

MAPLE
MILLER
NEWPORT
**TRAFFIC
AND
CIRCULATION
STUDY**

An Amendment to the
City of Ann Arbor
West Area Plan

November 1995

Adopted by Ann Arbor City Planning Commission on October 3, 1995

Adopted by Ann Arbor City Council on November 9, 1995

Miller/Maple/Newport Traffic & Circulation Study

City of Ann Arbor Planning Department
November 1995

Purpose of Study

The purpose of this study is to project the traffic impacts that will result from the development of several vacant parcels of land north of M-14 between Newport and Maple Roads, and to recommend improvements to reduce or eliminate traffic conflicts and congestion. The West Area Plan identifies vacant sites north of M-14 that have the potential for low density, single-family residential development: A 109-acre site owned by the Ann Arbor Public Schools; a 41-acre site referred to as Newport Creek; and a 42-acre site, called the Pirrup property. While these sites are the major vacant, developable parcels north of M-14, other existing parcels along Newport Road could be subdivided to create additional housing units and curb cuts on Newport Road. Additional vacant acreage west of Maple Road also has development potential, but is located in Scio Township. This land is not included in the study.

Scope of Study

The study area is bounded on the north by the Huron River; on the east by Huron River Drive/Hampstead/Beechwood; on the south by Miller Avenue; and on the west by Maple Road. Map 1 shows the study area boundaries. It is expected that development of these sites will affect road systems within these general boundaries to some degree. The study will project the total possible number of housing units, analyze the expected travel patterns of residents of these new neighborhoods, and identify the area of influence likely to be affected by the resulting increased traffic.

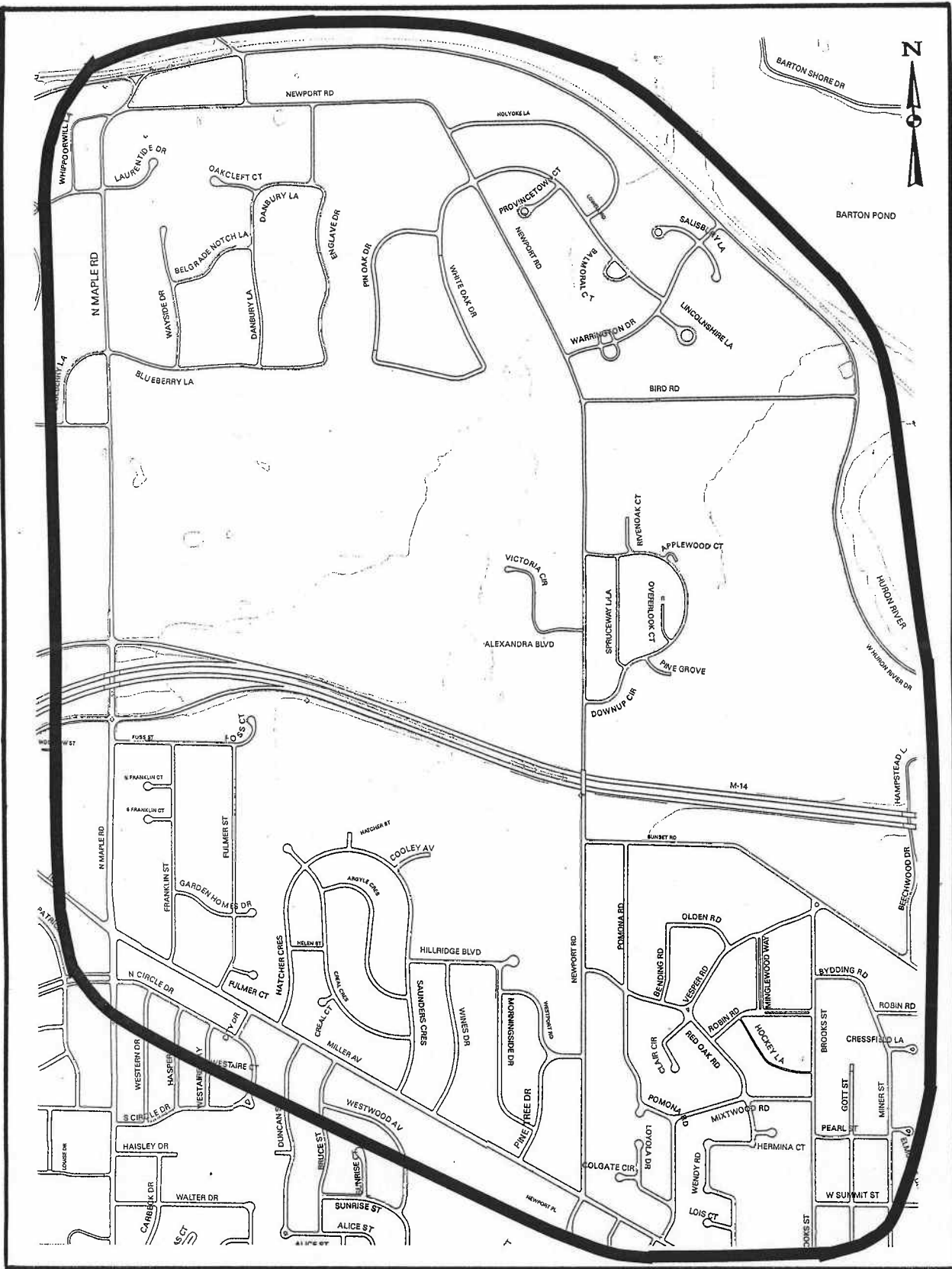
The study will focus primarily on the impacts on Newport Road, as well as other routes likely to be taken by residents of the new neighborhoods. The roads most likely to be impacted by development include North Maple Road, Bird Road, Huron River Drive, North Main Street, Summit Street and Miller Avenue.

Issues

The character of the study area generally is rural and existing development patterns are low-density residential. Residents of the area have become accustomed to the wooded areas, narrow streets and substantial open space found here. The development of almost 200 acres of heretofore vacant land raises issues that previously had not been present.

Conflicting City Policies. City policies call for enhancement of pedestrian and bicycle accessibility and portions of Newport Road, particularly north of M-14, currently lack sidewalks. However, the construction of sidewalks on Newport Road would necessitate the removal of trees, which is contrary to City policies to preserve natural features.

2



MAP 1

STUDY AREA BOUNDARY



3

Neighborhoods Connections. Linkages between developments, for both pedestrians and vehicles, is a goal of the West Area Plan. Sites 1, 2 and 3 should be interconnected, and further should link with Newport Hills Subdivision. Existing neighborhoods often resist links to new subdivisions because they want to remain isolated. The City supports neighborhood links because they facilitate the provision of City services, create a sense of "connectedness" between neighborhoods, and reduce conflict points by better distribution of traffic.

Conflicting Roadway Functions. Most roadways serve two primary purposes: to provide for efficient through movement of traffic and to provide access to abutting properties. There are 162 curb cuts on Newport and North Maple Roads north of M-14, between M-14 and the Huron River. The presence of so many curb cuts creates conflict points that can slow traffic and even pose safety hazards when poorly spaced or when traffic is moving too swiftly. The opportunity for so many vehicular turning movements clashes with the through movement of traffic.

Goals

Goals for the study area were culled from the 1990 Transportation Plan Update, the 1995 West Area Plan, and were augmented with data and findings revealed while undertaking this study. The goals were established to guide the development of solutions or improvements to traffic and circulation problems, address issues dealing with quality of life and preservation of community character, identify a Level of Service (LOS) acceptable to the community, and balance the sometimes differing perspectives of the community and transportation specialists.

Goal To provide a street system that safely and efficiently serves the travel needs of the community.

Objectives

- To provide sufficient capacity in the transportation system to accommodate existing and forecasted travel demand.
- Implement roadway designs that improve the operational characteristics of the transportation system and meet accepted engineering standards.
- To reduce conflict by reducing or limiting access points.
- To link residential areas by providing connections via logically-sited roadways.

Goal To be compatible with adjacent land uses and the environmental character of the area.

Objectives

- Implement improvements that are sensitive to the characteristics of the Miller/Maple/Newport area.
- Implement improvements that are sensitive to adjacent land uses and natural features.

Goal To provide a safe, efficient and convenient circulation and street system that facilitates the movement of people either walking or using cars, bicycles and public transit within and around the west area.

Objectives

- To make the City's street system easy to understand and use.
- To maintain and improve the efficiency and function of west area streets without widening existing roads.
- Improve the balance between automobiles and other modes of transportation, such as transit, bicycle and pedestrian.

Goal Provide a comprehensive bicycle transportation system to serve the needs of all bicyclists.

Objectives

- Maintain and enhance the existing, convenient and direct bicycle transportation system serving high travel demand corridors and major recreational, shopping, employment, and education centers.
- Maintain and enhance a bicycle transportation system which links residential areas with significant trip attractors.

Background Studies

An important element of a traffic and circulation study is background information. An analysis of existing conditions must be undertaken before recommendations can be proffered. Staff from the Planning Department and the Transportation Division have gathered data, including an inventory of existing traffic and circulation conditions. This data serves as a baseline for analyzing the traffic impacts of future development.

General Physical Conditions. General physical conditions including speed limits, traffic signal locations, pavement conditions, transit service in the area, and traffic volumes were considered for distinct segments of roadways in the study area. The following summary details those areas reviewed.

Newport Road from Maple Road to Miller Road

Speed Limit - The posted speed limit on Newport Road from the Miller/Newport intersection to the Maple/Newport intersection is 25 miles per hour.

Traffic Control Locations - Miller/Newport intersection: Stop sign for traffic on Newport. Newport/Red Oak intersection: Flashing yellow light; pedestrian crossing approximately 50 feet north of light. Newport/Sunset intersection: Four-way stop sign. Newport/Maple intersection: Stop sign for Newport traffic.

Pavement Conditions - Pavement conditions are good along Newport Road from Miller Avenue to Bird Road. North of Bird Road, the pavement conditions on Newport Road deteriorate, with frequently occurring areas of patched and uneven pavement.

Physical Conditions

- **General Description** - Newport Road, from Miller Road to Maple Road is a two-lane road with no usable shoulder and is striped as a no-passing zone.
- **Curbs and Gutters** - Newport Road contains curbs and gutters from Miller Avenue to Warrington Road. The remainder of Newport Road to Maple Road has neither curbs nor gutters.
- **Parking** - On-street parking is permitted on the east side of Newport Road from the Sunset/Newport intersection to the north end of the Forsythe School property.
- **Sidewalks** - A sidewalk extends along the east side of Newport Road, starting at the Newport/Miller intersection, terminating after approximately 300 feet. The sidewalk begins again at the Newport/Red Oak intersection and extends approximately 50 feet to the pedestrian crossing. The last segment of sidewalk exists along the bridge over M-14. A continuous sidewalk is present along the west side of Newport Road, extending from Miller Road and terminating at the M-14 bridge. The bridge itself has sidewalks on both sides.
- **Topography** - Newport Road from Miller Road north to M-14 has a steady incline, but is fairly straight. From M-14 north to Bird Road, Newport Road gently rolls and curves. At Bird Road, Newport Road jogs to the west, continues, and again jogs west, changing its course from a north-south road to an east-west road.
- **Other** - A bridge is located over a small creek approximately 450 feet North of Bird Road along Newport Road. A storm drain is located approximately 750 feet north of Alexandria Boulevard on the east side of Newport Road.

Transit System - Two AATA bus routes serve the Newport Road area: 12A and 13. A bus stop is located approximately 450 feet south of Lowell Road on the west side of Newport Road, and the buses serve both Forsythe and Rudolph Steiner Schools.

Maple Road from Miller Avenue to Huron River Drive

Speed Limit - The posted speed limit on Maple Road is 45 miles per hour from Newport Road south to just beyond the M-14 entrance ramp, at which point the limit changes to 35 miles per hour.

Traffic Control Locations - Newport/Maple intersection: stop sign for Newport Road only. Maple/Miller intersection: fully signalized with a left turn lane. Maple/Huron River Drive: stop sign for Maple only.

Pavement Conditions - Pavement conditions are good along Maple Road.

Physical Conditions

- *General Description* - Maple Road is a two-lane road, except at the M-14 entrance and exit ramps and the intersection with Miller Avenue, where it has two lanes of southbound traffic and a right turn lane. The road is flat in nature and has a straight alignment, except where it curves east prior to the Huron River Drive intersection.
- *Curbs and Gutters* - Maple Road has a shoulder along the west side of the road. Just south of the M-14 intersection, curbs and gutters exist and continue on past the intersection at Miller Avenue.
- *Sidewalks* - Sidewalks are present only along the east side of Maple Road from the M-14 intersection to Miller Road.
- *Parking* - No parking exists along this stretch of Maple Road.

Transit Systems - The AATA Bus Route 12 is accessible at the intersection of Maple and Miller, otherwise the only service for the remainder of Maple Road until the intersection with Huron River Drive is at the intersection of Maple Road and Newport Road. This intersection is served by AATA Bus Route 13.

Huron River Drive from Maple to North Main Street

Speed Limit - The posted speed limit on Huron River Drive is 35 Miles Per Hour.

Traffic Control Locations - Huron River Drive/Maple Road: stop sign for Maple Road only. Huron River Drive/Main Street: stop sign for Huron River Drive only. Huron River Drive/M-14: stop sign for Huron River Drive only.

Pavement Conditions - The pavement along Huron River Drive is generally good with some patchy and uneven areas.

Physical Conditions - Huron River Drive is a "Scenic Drive" consisting of a two lane road with winding curves following the topography of the Huron River. The winding curves result in poor sight distances around curves. Huron River Drive is often utilized by bikers. No parking is allowed, nor passing, but there are a few pull-off areas for fishing. No sidewalks, curbs and gutters.

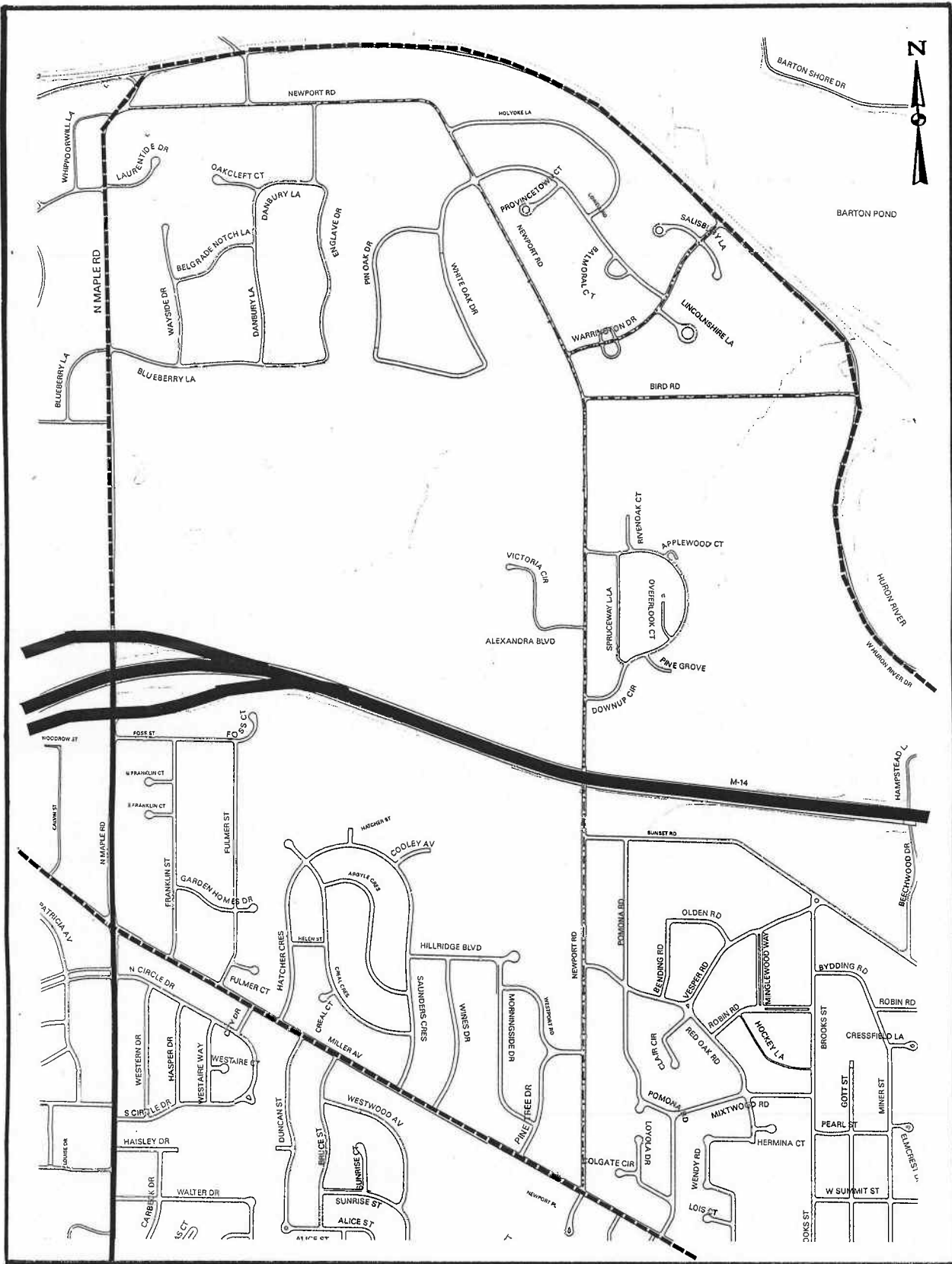
Transit System - The AATA bus system is not available to Huron River Drive. Route 13 does access the intersection of Newport and Maple, which is within close proximity to the Huron River Drive/Maple Road intersection.

Accident Location Analysis. Few accidents have occurred at major intersections in the study area and, generally, traffic moves safely and efficiently through most intersections. The Miller/Maple intersection has had the highest number of accidents (5 in 1993), but since that time a left turn signal has been added. Table 1, on the following page, reveals the accident data for select intersections in the study area.

Existing Functional Classification. Functional roadway classification definitions provide guidelines for realizing the efficient movement of traffic on roadways throughout the City. Roadways are ranked based on their function, or use. At one end of the scale are expressways that provide no direct access to land uses. Cul-de-sacs that provide access only to those uses which front the road are the other extreme. In between are arterials, collectors and local streets that provide a decreasing function of traffic movement in relation to access. Higher classified roads usually carry higher traffic volumes. The following definitions apply to roads within the Miller/Maple/Newport Study Area. Map 2 summarizes the roadway classifications.

Principal Arterial - The primary function is for high speed traffic movement between regions, and no direct access is provided. Speed limits are 55-65 mph and typical average daily traffic is 30,000 to 100,000 vehicles. **M-14** is considered a principal arterial.

Major Arterial - Major arterials provide mobility between or within major sections of the City or area. Access to land use is secondary. Posted speed limits are generally 35-40 miles per hour in urban areas and 45-55 mph in rural areas. On-street parking is usually discouraged. Typical average daily traffic is generally 10,000 to 50,000 cars. **Maple Road south of M-14** is considered a major arterial.



MAP 2

FUNCTIONAL ROAD CLASSIFICATION






-  Principal Arterial
-  Major Arterial
-  Minor Arterial
-  Collector
-  Local



TABLE 1

NEWPORT ROAD TRAFFIC STUDY: ACCIDENT DATA				
INTERSECTION	1991	1992	1993	TOTAL
Miller/Newport	3	0	3	6
Newport/Sunset	0	0	0	0
Newport/Down Up Circle #1	0	0	0	0
Newport/Down Up Circle #2	0	0	0	0
Newport/Bird	2	0	0	2
Bird/Huron River Drive	0	0	1	1
Newport/Warrington	0	0	0	0
Newport/Holyoke	0	0	0	0
Blueberry/Maple	2	0	0	2
Huron River Drive/Main	0	0	0	0
Maple/Miller	8	5	5	18
TOTALS	15	5	9	29

Note: Accidents during 1991 and 1992 were not recorded unless there were two or more.

Source: Urban Area Transportation Study, 1995

Minor Arterial - The primary function of a minor arterial is to move traffic within the community, or between neighborhoods, but usually has an important function of providing access to adjacent land uses. Posted speeds are generally 30-40 miles per hour. On-street parking generally is not permitted except in downtown areas. Typical average daily traffic is 3,000 to 5,000 vehicles. **Huron River Drive and Maple between M-14 and Huron River Drive and Miller Road** are considered minor arterials.

Collector - Collector streets provide access between arterials and local streets. The principal function is to collect traffic from nearby local streets and link it with the surrounding arterial street system. Generally, collectors are not intended for through traffic. On-street parking may be permitted. Speed limits are usually posted between 25 and 35 mph. Typical average daily traffic is from 1,000 to 15,000 trips. Collectors cover a wide range of traffic. The bottom of this range includes residential collector streets and the higher range either more intense commercial strips or a roadway with more than two lanes of traffic. **Newport, Warrington and Bird**, which would be on the lower range, are considered collector streets.

Local - Local streets primarily provide access to adjacent land uses and mobility within neighborhoods, and through traffic is discouraged. Typical average daily traffic is 1,000

vehicles and posted speeds are generally 25 mph. Neighborhood streets such as **White Oak and Alexandria** are considered local streets.

Scenic Routes and Natural Beauty Roads. While Newport Road is not an officially designated natural beauty road, its narrow width, rolling terrain and mature tree canopy create a tranquil and rural ambiance. Huron River Drive also is not a designated natural beauty road or scenic highway, although this riverside drive is used as such by cars and cyclists alike.

Jurisdictional Authority. The following list identifies the entity with jurisdiction over the subject roadway.

Miller Road is maintained by the City of Ann Arbor.

M-14 is an MDOT roadway, but the City has entered into an agreement with the Washtenaw County Road Commission whereby the County maintains M-14.

Newport Road is under joint jurisdiction (under City ownership, with the County providing maintenance) from M-14 to Maple Road. Newport Road from Miller to M-14 is under City jurisdiction.

Maple Road from M-14 to Huron River Drive is maintained by the Washtenaw County Road Commission. From Miller to M-14 Maple Road is maintained by the City.

Bird Road is maintained by the City under an agreement with the Washtenaw County Road Commission.

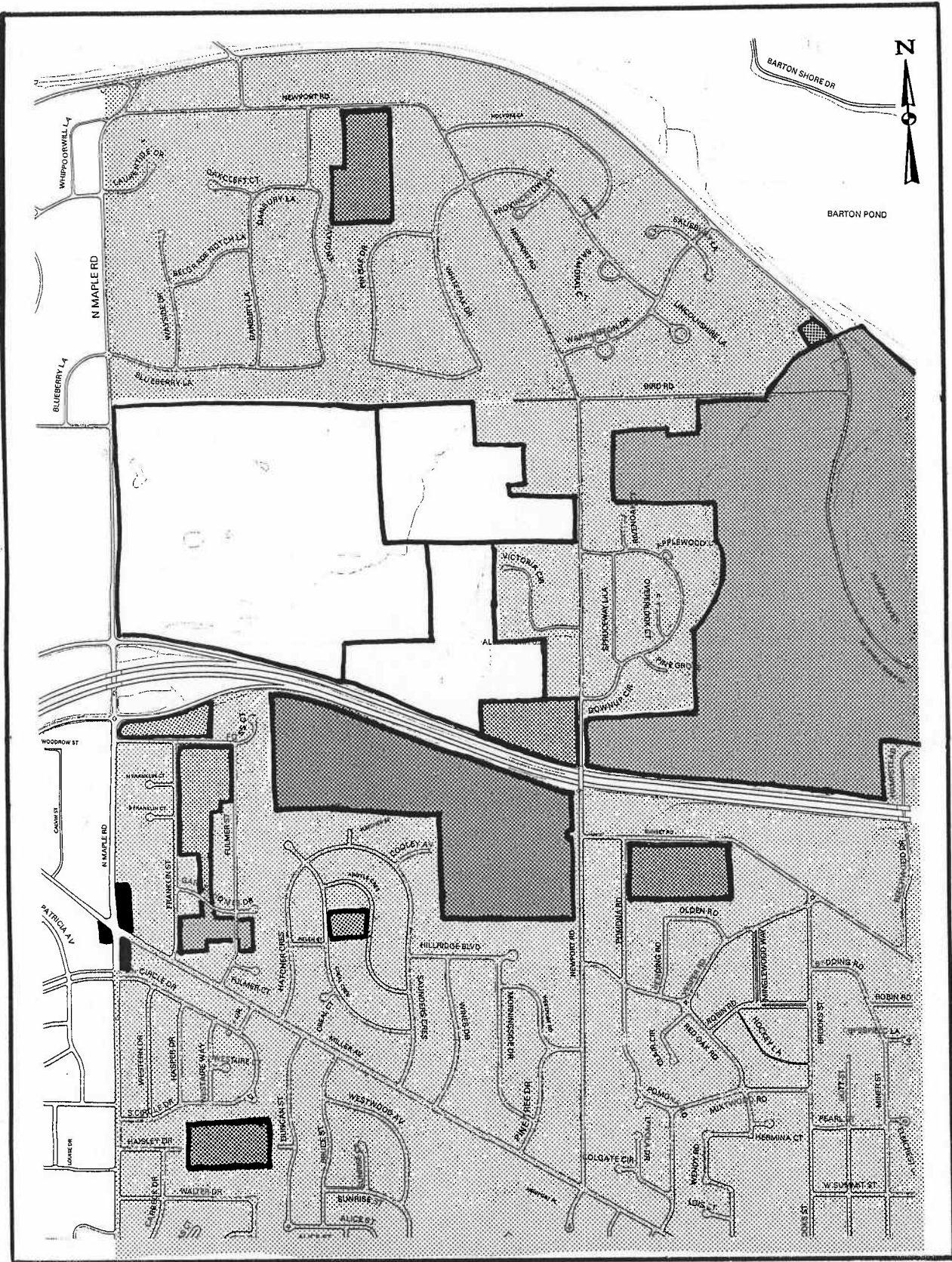
Huron River Drive is maintained by the Washtenaw County Road Commission from North Main to Maple Road.

Land Use and Traffic Generators

The major land uses in the study area are residential or public/quasi-public, although there is a small amount of commercial. Map 3 shows existing land use in the study area.






Single-family subdivisions north of M-14 include Newport Hills, Warrington, and Blueberry. The Newport West attached single family condominiums are located in the area as well. In addition, single family homes line both Newport and Maple Roads. There are a total of 713 housing units existing north of M-14. The Calvin Street neighborhood, Garden Homes and the Crescents are located between Miller and M-14. Vehicular trips generated from these neighborhoods currently impact the existing street system.

Public/quasi-public uses in the study area include schools, parks, churches and public facilities. Schools include the Rudolph Steiner School, Wines and Forsythe schools.



MAP 3

EXISTING LAND USE

- | | | | |
|---|---------------------|---|-------------------|
|  | Residential |  | Parks/Open Space |
|  | Commercial |  | Development Sites |
|  | Public/Quasi-Public | | |



12

The Rudolph Steiner School, located on Newport Road east of Englave Drive, is a private school serving 220 students in kindergarten through eighth grade. There are 35 employees. The school is open from 7:30 to 5:30, and peak drop-off and pick-up times at 8:30 and 3:30. Approximately 30 students take either a public school or AATA bus, with the remaining students in car pool arrangements. Forsythe School is a public middle school with 700 students and 85 employees. The school operates from 8:10 to 2:50 daily. Wines School is a public elementary school with 469 students and 58 employees, operating from 9:00 to 3:25 daily.

Bird Hills Park is a passive City park containing 151 acres. Footpaths have been installed, but generally the park is found in a natural state and not developed. Kuebler-Langford Park contains 30 acres and is an undeveloped natural area. Barton Park, a linear park located along the Huron River, contains 100 acres, and is developed with footpaths and pedestrian bridges. Small parking areas are provided at each of these parks, and are considered regional parks designed to serve the entire City. Several neighborhood parks, designed to serve the immediate neighborhood and thus catering to a pedestrian rather than automobile access, are also found in the study area. These include White Oak, Garden Homes and Creal Parks.

The Ann Arbor Water Treatment Plant employs a total of 30 employees who primarily work 8:00 to 4:00 shifts. There is minimal overnight staffing. The site contains 11 acres and there are 47 parking spaces. The facility is accessed from Sunset Road.

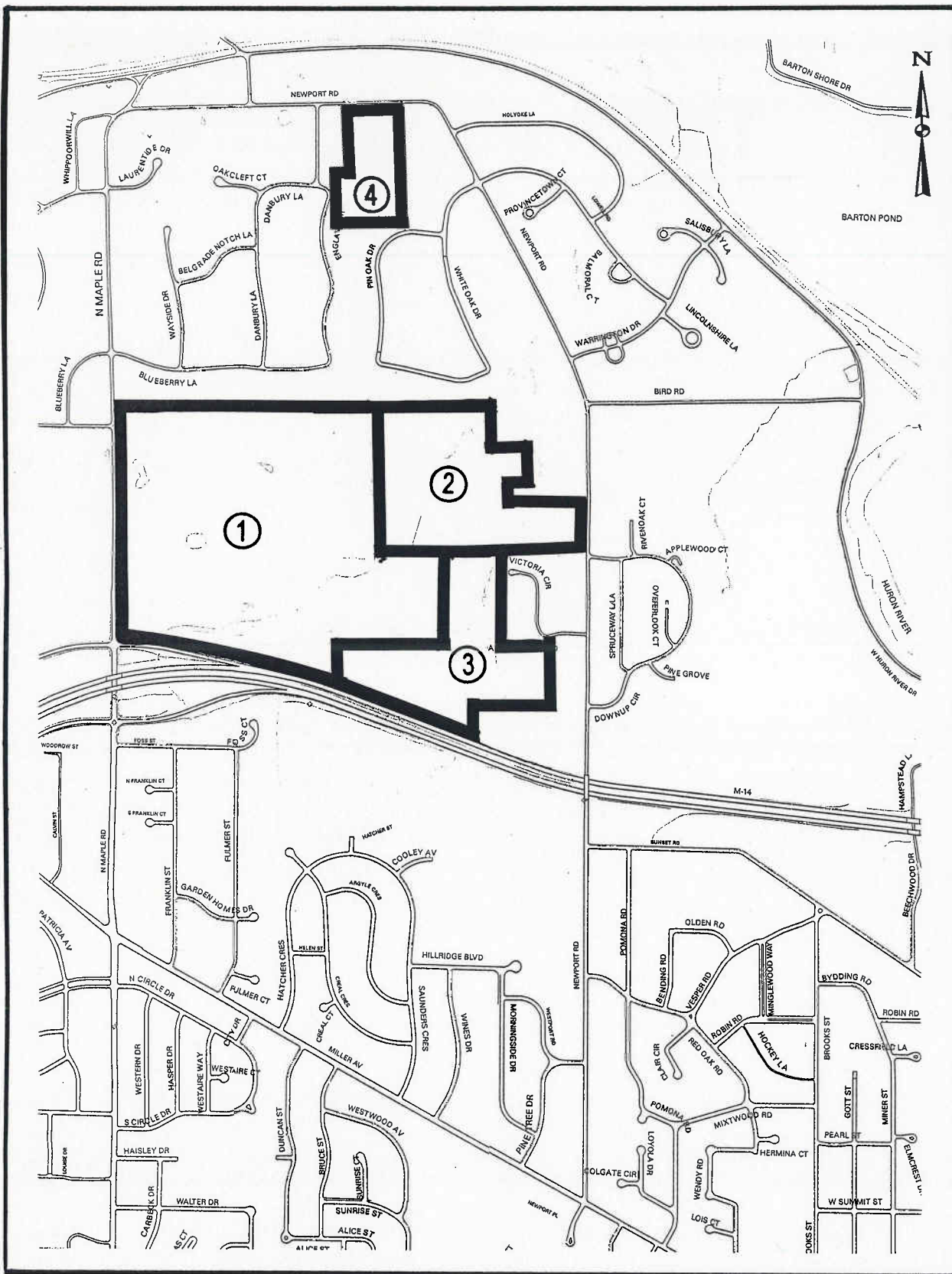
Seventh Day Adventist Church, located at North Maple Road and M-14, has a congregation of 100. The site contains 11 acres and there are 85 parking spaces. The building is used as a starting point for canvassing during the week between 9:00 and 6:00, but use is heaviest on the weekends: Saturday from 9:00 to 1:00 and Sunday from 9:00 to 3:00.

The Ann Arbor Free Methodist Church, located at Newport Road and M-14, has a congregation of about 60, and they meet on Sunday morning and Wednesday evenings. Alcoholics Anonymous and Alanon use the building on Friday evenings, with up to 60 people attending. A pre-school uses the facility Monday through Friday, with full and half day sessions. Drop-off starts at 8:00, and again at noon when half day sessions either start or complete. Pick-up is at 5:00. The site contains 3.84 acres and there are approximately 30 undelineated gravel parking spaces.

Neighborhood commercial uses, those which primarily serve the local area, are found at the Miller/Maple intersection.

Anticipated Major Developments

The West Area Plan identifies three vacant sites north of M-14 that have the potential for low density, single family residential development. The plan recommends that development occur at R1A density standards, which requires a minimum lot size of 20,000 square feet, resulting in approximately 2 units per acre. In addition, the Rudolf Steiner School proposes a large addition. Map 4 identifies potential development sites.



MAP 4

ANTICIPATED DEVELOPMENTS

- 1: Public School Site - 109 Acres
- 2: Swisher Property - 41.5 Acres
- 3: Pirrup Property - 42 Acres
- 4: Rudolph Steiner School - 12 Acres



14

Site 1, owned by the Ann Arbor Public Schools, contains 109 acres and is located at M-14 and North Maple Road. The West Area Plan recommendations for this site include a school, a park, or low density, single-family residential. Representatives from the school maintain that the site is planned for future use as a school and the identified need is a high school. The development of a high school would have the greatest impact on the site in terms of intensity of use and traffic generation.

According to a representative from the school district, the existing four high schools will be over capacity by 300 to 500 students by the year 2000. If a new school were to be constructed, attendance area lines would be redrawn to reduce overcrowding in existing schools, and students shifted to the new high school. Depending on when a new high school is constructed, it would accommodate from 300 to 1,500 students (enrollment at Huron currently is 1,804 and Pioneer 2,068). More than 100 certified staff members, and up to 20 non-certified staff, would be required for 1,500 students. Approximately 30 percent of students currently drive vehicles to school, with the remaining 30 percent walking, being dropped off or taking public transit.

A high school is land intensive, and must accommodate the school structure, parking for students, teachers and staff, athletic fields (football, baseball, soccer, etc), as well as open space. Representatives from the school district state that if a school is developed on this site, the entire site likely would be developed for school purposes, and excess land would not be available for sale.

A public park, or park/school combination use also were discussed as viable land uses for this site in the plan. Public park use would include both active and passive recreation opportunities, possibly unlit softball or soccer fields. If the final land use option, single family residential, were developed at the densities recommended by the plan, 178 residential units could be constructed on this site. This figure is based on the buildable acreage, and 25 percent of the total land area has been set aside for roads and public utilities.

Site 2, referred to as Newport Creek, contains 41 acres and is located on the west side of Newport Road. An area plan was approved in May 1995 for 48 single-family residential units and it is anticipated that 48 units will be approved at the site plan stage as well. This development meets the recommendations of the West Area Plan for use, density and design.

Site 3, referred to as the Pirrup property, contains 42 acres and is located on the west side of Newport Road, south of Site 2 and bounded on the south by M-14. Representatives for this site have articulated a desire to develop this site at densities that fall between the R1A and R1B zoning district standards. The West Area Plan included flexible language for this site to allow City Council and Planning Commission the option of increasing the density beyond the R1A limits. If this site were developed at three units per acre (between R1A and R1B standards), approximately 91 housing units could be constructed on the site, after subtracting the land area required for streets and public utilities. If R1A standards are applied, 69 housing units are possible, after subtracting land area needed for roads.

Site 4, the Rudolf Steiner School, intends to expand its facilities in phases over the next decade. Development of a 3,000-square foot early learning center is anticipated in spring 1996. However, this will primarily accommodate the shifting of existing classrooms/students

to the new facility and only 15 additional students are projected. The school plans to phase in a high school over the next six years, one grade at a time. Space in the existing building resulting from the shift will house the new ninth grade class of approximately 20 students. Additional high school classes will be housed in a new structure, the size of which has not yet been determined by the school. It is not known when this will be constructed. It is projected that the total school population will increase by 85 to 110 students in the next eight years.

Traffic Volume Projections and Expected Travel Patterns

Future traffic volumes were projected by using the future land use recommendations coupled with density estimates based on likely zoning classifications and West Area Plan future use recommendations. A total of 317 housing units are potentially possible on the large, vacant parcels north of M-14 based on the highest densities recommended by the West Area Plan. Table 2 shows projected housing units. In addition to these sites, other existing parcels along Newport could be subdivided creating some additional housing units and curb cuts on Newport Road. It is expected that approximately 15 additional housing sites could be developed along Newport Road. Thus, a total of 332 new housing units are possible.

TABLE 2

PROJECTED HOUSING UNITS			
SITE	TOTAL ACREAGE	BUILDABLE AREA (LESS 25% OF TOTAL)	TOTAL UNITS (BASED ON R1A STANDARDS)
#1 Public School Site	109 acres (4,748,040 sq ft)	81.75 acres (3,561,030 sq ft)	178 units
#2 Newport Creek Property	41.5 acres (1,807,740 sq ft)	1,377,585 sq ft	48 units (approved on an area plan) (1)
#3 Pirrup Property	42 acres (1,829,520 sq ft)	31.5 acres (1,372,140 sq ft)	91 units (average R1A/R1B standards) (2)
Potential for New Lots via Land Divisions			15 units
TOTAL			332 units

- (1) 68 units would be permitted given lot area.
- (2) 68 units would be permitted based on R1A density standards. However, slightly increased density can be expected based on West Area Plan language regarding flexibility.

The Ann Arbor Transportation Plan Update estimated that an additional 280 housing units would be constructed north of M-14 between Maple and the Huron River. Based on the calculations for the highest density uses recommended by the West Area Plan, potential units would exceed the transportation plan estimate by 38 units. Potentially, 1,008 housing units, including existing and proposed housing units, could be located north of M-14 when the area is completely built out.

16

Once the total potential number of housing units was calculated, the amount of future traffic and its likely direction of travel was estimated. Traffic impact statements prepared for the Newport Hills and Newport Creek developments were used, with pertinent data extrapolated to predict trip generation for the Pirrup property and the public school site. The following summary details the anticipated traffic volumes relating to development Sites 1, 2 and 3, including projections for the various alternatives identified in the West Area Plan. Map 5 graphically exhibits proposed roadway links.

Site 1, School Alternative. Approximately 2,000 trips per day are projected if the site is developed as a high school, based on estimates discussed earlier in this study. A high school would impact the existing road system more than other use alternatives. A road connection between Maple and Newport Roads is not recommended because of the impact on the neighborhoods from the school traffic. Few trips would be generated from the neighborhood; rather, they would be passing through. Bike and pedestrian links, however, are recommended. Other connections, such as the extension of Bird Road from Newport to Maple, are not considered necessary, appropriate or feasible. The existing street system, with only minor improvements, should adequately accommodate traffic generated by a high school use. Maple Road, which would absorb all traffic, is two lanes south to M-14. It may be necessary to create three lanes of traffic, as found south of M-14 on Maple, or to construct a turn lane or a deceleration lane directly in front of school entrance driveways. It is not likely that signalization will be required.

However, if the site is developed as an elementary school, roadway linkages to the neighborhood must be incorporated in the design since most traffic related to an elementary school is local.

Site 1, Park Alternative. The Institute of Traffic Engineers (ITE) Trip Generation Manual estimates that 243 trips per day are generated for a city park. Because the number of trips generated by park use is limited, connections through the neighborhoods to the east are considered appropriate. A City park would have minimum impact on Newport Road, with most trips using North Maple. While the biggest impact will be on North Maple, it should not be enough to trigger improvements to the street system, except for at the entrance to the park, which may necessitate a turn lane or a deceleration lane, but not signalization. Since both active and passive recreation activities are recommended if the site is developed as a park, separate park entrances should be created, and the connection to the neighborhood should occur via the driveway/road that serves the passive portion of the park.

If the park is developed for both passive and active uses, all active uses should locate in the southwest portion of the park adjacent to M-14. This portion of the site contains fewer wooded areas and slopes. Any parking areas associated with active park uses should be accessed only from North Maple Road, and should not link with neighborhoods to the east. Passive recreation areas containing hiking trails should be sited on the northern, wooded and sloped portion of the site, and in the southeast corner of the site. A road connecting the neighborhoods to the east with the passive portion of the park is recommended and a small, ancillary parking area should be constructed near Maple Road. The passive portion of the park should be separate from the active park uses, be oriented to the northern portion of the site, and should connect with the stub road proposed for the Newport Creek development. The roadway should not encroach upon wooded or wet areas.

Site 1, Residential Alternative. If the entire site is built out at R1A standards, 178 units are possible. The site would generate 1,700 trips per day (two-way average number of trips). It is assumed that 70 percent of peak hour trips would travel westerly out of the neighborhood to North Maple Road and that approximately 30 percent of the peak hour trips would travel easterly through either the Newport Creek or Pirrup properties. Table 3 reveals the number of peak hour trips generated by the residential development.

TABLE 3

Peak Hour Trips
Site 1, Residential Alternative

PEAK HOUR TRIP GENERATION	
TOTAL PEAK HOUR TRIPS	
A.M. Peak "In"	34
P.M. Peak "In"	117
A.M. Peak "Out"	97
P.M. Peak "Out"	63
70 PERCENT OF PEAK HOUR TRIPS (TO TRAVEL WEST)	
A.M. Peak "In"	24
P.M. Peak "In"	82
A.M. Peak "Out"	68
P.M. Peak "Out"	44
30 PERCENT OF PEAK HOUR TRIPS (TO TRAVEL EAST)	
A.M. Peak "In"	10
P.M. Peak "In"	35
A.M. Peak "Out"	29
P.M. Peak "Out"	19

Table 3 reveals that potentially 35 vehicles could travel through the Newport Creek or Pirrup properties at p.m. peak times to access the residential development located on the school-owned property. In real terms, that is approximately 1 car every two minutes for the peak hour, although at non-peak times the trips would be significantly less. In addition, vehicular trips will originate on the Newport Creek or Pirrup properties and travel across the school site to access North Maple Road (but only if it is developed for residential purposes, since development as a school would not require connections with the neighborhoods). Trips generated from dwelling units constructed on the public school site will affect traffic on North Maple.

18

Site 2, Newport Creek. An area plan for 48 residential units has been approved and approximately 458 vehicular trips will be generated each day. On average, each house will generate 12 trips per day.

TABLE 4

Peak Hour Trips
Site 2, Newport Creek

PEAK HOUR TRIP GENERATION	
TOTAL PEAK HOUR TRIPS	
A.M. Peak "In"	9
P.M. Peak "In"	32
A.M. Peak "Out"	26
P.M. Peak "Out"	17
85 PERCENT OF PEAK HOUR TRIPS (TO TRAVEL EAST)	
A.M. Peak "In"	8
P.M. Peak "In"	27
A.M. Peak "Out"	22
P.M. Peak "Out"	14
15 PERCENT OF PEAK HOUR TRIPS (TO TRAVEL WEST)	
A.M. Peak "In"	1
P.M. Peak "In"	5
A.M. Peak "Out"	4
P.M. Peak "Out"	3

It can be assumed that 80 to 85 percent of these trips will travel easterly toward town, using Newport Road. The remaining 15 to 20 percent would travel westerly towards North Maple Road, but only if Site 1 is developed residentially or as a park, thus necessitating a connecting street (development of the site as a school would not include a connecting street). Trips generated from the new dwelling units constructed on this site will primarily affect traffic on Newport Road, and particularly the Miller/Newport intersection.

Site 3, Pirrup Property. Based on development potential of up to 91 housing units, 869 trips per day will be generated from this housing development. Trips generated from the new dwelling units will primarily affect traffic on Newport Road, and particularly the Miller/Newport intersection. Like the Newport Creek property to the north, approximately 10 to 15 percent of trips generated from the Pirrup property will travel westerly through the school site to North Maple Road (only if the school site is developed residentially), and the majority, 80 to 85 percent, will travel easterly toward town.

TABLE 5

Peak Hour Trips
Site 3, Pirrup Property

PEAK HOUR TRIP GENERATION	
TOTAL PEAK HOUR TRIPS	
A.M. Peak "In"	18
P.M. Peak "In"	60
A.M. Peak "Out"	50
P.M. Peak "Out"	32
85 PERCENT OF PEAK HOUR TRIPS (TO TRAVEL EAST)	
A.M. Peak "In"	15
P.M. Peak "In"	51
A.M. Peak "Out"	42
P.M. Peak "Out"	27
15 PERCENT OF PEAK HOUR TRIPS (TO TRAVEL WEST)	
A.M. Peak "In"	8
P.M. Peak "In"	9
A.M. Peak "Out"	7
P.M. Peak "Out"	5

Site 4, Rudolf Steiner School. Based on the anticipated development of a 3,000-square foot early learning center and a high school building to accommodate up to 110 new students, 45 additional peak hour trips will be generated by the school. New trips generated will affect both North Maple and Newport Roads, as it is projected that 50 percent of the trips will arrive at the school from each direction. Only a.m. peak hour trips are reflected in the following table since p.m. peak reflecting general street system traffic is later than the school p.m. peak.

TABLE 6

New Peak Hour Trips
Site 4, Rudolf Steiner School

HIGH SCHOOL
A.M. Peak Hour Trips = 45 68% "In" = 31 Trips (50% from N. Maple = 15.5 Trips, 50% from Newport = 15.5 Trips) 32% "Out" = 14 Trips (50% to N. Maple = 7 Trips, 50% to Newport = 7 Trips)
EARLY LEARNING CENTER
3 Trips per 1,000 square feet at 3,000 square feet = 9 Trips per Hour 54% "In" = 5 Trips (50% from N. Maple = 2.5 Trips, 50% from Newport = 2.5 Trips) 46% "Out" = 4 Trips (50% to N. Maple = 2 Trips, 50% to Newport = 2 Trips)
COMBINED USES
A.M. Peak Hour Trips = 54 A.M. Peak "In" = 36 Trips (18 from N. Maple and 18 from Newport) A.M. Peak "Out" = 18 (9 to N. Maple and 9 to Newport)

Roadway Capacity - Level of Service

Once the projected number of trips was calculated, the ability of the street system to handle the increased traffic volumes was reviewed. There is no absolute number of vehicles a roadway can accommodate, but there are measures of how much traffic can be handled within a corresponding amount of delay. The general capacity of the roadway system is based on a number of factors including the number and frequency of turning movements that disrupt the flow of traffic, the speed limit, number of lanes, type of land use, and stops required for traffic signals and stop signs. Capacity is measured by the amount of delay. The most common measurement of intersection conditions is through "level of service" calculations for the peak hours in the morning and evening of a typical day. Level of service is simply a qualitative measurement of how well an intersection or roadway operates.

Acceptable levels of service depend on community character. In rural areas, Level of Service "C" is typically the highest (worst) level acceptable. Level of Service "D" is typically a reasonable level in suburban areas and small to mid-sized cities. In larger urban areas and downtown, Level of Service "E" is the highest (worst) level accepted. Level of Service "F" is considered unacceptable except in very rare cases. Table 6 defines various levels of service.

21

TABLE 7

LEVEL OF SERVICE (LOS) DEFINITIONS	
Level of Service A	Represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speed and to maneuver within the traffic stream is extremely high.
Level of Service B	Is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A.
Level of Service C	Is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users become significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user.
Level of Service D	Represents high-density, but stable flow. Speed and freedom to maneuver are severely restricted, and the driver or pedestrian experiences a generally poor level of comfort and convenience.
Level of Service E	Represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing maneuvers.
Level of Service F	is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves, and they are extremely unstable.

For unsignalized intersections, traffic operations are based on an analysis of the "reserve capacity." Reserve capacity is the difference between the number of vehicles that wish to make a movement versus how many could make the movement in a peak hour. Essentially, it is the frequency of gaps in traffic flow that are adequate for motorists to turn, and is influenced by a driver's comfort zone - how big of a gap is needed to feel confident to make the turning movement.

Several steps were undertaken to determine the existing and proposed level of service. First, traffic counts were undertaken by the Transportation Division, and traffic impact analyses conducted by consultants for the Newport Hills and Newport Creek (Site 2) developments were reviewed. This analysis provided a baseline for existing traffic. Next, future traffic volumes were projected by calculating anticipated development of new housing units and the school expansion and, using the ITE Trip Generation Manual, projecting future traffic volumes. Projections were made for a.m. and p.m. peak hours. The projected traffic volumes were used to calculate the level of service by using Highway Capacity Software. Data from these reports were extrapolated to project future traffic patterns.

It is projected that the Miller/Newport intersection will be the intersection most impacted by new development north of M-14. The Miller/Maple intersection, which would be impacted most by development of Site 1 by the Ann Arbor Public Schools, recently was improved with new left turn signals/turn lanes, providing adequate infrastructure to accommodate new development north of M-14. It is not anticipated that the level of service for this intersection would be reduced below an acceptable level even with new development. While other intersections in the study area such as Bird and Newport, Bird and Huron River Drive, and Huron River Drive and North Main Street, would be minimally impacted by new development, again, the level of service at these intersections is not anticipated to increase to unacceptable levels of service as a result of new development.

At the Newport/Miller intersection, during a.m. peak hour, delay would be increased from 3 seconds to 11.7 seconds. This reduces the existing Level of Service "A" to a Level of Service "C." The reduced level of service accounts for all existing traffic, as well as proposed traffic, resulting from the Pirrup and Newport Creek properties, the Rudolf Steiner School expansion, in addition to the school property if that property is developed residentially. During p.m. peak hour at Newport/Miller, the level of service would be decreased from "A" to "C," the delay increasing from 2.1 seconds to 10.8 seconds. The Rudolf Steiner School will not affect p.m. peak.

Findings and Recommendations

The street system in the study area is able to accommodate new development north of M-14 with few physical changes. The recommended changes will improve traffic flow and safety. It is recognized that the level of service for certain roads in the study area will worsen, but not to unacceptable levels. These increases are anticipated and accepted as part of the Transportation Plan Update, and traffic in the study area was not projected to pose circulation problems based on projections and assumptions made by that plan.

The following actions, or modifications to the circulation system are recommended.

- A. *Monitor the Miller/Newport intersection to determine the need for a future signal at this location.*

Generally, the projected future traffic will not reduce the level of service at Newport/Miller enough to justify substantial infrastructure improvements to accommodate the increased vehicular trips. The level of service at this intersection may be decreased to the point where a signal might be necessary in the future, and then only when traffic counts for a 24 hour period are considered rather than a.m. or p.m. peak counts. While the level of service at the Miller/Newport intersection is decreasing to "C" from "B," "C" is considered acceptable by the City of Ann Arbor Land Development Regulations. In addition, the Transportation Plan Update states that a Level of Service "C" is in the range of stable flow, although this level marks the beginning of the range of flow in which vehicle operation is affected. Only Miller Road is projected to be over capacity; all other study area streets are within acceptable levels of service. While increased delays may occur at the

Miller/Newport intersection, they are not considered to be unreasonable delays. As development north of M-14 continues over the next several years, this intersection should be monitored to determine if the level of service in fact decreases more than projected in this study, or if the accident rate increases.

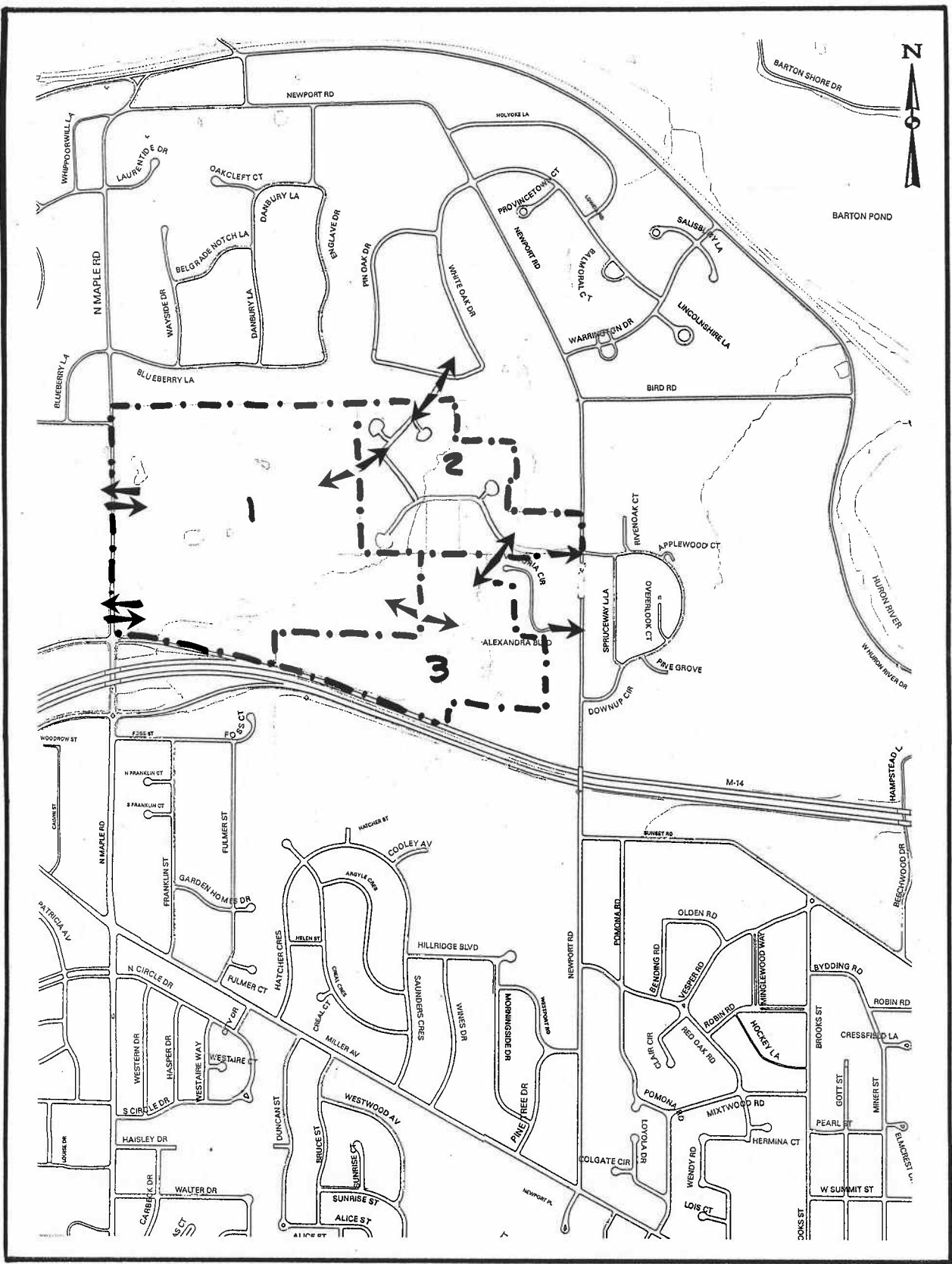
B. Roadway connections between the new developments should be implemented as each site is developed. The following neighborhood linkages are recommended and are graphically depicted on Map 5.

1. Public School Site (Site 1) Alternatives.

- a. If the Ann Arbor Public School site is developed as a high school, vehicular roadway links to the Pirrup and Newport Creek properties to the east should not be incorporated in the design. Pedestrian and bike access paths should connect the developments.
- b. If the Ann Arbor Public School site (or a portion of the site) is developed as an elementary school, a local roadway connection to the neighborhood should be incorporated in the design of the site, as well as pedestrian and bike access.
- c. If the Ann Arbor Public School site is developed for park use, the passive recreation uses recommended for the northern portion of the school site should be linked by a local street to the Newport Creek development, where a stub road is noted at the northwest corner of the site on approved area plan. The southern portion of the school site, if developed for active recreational purposes, should not link with either the Pirrup or Newport Creek properties. Pedestrian and bike linkages should be provided.
- d. If the Ann Arbor Public School site is developed for residential purposes, roadway connectors should be included which link this site with the Pirrup and Newport Creek properties to the east. One connection should be made to each development and also should include bicycle and pedestrian access.

2. Newport Creek Property (Site 2). The approved Newport Creek Area Plan identifies a stub street intended to connect to the school site, as well as proposed stub streets intended to connect to the Newport Hills Subdivision to the north and to the Pirrup property to the south. These proposed connectors must be maintained when adjacent new development proposals are designed. The school site stub road link must be constructed for all future uses except for use as a high school. Bike and pedestrian paths through the development site should be incorporated into site design so that pedestrians and cyclists will be encouraged to use neighborhood roads rather than the vehicular-oriented Newport Road.

3. Pirrup Property (Site 3). The design of the Pirrup property must include vehicular and pedestrian/bike links to both the Newport Creek property to the



MAP 5

PROPOSED ROADWAY LINKS

↗ Represents conceptual connections between potential residential developments, but does not suggest connections for school or park uses.



25

north and to the school site to the west (unless the school site is developed as a high school, in which case only pedestrian and bike access should be provided). The purpose is to connect Newport Road with North Maple Road with a bike path across the Pirrup and Public School properties. If an alternative to using Newport Road is offered to cyclists and pedestrians, higher use of the bike path system will result, as well as increased safety. This bike path should be designed to be part of the bike route around the perimeter of the City, as recommended by the Bicycle Master Plan. In addition, bike and pedestrian paths through the development site should be incorporated into site design so that pedestrians and cyclists will be encouraged to use neighborhood roads rather than the vehicular-oriented Newport Road.

C. *Roadway width modifications may be required in limited circumstances.*

The only instance where roadway widenings may be necessary in relation to development north of M-14 is if the School site is developed as a high school. Under this scenario it may be necessary to widen North Maple Road to three lanes from the entrance to the school site to M-14. While some students will travel to the school from the north on North Maple, the vast majority will arrive from the south; thus widening would not be necessary north of school entrance driveways. To relieve congestion related to school peak hours, two entrances to the school for Maple Road should be provided. It also may be necessary to provide a signal at the M-14 exchange to create traffic gaps to facilitate turning movements into and out of the school site.

Newport Road is not recommended to be widened, although acceleration/ deceleration lanes may be necessary at the entrances to the proposed Newport Creek and Pirrup developments.

D. *Pedestrian/Bike Facilities.*

As noted in a previous section of this study, new developments north of M-14 should be connected to each other and to existing development by pedestrian and bike paths, even when roadway connections are not proposed. Connections such as these facilitate the uses other than the automobile as a means of transportation, furthering the goals of the West Area Plan, the Transportation Plan Update, and the Bicycle Master Plan.

In addition, existing roadways within the study area should be modified to better accommodate cyclists and pedestrians by incorporating bike routes/lanes/paths and sidewalks when roadway modifications occur. It is anticipated that improvements will be made to the existing bike lane on Miller Road between Seventh Street and North Maple Road, to improve bike travel, as recommended in the Bicycle Master Plan.

In some situations, however, it will be difficult to modify the existing street system to accommodate cyclists and pedestrians. For example, on Newport Road, on the east and west sides of the road between Sunset Road and the City limits, a

sidewalk cannot be built to City standards without major disturbance to significant grades, mature trees, creek crossings, and drainage swales. While the road can continue to be used as a bike route as recommended in the Bicycle Master Plan, no specific pedestrian improvements are recommended at this time. This recommendation is supported by the City of Ann Arbor draft American's with Disabilities Act (ADA) Transition Plan. However, continuing strong demand for pedestrian access along Newport Road is recognized and pedestrian facilities should be incorporated whenever possible and to the extent possible. Connections between neighborhoods in the study area will serve to balance the lack of a bike lane on Newport Road.

Further, the West Area Plan, Transportation Plan Update, draft ADA Transition Plan, and Bicycle Master Plan support the installation of sidewalks where gaps are present throughout the study area. All new developments should provide sidewalks on both sides of the streets.

E. Access Control.

As noted earlier in the study, there are 162 driveways, or access points, on North Maple and Newport Roads north of M-14. Each additional access point reduces the capacity of the roadway on which it is located. There are, however, ways to manage the number, location, spacing and design of access points to reduce conflict, thereby improving the capacity, or level of service. The following guiding policies should be referenced when considering new development or land division requests throughout the study area, and particularly on North Maple or Newport Roads.

1. Align access roads for new subdivisions with existing roads where possible. Where this is not possible, ensure that roadway offsets allow for safe and efficient left-turn movements.
2. Driveways should be located to provide the most favorable driveway grade and assure that no undue interference with the free movement of road traffic will result. Sight distance requirements must be met.
3. Limit excessive curb cuts by considering access off of a marginal access road, shared drives, cul-de-sacs or other means to limit excessive curb cuts. These solutions should be applied to land divisions where new developable parcels are created that would otherwise require an additional curb cut onto an existing arterial or collector street.

F. Modifications to Bird Road.

The concept of extending Bird Road from Newport Road west to Maple Road was considered and rejected. While a connection between Maple Road and Newport Road is desirable under residential development scenarios, this can be accomplished by creating a connecting street system through the new neighborhood developments (Sites 1, 2 and 3). The undesirable results of

extending Bird Road include the creation of a road in the rear yards of homes in Newport Hills, Newport Creek and the "Blueberry" neighborhood, as well as the removal of important natural features that are located in the path of the roadway.

Bird Road east of Newport Road is narrow, steep and partially gravel. It is used to access Huron River Drive and also provides access for residents on Bird Road. There are two potential changes that would address difficulties presented by the current roadway. Rerouting Bird Road to connect to Huron River Drive at the Barton Park access drive would reduce safety concerns due to extreme topography and eliminate bisecting two portions of Bird Hills Park. It also would allow improvement to Bird Hills Park off of Bird Road.

Alternatively, the Parks and Recreation Department has discussed the possibility of closing that portion of Bird Road that is located within Bird Hills Park. Bird Hills Park is divided by Bird Road and its closure would link the park. Bird Road would remain open from Newport Road to access existing homes. Safety would be increased by eliminating through traffic from this narrow, steep, partially gravel road.

Prepared by Andrea L. Brown
Ann Arbor City Planning Department
100 North Fifth Avenue
Ann Arbor, Michigan 48107-8647
(313)994-2800

Adopted by Ann Arbor City Planning Commission
October 3, 1995

Adopted by Ann Arbor City Council
November 9, 1995