergency restrictions and agricultural operations are given an irrebuttable presumption of not constituting a nuisance.

The Salem CADB is investigating the feasibility of developing a second program to purchase development rights. This effort would be administered at the County level and would be independent of the state farmland preservation program. This plan would give the county total control over farmland preservation criteria and would provide more flexible financing.

OPEN SPACE

Open space is important for a number of reasons. Since Lower Alloways Creek is totally dependent on groundwater for its potable water, protection of this resource should be a prime consideration in the review of major development proposals. Aquifer recharge areas are particularly susceptible to contamination and must be protected to maintain an adequate supply of high quality drinking water. As previously discussed, wetlands and forests are important because they reduce floods and prevent erosion of steep slopes. Open space also provides visual relief and recreation opportunities.

Areas shown as wetlands on the National Wetlands Inventory (NWI) Maps include all lands in floodplains and lands which have a seasonal water table of 1.5 feet or less below the surface. Areas delineated as wetlands should be left in their natural state to the greatest extent possible. Preservation of "greenways" adjacent to the major stream corridors now may provide the opportunity for their future use as recreation areas. Noting that, by the year 2000, eighty (80) percent of Americans will live in metropolitan areas, "The Report of the President's Commission on American Outdoors" stresses the growing need for convenient outdoor recreation lands and tracts of "green" in the new urban areas. In addition to the functions typically served by open space lands, a successful urban green belt may help to contain the spread of suburban development.

Although the Township's development pattern suggests abundant open space opportunities, most of this open space is private property and is not necessarily accessible to the public. The New Jersey Department of Environmental Protection holds title to approximately 9,000 acres of land in the Township, most of this being within the Mad Horse Creek Fish and Wildlife Management Area. This area is comprised almost entirely of wetlands with the exception of Stow Neck road which provides access. This area provides important habitat for many wildlife species including bald eagle and osprey. The area is utilized by the hunters, fisherman and trappers.

RECOMMENDATIONS

The following recommendations are based on an analysis of natural resources and represent Conservation Plan proposals will require careful review of Township ordinances and determined enforcement and implementation efforts:

1. Adhere to the capacity limits of natural resources in planning and zoning.

2. Require the protection of flood plains, steep slope areas and aquifer recharge areas.

3. Provide for the preservation of all stream and river corridors by the use of incentives, easements and restrictive ordinances. The stream corridor can be defined to include stream channels, contiguous slopes of ten (10) percent or more and wet soils. The corridor buffer could also be expanded to include adjacent sensitive natural areas.

4. Encourage cluster development where public sewers are available in order to create buffers and preserve environmental features.

5. Review and revise all ordinances to remove disincentives for agriculture in those areas intended for retention of agricultural lands.

6. Encourage the long-term use of farming in prime agricultural areas, and the use of agricultural management techniques which minimize soil disturbance, reduce erosion and surface water pollution.

7. Encourage conservation of wood lots and woodland areas.

8. Develop and implement an ordinance requiring submission of an Environmental Impact Statement to monitor the effects of development on natural resource systems.

9. Revise the local "Right to Farm" ordinance to require the subsurface injection of liquid waste within a specified time period to prevent nuisance odors.

* * *

HISTORIC PRESERVATION PLAN

Purpose

The purpose of the Historic Preservation Plan is to indicate the location, significance, proposed utilization and means for preservation of historic sites and historic districts, and identify the standards used to access the worthiness for historic site or district designation.

INTRODUCTION

In recent years our society has become increasingly concerned with the preservation of our cultural resources such as farmsteads, residential settlements and commercial districts. These land uses represent the development and character of the community. Neighborhoods, commercial areas and parks provide a sense of place. Therefore, it is not only important to understand the history of where we live, but also to be aware of our historical resources and plan for their conservation.

Historical analysis can help explain the unique character and specific identity of a community. Through such studies proposals can be made for shaping the future environment of an area which capitalize on the historical aspects of the region. In Lower Alloways Creek, certain factors such as history, its geographic location and its settlement pattern contribute to a more complete understanding of land use.

SETTLEMENT PATTERNS

Prior to the colonialization of Salem County, the area was inhabited by Leni-Lenape Indians. These Indians were semi-nomads, agrarian, non-aggressive people. The Alloways area was named for one of their chiefs, Chief Aloes. The name Aloes has been anglicized to Alloways. The first colonists (Swedish, Dutch and English) arrived in the mid-1600's. The three nations contested for the area until 1664 when the English claim was accepted.

Originally Lower Alloways Creek was a part of Monmouth Precinct which contained over 64,000 acres. In 1760 the State authority granted the inhabitants the power to divide the area into Upper and Lower Alloways Creek Townships. During the course of early development, three villages evolved, Hancocks Bridge, Harmersville and Canton. These were centers of agricultural activity which reached their peak period by 1870. With the railroads by-passing the Township, early attempts at industry in the area failed and the villages and the Township have shown little change since that time. Much of the architecture in the villages indicates substantial growth during the early and mid-1800's. Most of the colonial architecture is to be found in the form of farm residences.

The most important point in Lower Alloways Creek Township, historically and in some other respects, is Hancock's Bridge, a village situated on Alloways Creek. The most interesting structure is the Hancock House, in which occurred the massacre by the British during the Revolution. At one time, this village contained a variety of shops which supported trades and business, and was also a popular shipping point for produce. Harmersville, originally called Logtown, was named in honor Ebenezer Harmer. At one time there we two stores, two blacksmiths, a machinist, wheelwright, an undertaker and cabinet maker, a shoe cobbler and a treasury located here.

Canton, formerly known as New Canton, was settled as a village and post-town, situated near the southeastern boundary of the Township. In earlier times, it was possible for vessels to pass directly to the village, and as late as 1883, Stow Creek was navigable to a landing within two miles of the village. A great amount of gord wood was formerly shipped to Philadelphia from this point.

INDUSTRIAL PURSUITS

The leading industry of this Township has long been agriculture. Early inhabitants expended mush energy in reclaiming marshy lands, and in 1697 constructed a dam across Alloways Creek just above Hancocks Bridge. Due to neglect the dam broke and was never repaired. Millions of tons of wood and lumber have passed this site as have many vessels built further up of the creek. Canning of tomatoes in Hancocks Bridge, and grain mills along Gravelly Run and Stow Creek were early industrial pursuits.

Agriculture has long been the leading industry of this Township, and much work has gone into reclaiming marshy land. In 1697, the inhabitants dwelling on both sides of the Creek obtained a law authorizing the erection of a dam to stop the Creek just above Hancock's Bridge. It was completed, neglected and broken, and was never repaired. Since then, millions of tons of wood and lumber have passed over the site of this dam, and many vessels built further upstream have passed this place. Several canning factories were operated in this area, their principle product being tomatoes. There were also tide mills and water mills, and an unsuccessful grist mill.

REGIONAL INFLUENCES

The early architecture of the buildings found in the Township clearly indicate the strong influence of Philadelphia on the area.

In practice, national traditions are most clearly recognizable as a consistent taste, in a given region, for one set of proportions in preference to another; for certain kinds of materials handled in certain ways; for certain kinds of characteristic roof shapes, sizes, and spacing of floors and windows. As an example, while the smaller units of the Hancock House share characteristics common to folk architecture everywhere, they can also be recognized as typical of Southern rather than Northern colonial buildings (the same general proportions of roof to wall, the same interior arrangements, the same combination of materials commonly used in the early architecture of Maryland, Virginia, or Delaware; but, rarely in Connecticut, the Hudson Valley, or Massachusetts). Considering the main Hancock House, its combination of characteristics is more distinctive still. It represents not merely a national tradition in general, but the expression of a particular region and culture. A narrow box-like shape; a penteave running across the house front with a little pediment in the middle, a cove cornice; a front door approached by a small flight of steps; a symmetrically fenestrated facade and a blank side wall-all characteristic features of a type of house introduced to the Delaware Valley by the buildings of Philadelphia, which in turn were inspired by the house type developed in London after the Great Fire in 1666. Collectively, the several units of the Hancock House reveal how completely the English-speaking settlements had overwhelmed early Swedish cultural patterns by the beginning of the eighteenth century. And, in the main Hancock House, and the dozens like it all over the County, is evidence of how soon all Southwestern New Jersey had become culturally dependent on Philadelphia.

One of the most distinctive features of these Colonial homes of South Jersey is the patterned brickwork; it is a characteristic example of folk traditions and heritage. Far back in history, a love of flat zig-zag patterns had been characteristic of medieval cathedrals, in the diaper-patterned backgrounds of illuminated manuscripts, in Tudor half-timber work, and the stonework of Anglo Saxon monuments. Presumably, though by no means certainly, builders in the English folk tradition brought it to Philadelphia, but in this more sophisticated atmosphere, it never flourished as luxuriantly as the rural setting of Camden, Cumberland, Gloucester, Burlington, and above all, Salem County. Here local builders developed it into striking forms, many of which are still very well-preserved.

HISTORIC SIGNIFICANCE

Of the three villages, Hancocks Bridge is the most significant. It was here that the atrocious massacre by the British during the War for Independence occurred at the William Hancock House on the early morning of March 21, 1778. William Hancock and three other non-combatant Quakers were among those bayonetted in the garrett by the British troops during "the Massacre of Hancock's Bridge."

HISTORIC PRESERVATION

Today we are living in an age of standardization, an age in which social patterns are becoming the same the world over and in which construction methods have become so similar that we no longer have truly regional design. In such an atmosphere of sameness historic buildings and areas take on a completely new function as witnesses of the history of a people and of the skills of past generations.

The case for preservation was clearly defined in 1964 by the National Trust for Historic Preservation in their Report on the Principles and Guidelines for Historic Preservation in the United States with the following statement:

> "While it should be evident to every American that our communities and nation must continue to grow and develop it is equally clear that we must also preserve our heritage of history and architecture if we are to keep our roots and retain what is unique and much of what is handsome in the character of our communities. The two objectives need not be incompatible if there is adequate research, planning and communication among those responsible and concerned."

It is also sound economy that conservation of resources that already exist can give new life to many communities.

HISTORIC SITES

There are 20 sites of historic significance listed in the County Historical Register.

The following residential and other buildings and sites are considered to be of significant historical or architectural value as to warrant preservation:

BEASLEY OR CORNELIA HANCOCK HOUSE

The builder and date of this house are unknown. It was occupied by Thomas Y. Hancock and his daughter, Cornelia, in 1830.

THE JOHN MADDOX DENN HOUSE - 1725

The John Maddox Denn House, just outside of Hancock's Bridge on Alloways Creek is a masterpiece of colonial brick work. It received some of the wounded and dead after the Hancock's Bridge massacre in 1778.

John Maddox, a chandler from the parish of St. Sepulchre in London, came with his family to Salem in 1678, and purchased half of William Hancock's allotment of Hancock Hurst, a manorial tract, situated on the south bank of Monmouth River, now called Alloways Creek. The grandson of the elder Maddox, John Maddox Denn, born in 1693, married Elizabeth Oakford in 1717, and in 1725 built this house.

THE NATHANIEL CHAMBLESS HOUSE - 1730

Nathaniel Chambless and his son emigrated in 1675 as servants to Edward Wade. Prospering, they purchased a tract of land in Monmouth Precinct, now Lower Alloway's Creek Township. Nathaniel Chambless, III, erected this house in 1730.

THE JOHN AND HANNAH OAKFORD HOUSE - 1764

Built by John and Hannah Oakford in 1764, the title of this house has passed many times throughout the years. This house was recently burned in a fire which completely destroyed the interior.

THOMAS SHOURDS HOUSE - 1730

This house, also known as the Creek House, was actually built by Joseph Ware in 1730, a famous son of Fenwick's Colony, who lived and wrote here his ponderous genealogical commentary called History of Fenwick's Colony.

THE WILLIAM HANCOCK HOUSE - 1734

When William Hancock erected his proud mansion with its glorious zig-zag striped brickwork in 1734, he never thought that he would be murdered in the very home he was building. But, it happened that he was so killed, along with three other non-combatant Quakers, on the early morning of March 21, 1778, in the affair which has passed into history as the Massacre of Hancock's Bridge. This event represents the greatest blow of the war in Salem County.

The State of New Jersey purchased the Hancock House and established it as a museum in 1931 displaying furnishings supplied chiefly by the Salem County Historical Society. In 1975, the N.J. Department of Environmental Protection completed extensive renovations of the house and grounds. As a part of this project, the little Swedish log house was converted into a stark white lavatory. This structure is listed in both the State and National Registers. The Hancock House, a shrine to colonial living and especially the Revolutionary War, is visited annually by thousands of people. The Hancock House museum depicts the Revolutionary War history of John Fenwick's colony and shows the life of the colony in its original atmosphere.

QUAKER MEETING HOUSE HANCOCK'S BRIDGE - 1756

This Friends Meeting House, which stands in the village of Hancock's Bridge, has been carefully preserved. It was built on a plot of ground deeded to the Friends in 1753 by William Hancock and displays Flemish bond. The actual construction was done in 1756 and another portion was added in 1784. On special occasions, Friends Meetings are held here.

PADGETT HOUSE - 1735

The Padgett House near Harmersville displays one of the finest examples of intricate glazed brickwork. The diamond design in blue on red brick appears on its eastern wall. The house stands on the oldest land in the County which was granted by John Fenwick to Christopher Whits. The land was passed to James Evans who, it is supposed, built the house in 1735. The building was a hip roofed structure raised later to a peak roof. This building is currently being restored with private funds.

CANTON BAPTIST CHURCH - 1840

In the early 1800's, Baptists from Salem and Cohansey joined to form the first congregation of the Canton Baptist Church. The third pastor of the church was the Rev. Ebenezer Jayne whose gravestone stands in the cemetery. The first church building was eventually sold and a new one erected in 1840. Clay bricks found on a plot of ground north of the church were used in the construction.

SWEDISH CABIN

Log houses are one of the few remaining examples of early Swedish architecture in Southern New Jersey. The log cabin on Smick Road, which was built in the 1700's, is attached to a small 2-story house which was added in the late 1800's. The Township took possession in 1982 and has restored the cabin with careful consideration for materials and craftsmanship. The Historical and Heritage Committee has furnished the cabin and house hand-built furniture similar to what may have been in the original dwelling. This museum is opened to the public on occasion for special events and tours.

These buildings represent a link to our history and should be maintained as near as possible in their original condition. Owners of these structures could seek historical certification on the National Register of Historic Properties.

Many of these early houses are rich in colonial history, are well-preserved, and are attractive, occupied homes today. In the early colonial era clapboard dwellings built of round logs sawed by hand began to appear. With the arrival of the more prosperous families, houses began to be constructed of brick. With pride the owner had the date of construction inserted in one end of the house, often with the embellished addition of his and his wife's initials in unique patterns.

The unusual brick work found on the outer walls of some of Salem County's old houses dates back to France and the Flemish-Norman artisans who carried the work into England in the fifteenth century. English settlers introduced the unique design here mostly during the period between 1720 and 1764. Two kinds of ornamental brick work appear in these houses. One is the bond, or overall, pattern of the house; the other, the diaper or ornamental design of the house. Innovations in brick design appear outstanding in the zig-zag designs of the Hancock House which is patterned after Leigh's Priory built about 1536 in Essex, England.

HISTORY RECORDED

We are fortunate to have many records, pictures and several well-preserved houses and household articles to give us insight into our community's past. Prominent examples of books which describe our historical past include: Fenwick's Colony published in observance of New Jersey's Tercentenary Year 1664-1964, by the Salem County Tercentenary Committee, and How Dear to My Heart published in observance of the Bicentennial Celebration 1776-1976 by the Lower Alloways Creek Township Committee. Fenwick's Colony contains more than 150 photographs presenting scenes of today with a brief narrative text relating the story of Salem County's founding and development. How Dear to My Heart is a collection of writings by William J.S. Bradway. Most of the pictures were reproduced from his original glass plates which are retained by the Township. The writings in this book are excerpted from a series prepared by Mr. Bradway when he was a correspondent with the Bridgeton Evening News. A pamphlet recently compiled by the Lower Alloways Creek Historical and Heritage Committee entitled "Historical Sites of Lower Alloways Creek Township" in the conjunction with these books, provide interesting reading and information regarding the development of Lower Alloways Creek and surrounding area.

SUMMARY/RECOMMENDATIONS

1. New construction in, around or adjacent to the buildings identified herein should emulate the basic architectural characteristic of the neighboring properties.

2. Additions and rehabilitation of units should be sympathetic to the historic features of the structure.

3. The Planning Board should review the architecture of any construction activity proposed adjacent to the above identified structures.

* * *

RECYCLING PLAN

PURPOSE

The purpose of the Recycling Plan is to demonstrate compliance with the State Recycling Plan. Specific provisions for the collection, disposition and recycling of recyclable materials designated in the municipal recycling ordinance, within any development proposal for the construction of fifty (50) or more units of single-family residential housing, or twenty-five (25) or more units of multi-family residential housing and any commercial or industrial development proposal for the utilization of one thousand (1,000) square feet or more of land are included.

ADMINISTRATIVE STRUCTURE

The Salem County Utilities Authority (SCUA) is the governmental agency responsible for implementing all provisions and requirements under the State of New Jersey Recycling laws and the Salem County Solid Waste Management Plan as it relates to recycling matters. The Salem County Office of Recycling is generally responsible for the receipt and compilation of data, the publication of reports, the identification of markets, educational programs, enforcement of recycling laws and all other aspects of recycling within the County.

The Salem County Utilities Authority has established policies, rules and regulations to assure that the objectives of the various legislative acts are met. Reduction of the waste flow and energy conservation are specific objectives which are addressed in the Salem County Recycling Plan. This Plan also outlines specific goals for separated, recycled materials generated in each municipality. The first effective year of this Plan (May 30, 1989 to June 1, 1990) sought to assure that no less than fifteen (15) percent of the total combined weight of recycled materials and non-separated solid waste. For the second year (by June 4, 1991), the amount of recycled materials was to be no less than twenty-five (25) percent of the waste stream. The long term goal is to maintain the twenty-five (25) percent goal on an annual basis and to seek further means to reduce the flow of solid waste.

TOLACQEM REGIONAL RECYCLING COALITION

Lower Alloways Creek, Quinton, Elsinboro and Mannington Townships have developed an agreement for recycling of solid waste and joint trash collection services. Trash and refuse are collected at curbside and each municipality is responsible for paying its own tipping fees based on the amount of trash deposited at the landfill. This agreement is reviewed and renewed on an annual basis to evaluate operational efficiency. This innerlocal agreement was initially implemented in 1988 subsequent to the Salem County Landfill becoming operational on April 18, 1988.

Lower Alloways Creek provides the trash collection vehicle and also coordinates and manages the recycling program. The Superintendent of Public Works has the authority to establish the time, method and routes of service. The recycling center is maintained and operated by Township personnel at the Road Department complex in Harmersville.

LOCAL REGULATIONS

In response to State solid waste and recycling regulations, the Township adopted an amendment to Chapter 153 of the Township Code in August 1990. In accordance with this ordinance, the owner or occupant of any residential, commercial or institutional building are required to recycle the following items: glass - separated into clear, brown and green; aluminum; newspaper; office paper; corrugated and other cardboard, brown paper bags; magazines; HDPE and PET plastic containers as designated by the Recycling Coordinator. All leaves and grass clippings generated on residential properties are to be mulched or composted on the properties on which located.

The collection and removal of waste paper, glass, aluminum, trash, debris and large objects from non-institutional residential buildings is supervised by the Department of Public Works Superintendent. The following items are specifically excluded from collection by the Township:

1. Waste material generated outside of the Township.

2. Any material not accepted by the Salem County landfill without special arrangements, packaging, handling or fees.

3. Any trash resulting from building demolition.

4. Contractor renovation materials.

5. Motor vehicles, tractors, farm machinery and trucks or parts of any of those items.

6. Toxic and hazardous wastes.

7. Tree stumps.

8. Brush and trees, or parts of brush and trees in excess of four (4) inches in diameter.

9. Animal carcasses.

10. Non-household chemical or petroleum products.

11. Herbicide, pesticide and chemical containers unless they are empty and triple-rinsed.

12. Leaves and grass trimmings.

The Recycling Coordinator is responsible for local enforcement of all solid waste and recycling regulations. Persons occupying commercial or institutional premises may be exempted from some or all of the Township's source-separation requirements. In order for any such exemption to be granted, it must be demonstrated that all recyclable materials are properly disposed. All individuals granted such exemptions are also required to provide annual reports to the Township which document the tonnage recycled prior to the exemption being granted and for each year thereafter.

WASTE GENERATION

The Salem County Recycling Plan requires each municipality to submit a semi-annual report to the County Recycling Coordinator. This report is to describe the volume of materials successfully recycled for the previous six-month period for each material recycled, and shall also show the cumulative total volume by weight for the same materials.

Generally speaking, the more people there are in a given municipality, the greater the amount of solid waste generated, all other things being equal. Since the majority of waste collected in Lower Alloways Creek is from residences, it is important to understand some of the variables affecting solid waste generation rates. The Energy Research and Development Administration sites statistics which indicate the following:

1. The amount of solid waste generated per person decreases as the household size increases.

2. The amount of solid waste generated per household increases as the number of persons per household increases.

3. As dwelling unit size increases the amount of solid waste generated increases.

4. Newspaper, garden waste and ferrous materials exhibit a linear relationship with income.

From January through June of 1991, the following amounts of refuse were collected:

	January - June 1991
Lower Alloways Creek	454 Tons
Quinton	448 Tons
Elsinboro	995 Tons
Mannington	202 Tons

The following graphs give an indication of solid waste and recycling tonnage generated for the coalition municipalities and Lower Alloways Creek.

Recycling Recommendations

The following specific recommendations are made with respect to recycling in the Township:

1. The Township should continue to evaluate market conditions to assure the greatest monetary return for recycled materials.

2. The Township should continue to evaluate the efficiency of its recycling program and institute programmatic and operational changes as necessary.

3. The Township should continue its educational and public awareness programs in an effort to increase public awareness and involvement in recycling activities.

4. The Township should use the monies received from the state for recycling to further improve the effectiveness of its recycling program.

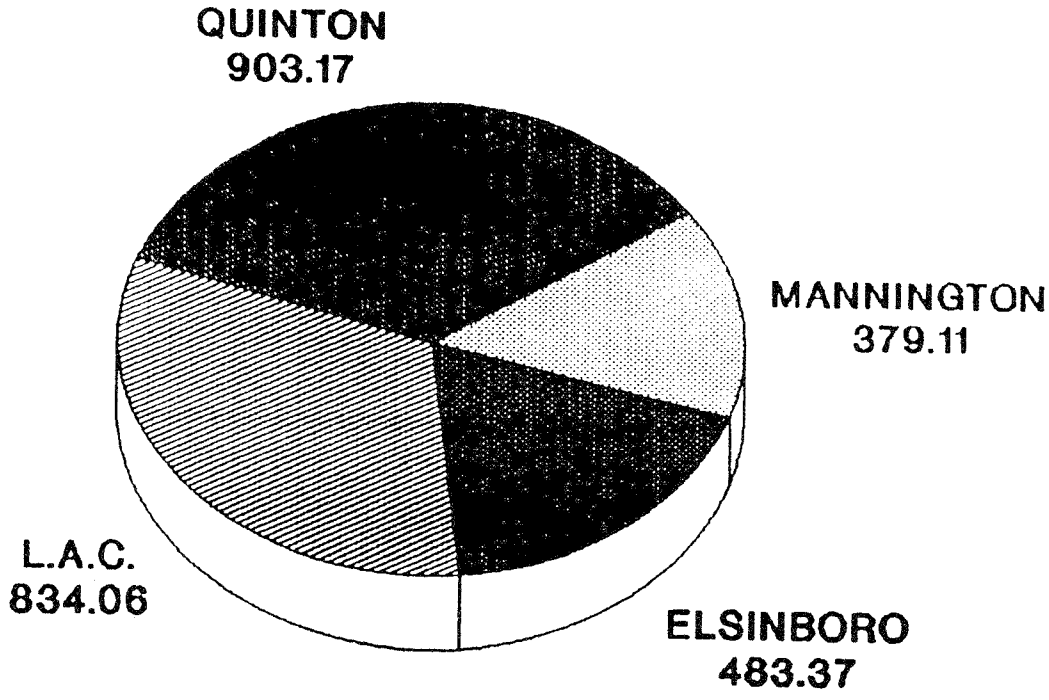
5. Lower Alloways Creek should encourage the other municipal members of the Coalition to improve the efficiency of their respective programs where possible.

6. The Township should continue to monitor and enforce the regulatory aspects of the recycling ordinances.

* * *

TOLACQEM SOLID WASTE TONNAGE

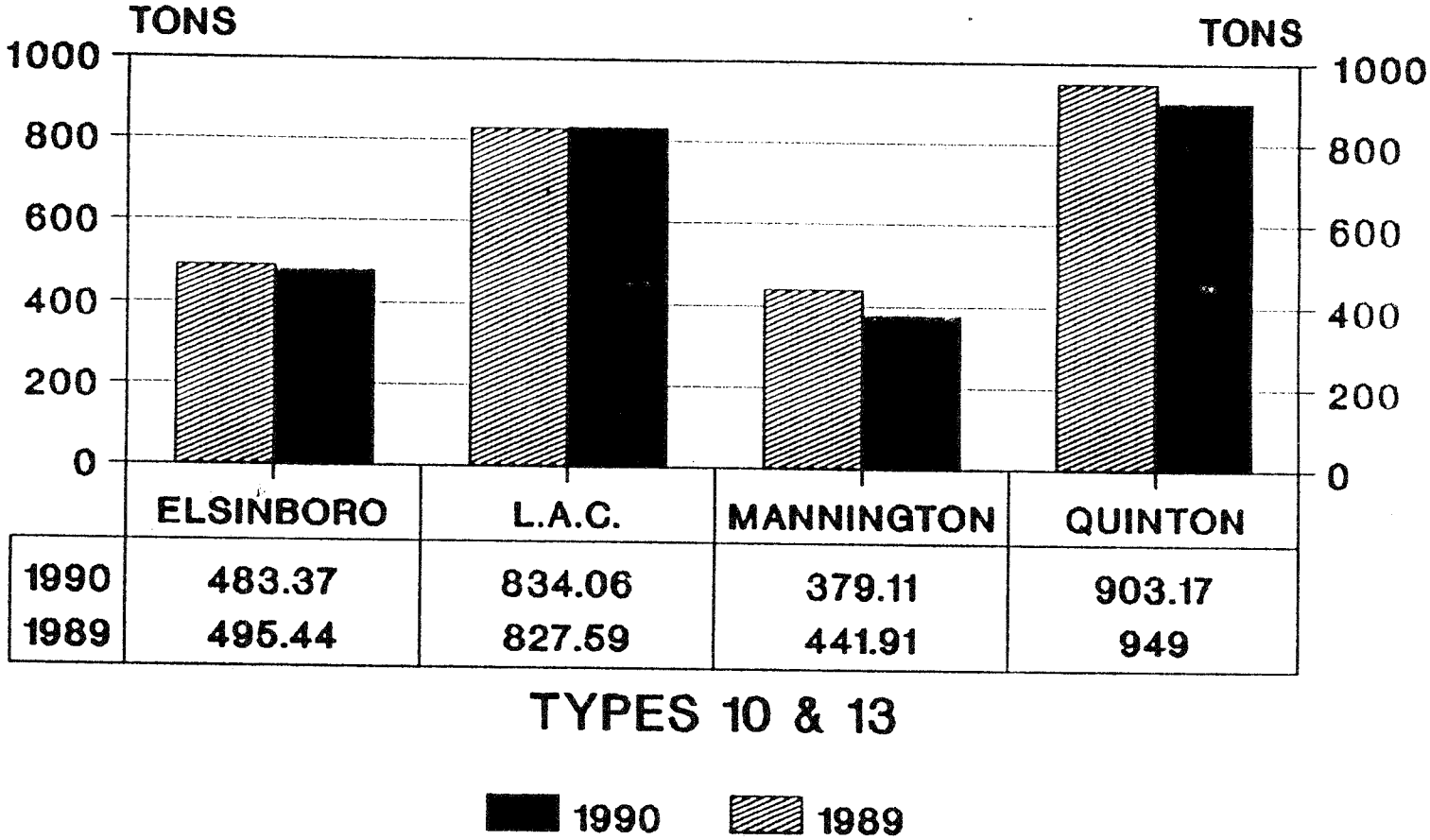
JANUARY 1 - OCTOBER 31, 1990



2,599.71 TOTAL TONS

RJF 8 NOV 90
8WT10MO

TOLACQEM SOLID WASTE
JANUARY 1 - OCTOBER 31, 1990

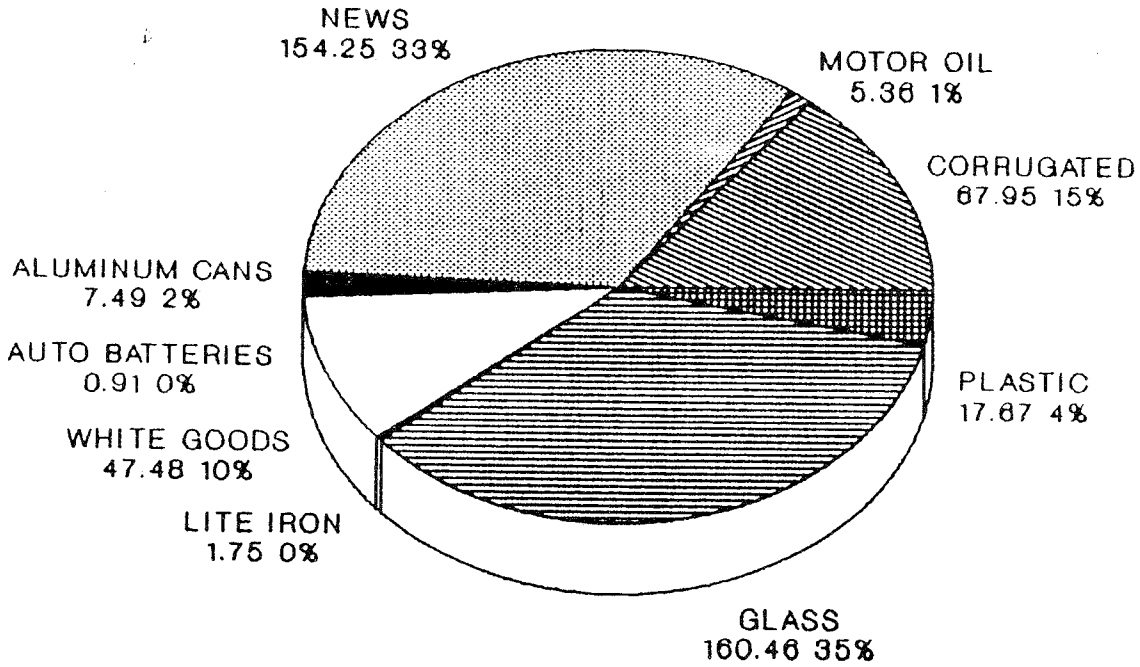


	ELSINBORO	L.A.C.	MANNINGTON	QUINTON
1990	483.37	834.06	379.11	903.17
1989	495.44	827.59	441.91	949

TYPES 10 & 13

RJF 8 NOV 90
TSW1090

TOLACQEM RECYCLING
JAN. 1 - OCT. 31, 1990

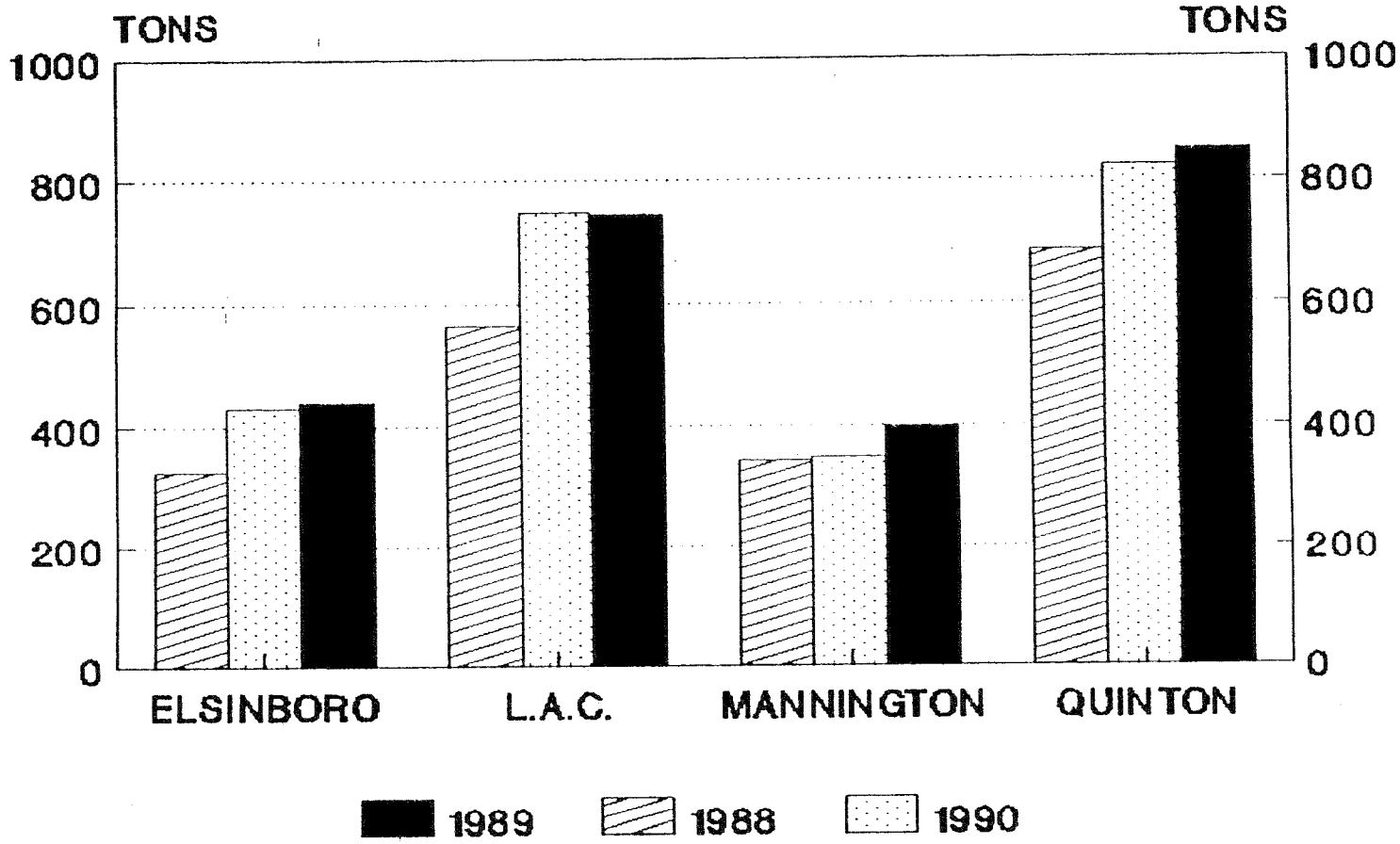


463.32 RECYCLED TONS

RJF 2 NOV 90 REC1090

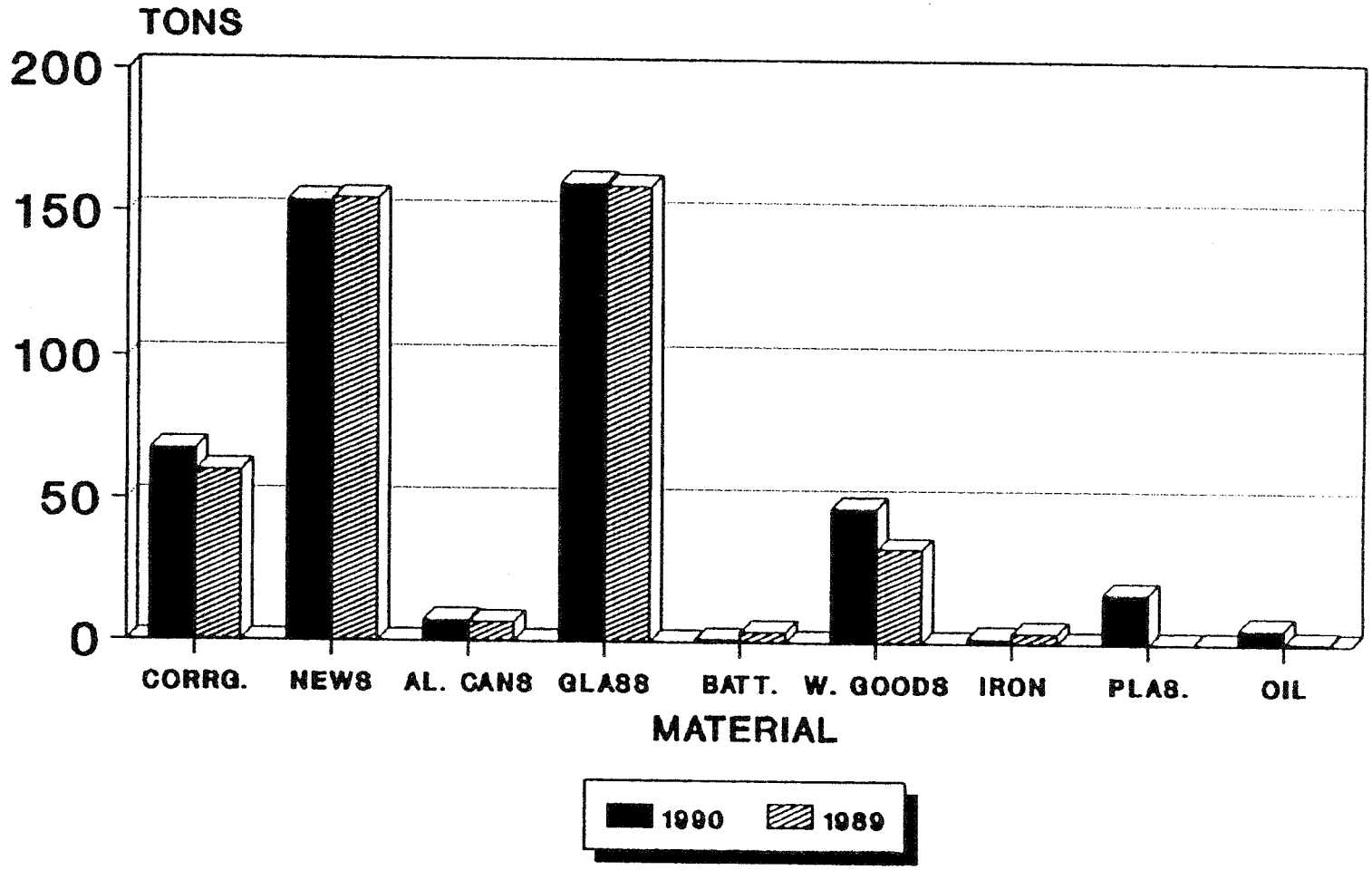
TOLACQEM SOLID WASTE TONNAGE

NINE MONTHS



RJF 25 OCT 90
SWT9MO

TOLACQEM RECYCLING
JANUARY - OCTOBER



RJF 8 NOV 90
BAR1090

LAND USE PLAN

PURPOSE

The purpose of the Land Use Plan Element is to take into account the other Master Plan elements and natural conditions, including, but not necessarily limited to, topography, soil conditions, water supply, drainage, flood plain areas, marshes and woodlands. This plan is also intended to show the existing and proposed location, extent and intensity of development of land to be used in the future for varying types of residential, commercial, industrial, agricultural, recreational, educational and other public or private purposes or combination of purposes. A statement of the standards of population density and development intensity recommended for the municipality is also included.

INTRODUCTION

The land use plan is the most important portion of the master plan. The Municipal Land Use Law (N.J.S.A. 40:55D-62) states that:

> The zoning ordinance shall be adopted after the planning board has adopted the land use element of the master plan and all the provisions of such zoning ordinance or any amendment or revision thereof shall either be substantially consistent with the land use element of the master plan or designed to effectuate such a plan element.

The extent to which public policy can influence the physical development of the Township is dependent upon a number of considerations: existing land uses and the character of development which has already occurred; housing needs at the local and regional levels; the need for community facilities and services for existing and future populations; constraints and opportunities associated with the existing circulation system; and the physical characteristics of the land. Information related to these components of community development have been provided within the text of this plan. This information, when taken together, provides a composite perspective of the Township as it exists today, and forms the basis for land use development policies articulated in this plan.

EXISTING LAND USE PATTERNS AND TRENDS

Significant portions of Lower Alloways Creek Township consist of farmland, public open space and vacant land. According to a 1976 study by the Salem County Planning Board, only 5.4 percent of the Township's 30,070 acres (46.25 square miles) were developed with buildings or other improvements. The current distribution among different land uses is shown on the following table. A Land Use Map at the scale of 1" = 2,000' was prepared as a component of this Master Plan and is available for review at the Municipal Building.

LAND USE	ACRES	PERCENT
Residential	2,090	6.9
Commercial	208	0.8
Industrial	814	2.7
Public/Quasi-public	11,266	37.5
Agricultural	15,692	52.1
	30,070	100.0

The general development trends during the past fifteen (15) years consist primarily of increased single-family residential development and construction of the nuclear generating facilities at Artificial Island. The Township's population has increased from 1,430 in 1975 to 1,858 in 1990. This 23 percent increase in the Township significantly exceeds the five percent growth experienced by Salem County during the same period.

Residential uses are found throughout the Township. In addition to the village areas, development is concentrated adjacent to the primary road system. Existing vacant land in the Township consists of medium to large parcels ranging to hundreds of acres in size. Many of these vacant parcels, although large, are developmentally constrained by the presence of wetlands.

Outside of the village areas of Hancocks Bridge, Harmersville and Canton, homes are generally on large lots from 2-5 acres in size and are oriented along and between major collector roads such as Salem-Hancocks Bridge Road, Robinson Road and Hell Neck Road. This development has taken place exclusively on an individual lot basis.

Commercial establishments in the Township are located primarily within or adjacent to the village areas. These commercial uses are limited and consist primarily of neighborhood convenience stores. In all, these commercial uses account for less than one (1) percent of the Township's total land area. The size and location of the present commercial areas are directly related to the residential pattern.

Industrial development in Lower Alloways Creek Township encompasses about 814 acres and consists solely of the nuclear generating facilities at Artificial Island. These facilities consist of three (3) electrical generators and are owned and operated by Public Service Electric and Gas Company.

There is in excess of 11,000 acres of public land in the Township. The New Jersey Department of Environmental Protection and Energy holds title to approximately 8,589 acres within the Township. Most of this area is contained within the Mad Horse Creek Fish and Wildlife Management Area and consists of wetland and marsh areas. This Management Area is notable for its value as critical wildlife habitat and has been used for nesting by Bald Eagles, Osprey and other rare or endangered species. The State also maintains the historic Hancock House in Hancocks Bridge, and Maskells Mill Pond.

Other public and quasi-public lands include churches and cemeteries, municipal functions, fire and rescue stations, schools and charitable institutions. All public lands account for 33 percent of the Township's total land area.

LAND USE NEEDS AND PROBLEMS

Lower Alloways Creek Township is best described as a rural community with the potential for limited new development. The Township has attracted new residential and industrial construction in relation to the nuclear generating facilities and the absence of a general purpose tax. Continued residential development is anticipated, however, the rate of growth will be less than that experienced in the 1980's. Some of the major planning issues facing the Township are:

1. Farmlands and other large, undeveloped parcels will come under increasing pressure for development. The future disposition of these important parcels will have a significant impact on the character of the Township in years to come;

2. Innovative methods of development, conservation and preservation (PUD, TDR, farmland preservation) should be explored to achieve a land use pattern that carries out public policy;

3. The evolving demographic profile suggests that changing demands on municipal services, schools and other public services will need to be evaluated and adjusted as necessary;

4. The special natural and environmental resources of the Township are recognized as essential to the quality of life. The Township should monitor potential impacts to the environment and consider appropriate conservation/ preservation measures.

5. Decreased State and Federal grants and loans may adversely affect public infrastructure such as roads, utilities and facilities. A fiscal program aimed at maintaining and upgrading, where necessary, the Township's infrastructure is a major issue that impacts land use planning.

The land planning issues facing Lower Alloways Creek Township, therefore, essentially relate to the compatibility of growth in a rural environment. Because natural resource constraints are so pervasive in Lower Alloways Creek, this Master Plan is directed towards the management and control of change. This involves balancing the Township's needs with preserving its traditional character and values. Modern planning tools and techniques will assist the community in arriving at a fair consensus in what sometimes appear to be incompatible objectives of economic growth and environmental quality.

LAND USE PLAN

The Land Use Plan is not to be confused with the zoning district map. The plan, as expressed here, is a conceptual development management policy for the Township. These policies will be implemented through land use regulations and a detailed zoning map.

In addition to the planning goals previously stated, this Land Use Plan specifically addresses the following planning objectives:

1. This plan recognizes and incorporates past planning decisions which are consistent with present local and regional needs.

2. This plan recognizes the physical characteristics of the Township and acknowledges the inherent capabilities of the land to host different types of community development at appropriate densities and intensities.

    a. Conservation of existing natural resources should be an integral part of the planning process, particularly with respect to the constraints associated with environmentally critical and sensitive areas;

    b. Open space and farmland should be preserved to the maximum extent possible.

3. The eastern section of the Township should remain predominately rural and agricultural to preserve forested areas.

4. Agricultural lands which have been identified by virtue of their economic value as farmland should be protected from encroachments.

5. The Plan attempts to encourage development in those areas of the community most capable of providing necessary services, i.e., within existing or proposed sewer service areas.

The 1978 Master Plan of the Township divided the community into six (6) planning districts. The floodplain district is the most extensive with respect to land area and accounts for fifty (50) percent of total land. The remainder of the Township is divided between single-family and multi-family residential, industrial and commercial zoning.

This proposed Land Use Plan includes a total of four (4) new districts, a mixed use village district, an industrial zone, a conservation district and an agricultural/residential zone. This plan is oriented towards a 10 - 15 year planning horizon which is a desirable and proper basis for the zoning ordinance.

Village Residential District

The designation of a Village Residential district is recommended due to the following characteristics which have been observed with respect to Hancock's Bridge, Harmersville and Canton:

These areas are predominately residential with supporting commercial and public activities being present.

These areas are compact relative to their surroundings and to traditional tract development, and are easily distinguishable from the surrounding undeveloped land.

The density mix and arrangement of land uses encourages pedestrian movement among local origins and destinations.

The Village Residential district includes those land areas presently served by sanitary sewers within and around Hancock's Bridge, Harmersville and Canton. The boundaries of the Village Residential districts are intended to maintain the character of the existing Village areas, while at the same time allowing for in fill development. Since these districts are located within existing sewer service areas, all new development should be required to connect to the public sewerage system. The intensity and density of uses to be permitted in these districts are compatible with existing land use patterns and will not significantly alter the character of the Villages.

The following principal uses located on lots a minimum of 8,500 square feet are proposed for the Village Residential district;

1. Detached single-family dwellings.

2. Farm uses.

Personal service establishments, home occupations and municipal facilities may be permitted as conditional uses.

Agricultural - Residential District

The intent of this district is to encourage low density residential growth and agricultural use. This area contains a mix of farmsteads and more contemporary single-family residences. This district also contains large parcels of prime agricultural soils which are capable of supporting continued agricultural use and residential development. With the exception of the Villages, Artificial Island and the Conservation District, this zone encompasses the remainder of the Township's land area.

The following principal uses are proposed for the Agricultural-Residential districts:

1. Detached single-family dwellings.

2. Farm uses.

3. Public and non-profit recreation.

4. Municipal uses.

Accessory and conditional uses may include: home occupations, private garages, farm stands, private schools, churches and other places of worship, public utilities, social clubs, cluster development and day care centers.

The general land use policy in this district is to permit development provided the building lots are sufficiently sized to assure an adequate assimilation of the septic effluent to be generated. A minimum lot size of one (1.0) acres shall be required for all permitted uses. This lot size may be incrementally enlarged depending on the results of permeability and soil tests which shall be required for every new lot.

This Current Planning Capacity (CPC) approach to land planning is premised on two conditions which are essential for development: water supply and water quality. The intent of the CPC is to establish density ceilings based on the environmental conditions which cannot be exceeded without jeopardizing community health and safety. This technique establishes residential densities based on the capacity of the land to provide potable water and safely dispose of sewerage effluent on-site.

The minimum required lot area in the Agricultural-Residential may be increased above the one (1.0) acres minimum depending on the particular groundwater and soil conditions encountered. The following formula, which is based on a nitrate dilution model developed by Rutgers University, provides the basis for establishing the required lot area increment:

Lot Area Increment = Lot are Factor x 43,560

The Lot Area Factor (LAF) shall be established as follows:

$$LAF = \frac{(2 - \text{Permeability Rate})}{2} + \frac{72\ \text{DSHWT*}}{24}$$

WHERE:

*DSHWT = Depth to seasonal high water table.

A permeability rate greater than twenty (20) inches per hour or less than 0.2 inches per hour is not acceptable.

A depth to seasonal high water table of three (3) feet or less shall require a minimum lot size of 150,000 square feet.

The owners of existing vacant lots should also demonstrate that their lots are suitable for an on-site septic system prior to issuance of a building permit. Minimum lot width shall be two hundred (200) feet and no lot shall be created which has a depth to width ratio greater than 3 to 1. The intent of this requirement is to discourage lots with depth which are considered excessive, while simultaneously encouraging construction of new roads for access to the back of larger parcels. Due to the variation in soil and groundwater characteristics, the Township has determined that these development policies are necessary to maintain the rural character, they are consistent with the protection of environmental quality, and represent an equitable and rational means of determining minimal lot sizes where on-site septic systems will be used.

Conservation District

The delineation of a Conservation district is based primarily on the wetlands associated with the Mad Horse Creek Wildlife Management Area and those lands affected by the A4 Flood Zone, as established by the National Flood Insurance Program. This district also contains soils which are generally unsuited for any type of development. The environmental assessment done in conjunction with the Conservation Plan element of this Master Plan attests to the extreme environmental sensitivity of this area.

Permitted uses in this district include agricultural and low-intensity recreation uses. Development in this district is to be further restricted by requiring conditional use approval for single-family residences.

Industrial District

The Industrial district is intended to provide for continued industrial development within the area immediately adjacent to Artificial Island. Additional industrial development could provide job opportunities and economic diversity to the Township. Light industrial, research or office facilities are uses which would be compatible with the existing industrial facilities. The implementing ordinances should encourage the development of overall tracts in a park-like setting as opposed to lot-by-lot development.

PERFORMANCE STANDARDS

In conjunction with the uses to be permitted in this new plan, the Township should establish performance standards to address the relationship between varying districts to smooth the transition from one district to the next, by mitigating potential adverse conditions which may result from conflicting land uses.

Specific standards should include: buffers, open space, lighting, landscaping, parking, sidewalks, stormwater management and signage.

CONSISTENCY WITH ADJOINING COMMUNITIES

This section will describe the relationship between the Lower Alloways Creek Plan and the plans of adjoining communities as required by N.J.S.A. 40:55D-28. The preparation of the Lower Alloways Creek Township Comprehensive Plan has been coordinated with the County Planning Board and the plans which they have prepared for various facilities, services and land uses within the county. The Plan is consistent with these documents.

The Comprehensive Plan has also been prepared with awareness of the land use designations of adjacent municipalities within their master plans and zoning ordinances. There are no known points of conflict between boundary land uses designated by this Comprehensive Plan and the land uses called for by adjacent municipalities. Lower Alloways Creek Township is bordered by two municipalities in Salem County and two in Cumberland County. It is bordered on the south and southwest by the Delaware River and Delaware Bay.

Northwestern Border

Elsinboro Township has developed in a manner similar to Lower Alloways Creek by virtue of its location and environmental constraints. The area adjacent to Lower Alloways Creek consists primarily of wetlands and rural development on lots typically in excess of an acre in size. With the exception of the Industrial Zone in Lower Alloways Creek, the proposed land use plan is consistent with the Elsinboro Plan.

Northeastern Border

Lower Alloways Creek Township is bordered on its northern boundary by Quinton Township. This municipality is similar to Quinton in that it is a predominantly rural community. Due to environmental constraints and the desire to retain open space, development in the rural areas of Quinton is restricted. Lot sizes of 1.5-2.5 acres in size have typically been required in these areas. Quinton has recently updated its Master Plan and will be adopting land use ordinances which utilize the current planning capacity approach to regulate development densities. Therefore, the Lower Alloways Creek Plan is consistent with the Quinton Plan with respect to the type and density of development permitted.

Southeastern Border

Stow Creek Township is to the southeast and is physically separated from Lower Alloways Creek by Stow Creek. Stow Creek Township is similar to Lower Alloways Creek and is attempting to retain its rural nature through the establishment of an Agriculture zone requiring one (1.0) acre lots, and a residential zone which requires one-half (0.5) acre minimum lot sizes. Proposed zoning for the eastern section of Lower Alloways Creek Township encourages low density residential uses. It can be concluded that the Township's Plan is consistent with zoning in Stow Creek with respect to density and permitted uses.

RELATIONSHIP OF PLAN WITH STATE GUIDE PLAN

The State of New Jersey is currently in the process of developing the New Jersey State Development and Redevelopment Plan. The major focus of this new guide plan is to encourage growth within the corridor areas and centers, and discourage growth in the rural portions of the state. The State Plan calls for the land area of the State to be allocated/mapped to five basic land-use zones, or Planning Areas, that will provide a coordinated framework for local planning and zoning decisions. The purpose of the Planning Area system is to control future land use in ways that will serve the Plan goals. The Planning Area system will restrict most future development to existing, built-up areas and to contiguous open lands, where extension of sewer service exists or is already planned. Most other open lands are to be defined as farmland or natural open space. The system will give the State Planning Commission/Office of State Planning basic land use control throughout the State.

The Lower Alloways Creek Plan appears to be in general agreement with the goals of the Interim State Development and Redevelopment Plan (ISDRP). This Plan is sensitive to the retention of important agricultural and environmentally sensitive areas and encourages efforts to maintain and protect these valuable resources. The Plan, simultaneously, provides opportunities for the development of needed housing, and for employment and commercial activities. Environmental constraints have been instrumental in shaping the growth management policies recommended in this Land Use Plan, and the Township will continue its efforts to protect environmentally sensitive lands and open space.

This Plan establishes 'centers' in which development is to be concentrated. The Plan also attempts to control the rate of growth in rural areas by basing minimum lot sizes on the ability of soils to assimilate septic effluent. Due to the moderate to severe septic constraints which exist over much of the Township, it is anticipated that this mechanism will function as an effective growth management tool while maintaining the integrity of environmental resources.

APPENDIX A

The following blocks and lots are those Township owned properties which constitute the Conservation Park District as depicted on the Proposed Land Use Plan.

	BLOCK	LOT
TRACT 1	44	45
	43	30
		31
		34
		37
	44	30
		32
		33
		36
		36.01
		44
		45A
		47
		52
		53
		54
		55
		56
		57
		58
		62
		65
		66
		67
		68
		69
	47	9
TRACT 2	44	13
TRACT 3	44	13.02

Source: Deed Book #620 (County of Salem)

OLD replace in 2003

LOWER ALLOWAYS CREEK TOWNSHIP

SALEM COUNTY NEW JERSEY

KEY

- VILLAGE RESIDENTIAL
- AGRICULTURAL RESIDENTIAL
- WETLANDS
- CONSERVATION PARK
- INDUSTRIAL

PROPOSED LAND USE PLAN

PREPARED BY:

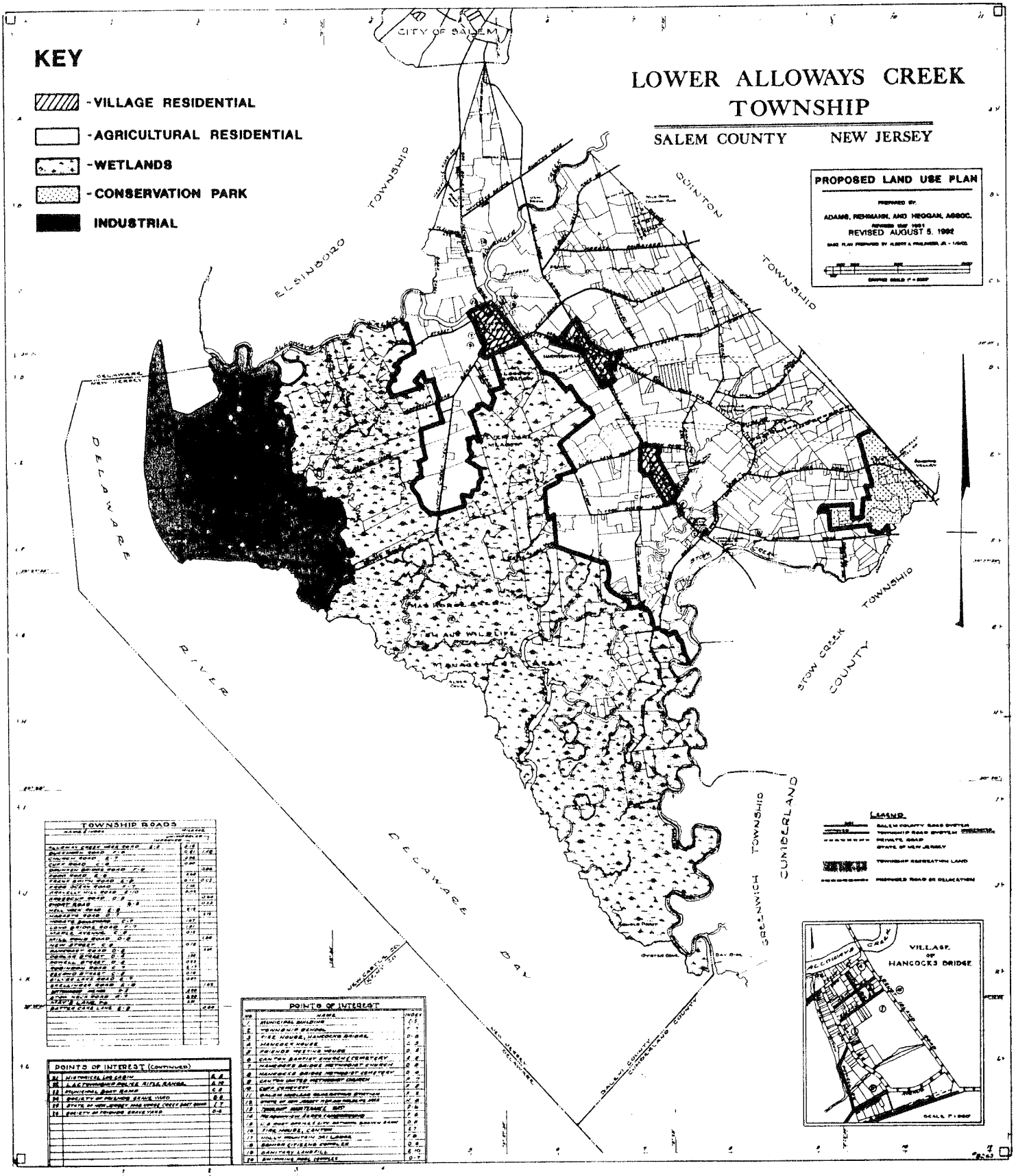
ADAMS, REHMANN, AND HEGGAN, ASSOC.

REVISED MAY 1991

REVISED AUGUST 5, 1992

BASE PLAN PREPARED BY ALBERT A. FRALINGER JR. - 1/4/92

GRAPHIC SCALE 1" = 2000'



TOWNSHIP ROADS

NAME / LOCATION	INDEX	MILEAGE
ALLOWAY CREEK HOLL ROAD E-F	A-B	
BACKHAM ROAD D-E	C-D	1.40
COLVIN ROAD E-F	J-K	
CUFF ROAD E-F	J-K	
DRAWBRIDGE ROAD F-G	J-K	3.00
FORD ROAD E-F	J-K	
FRANK SMITH ROAD E-F	G-H	0.13
FREE GOSH ROAD F-G	J-K	
HOLLOW HILL ROAD F-G	J-K	
GREENWICH ROAD D-E	J-K	0.94
HOOT ROAD B-C	C-D	0.13
HOLLOW ROAD E-F	G-H	
HANCOCKS ROAD D-E	C-D	2.75
HOOKS BRANCH ROAD C-D	C-D	
LOVE STONE ROAD C-D	C-D	
MAPLE AVENUE C-D	C-D	
MILL POND ROAD D-E	C-D	1.00
NEW STREET E-F	G-H	
RAMPHO ROAD D-E	C-D	2.00
OCEAN STREET D-E	C-D	
PORTER STREET D-E	C-D	
PORTRIDGE ROAD E-F	G-H	
RICHARD STREET E-F	G-H	
ROLLER LAKE ROAD E-F	G-H	
SCHOONER ROAD E-F	G-H	1.85
SHIP ROAD E-F	G-H	
STOW CREEK ROAD E-F	G-H	
STATE LANE PA	G-H	
BETWEEN THE LINE E-F	G-H	2.00

POINTS OF INTEREST

NO.	NAME	INDEX
1	MUNICIPAL BUILDING	C-D
2	"HOUSE" SCHOOL	F-G
3	FIRE HOUSE, HANCOCKS BRIDGE	D-E
4	HANCOCK HOUSE	C-D
5	FRIENDS MEETING HOUSE	D-E
6	CALVARY BAPTIST CHURCH (CEMETERY)	J-K
7	HANCOCKS BRIDGE METHODIST CHURCH	D-E
8	HANCOCKS BRIDGE METHODIST CEMETERY	D-E
9	CALVARY UNITED METHODIST CHURCH	J-K
10	CUFF CEMETERY	F-G
11	SALEM NUCLEAR GENERATING STATION	J-K
12	STATE OF NEW JERSEY FISH AND WILDLIFE AREA	J-K
13	TURNPIKE MAINTENANCE BLDG	F-G
14	THE MOUNTAIN ALWAYS CONFERENCE	F-G
15	U.S. POST OFFICE, FRANKLIN BRANCH BANK	D-E
16	FIRE HOUSE, CANTON	E-F
17	HOLLY MOUNTAIN SKI LODGE	F-G
18	SENIOR CITIZENS CENTER	D-E
19	SANITARY LANDFILL	E-10
20	SWIMMING POOL COMPLEX	D-7

POINTS OF INTEREST (CONTINUED)

NO.	NAME	INDEX
21	HISTORICAL LOG CABIN	A-B
22	L.A.C. TOWNSHIP POLICE RIFLE RANGE	A-B
23	MUNICIPAL BOAT RAMP	C-D
24	SOCIETY OF FRIENDS SERVICE YARD	D-E
25	STATE OF NEW JERSEY HOG HOUSE CREEK BOAT RAMP	F-7
26	SOCIETY OF FRIENDS GRAVE YARD	D-E