

Department of Planning & Development
Planning Unit

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Memorandum

Date: September 14, 2006

To: Plan Commission

From: Rick Roll, AICP

Subject: Cherokee questions and responses.

Attached is a summary of responses to a number of questions raised by the Plan Commission at its June 27th 2006 meeting and by the general public during the ongoing Cherokee Special Area Plan planning process. You will note that these questions cover a range of issues, including but not limited to, stormwater, groundwater, wetlands, open space, environmental assessment and other issues. The responses to the questions may be refined if additional information becomes available. If you have any questions, please do not hesitate to call me at 267-8732 or e-mail me at rroll@cityofmadison.com

September 18, 2006
Cherokee Special Area Plan Questions and Responses

Stormwater Issues (Source: City Engineering Division)

1. *Who is responsible for reviewing the Cherokee Park Incorporated (CPI) stormwater management plans?*

The City Engineering Department will review the CPI stormwater management plans in conjunction with the proposed plat and grading plan to ensure that the proposed development meets design standards and stormwater management requirements as mandated in Chapter 37 of the Madison General Ordinances. This review includes all Wisconsin DNR stormwater management and erosion control requirements, in accordance with Wisconsin Administrative Code NR 151, and all Dane County stormwater requirements and standards. The development may require additional separate DNR permits that the Developer would submit directly to the DNR for review and approval.

2. *CPI has not provided enough detail about their stormwater management plans.*

Detailed engineering and stormwater management plans will be submitted by the developer as part of the preliminary plat and final plat submittals. This detail usually occurs after initial approval of a special area plan. City Engineering staff has met with the Developer's stormwater management consulting engineer (Montgomery Associates) to discuss preliminary design criteria and concepts.

3. *Do we need a stormwater study?*

A detailed stormwater management plan shall be required as noted above. The components of information gathered to create this plan could be considered a stormwater study.

4. *Ten-year design of stormwater facilities is inadequate.*

Madison General Ordinance Chapter 37 requires that the peak runoff rate be maintained for the 2 through 10-year design storms and that safe emergency overflow be provided for the 100-year design storm event. We believe that these ordinance criteria are appropriate for this site, and CPI has committed to meet these criteria.

The use of the 10-year design storm has proven adequate to minimize flood damage during extreme storm events, provided that normal design precautions are taken to flood proof structures. Regardless of the design storm event selected, buildings are at risk if walk out basements, and underground residential and parking garages are installed without consideration for flood-proofing.

In summary, the City can design CPI to avoid flood damage using the 10-year design storm. A greater concern is the potential for stormwater flowing into CPI lands, and the developed

portions of CPI during extreme events due to continued development in the Lake Mendota Watershed in areas beyond the CPI ownership.

5. *How will stormwater facilities be maintained?*

Larger stormwater facilities, such as detention basins, will be dedicated to the City and maintained by the City. The smaller basins and infiltration facilities will be owned and maintained by the homeowners association, according to procedures that will be reviewed and approved by the City. Whenever private maintenance is to be provided, a deed restriction is recorded against the responsible lot(s) to guarantee maintenance and to establish the provisions if there is non-compliance.

6. *Who does the maintenance work on rain gardens?*

Presently, the CPI development is planned to be operated under a condominium concept. The rain gardens and/or infiltration basins will be maintained by Cherokee Park or the Homeowners' Association, rather than individual homeowners. The maintenance requirements are detailed in the maintenance agreement that the City records against the responsible lot or lots. Detailed information on rain gardens, including maintenance, can be found at numerous places online including City Engineering's website under Water Quality Initiatives.

The City does not have a maintenance history for rain gardens. Therefore, it is suggested that it would be prudent to plan to regrade and replant rain gardens on cycles of 10-years.

7. *How will pesticide runoff be managed?*

The City and County presently have regulated the use of fertilizer containing phosphorus, but neither has any regulation regarding pesticide management. The City has a policy of minimal usage of pesticides on public lands with detailed reporting requirements for any usage. CPI has indicated that herbicide/pesticide/fertilizer use will be managed through professional management of open space areas, and through buffers around sensitive areas, for privately owned (non-public) areas.

8. *No net gain in stormwater runoff off-site should be the goal. No additional off-site runoff.*

CPI indicates that they shall provide infiltration areas that shall attempt to provide 8-inches of recharge in upland areas. This will provide groundwater recharge comparable to the predevelopment rate, and will reduce post development runoff volume.

9. *The whole question of flooding and floodplain storage merits careful examination before development is approved. Existing homes in the Cherokee Park subdivision experience periodic flooding.*

The Cherokee Park neighborhood is located in an area that is susceptible to flooding caused by backwater from Lake Mendota, as evidenced by current floodplain maps. Some homes

may have built exposures, doors or windows at or below the 100-year flood plain elevation, or not sufficiently above this elevation. The peak water surface elevation was 852.75 during 2000, which was about 8-inches higher than the 100-year elevation. As a result of that flood event, the County has embarked on a study to consider the management of lake levels. The elevation of Lake Mendota is controlled by the locks at Tenney Park. CPI (Montgomery Associates) will analyze the runoff from the proposed development and how it travels through the golf course to Cherokee Lake, to make sure local stormwater runoff from the proposed development does not aggravate the existing situation. However, analyzing the effect that this proposed development would have on the 100-year flood elevation of Lake Mendota, would be a somewhat meaningless exercise as even developed, the runoff contribution would be a tiny fraction of the total runoff of the 85 square mile watershed (an area larger than the entire City) draining to Lake Mendota and affecting the flood plain elevations in Cherokee.

10. *Will the City insist that development in the 5th Addition meet the 1 home per ¼ acre or 1 home per ½ acre (preferred) standard with integrated rain gardens and other water and silt management built in and maintained to prevent further adverse effects on the Yahara River?*

Rain gardens and other stormwater management features will, no doubt be central to the stormwater management plan for the CPI development to meet their regulatory requirements. The general density ranges for the proposed development will comply with the City's Special Area Plan once it is adopted and all applicable local state and federal regulations. The preliminary and final plats will more specifically identify the sizes of all individual lots.

11. *How will stormwater runoff be handled so that flooding of homes doesn't get worse than it is now?*

As discussed under question 9, flooding in the area is generally the result of high lake levels.

Groundwater Issues (Sources: Madison Water Utility, Montgomery Associates, Wisconsin Geological and Natural History Survey)

1. *How will CPI development affect the groundwater and the Marsh?*

The proposed Cherokee Park development could affect groundwater in the area in two general ways: by changing the amount of groundwater recharge in the development areas, and by the additional pumping of municipal water supply wells to provide potable water for the new homes in the project.

The residents of the proposed CPI development will be supplied with potable water by City of Madison wells. The projected water use for the Cherokee development is a relatively small fraction (approximately 10%) of the 2004 pumping rate for the nearest City well, Well No. 13. Based on this relatively small incremental withdrawal, it is unlikely that the Cherokee project would result in water supply pumping that would significantly affect the local groundwater system. Preliminary assessment by Montgomery Associates using the

Dane County Regional Groundwater Model indicates that the resulting changes in groundwater discharge near Cherokee Marsh would be minimal.

The Cherokee development, like any development, could reduce the amount of groundwater recharge in the development area, due to construction of impervious surfaces such as roads and buildings. However, our understanding is that the project design will include stormwater infiltration features designed to maintain a groundwater recharge rate of 8 inches per year in the development area. Groundwater recharge in the Madison area for undeveloped areas is generally considered to be in the range of 6 to 8 inches per year, and the recently adopted Dane County stormwater ordinance specifies a recharge target of 7.6 inches per year. (Source: Montgomery and Associates)

2. *What area in Dane County is recharged from CPI land?*

The Dane County Regional Groundwater Model indicates that the proposed development areas supply recharge to the Yahara River in the area of Cherokee development, and probably also to Madison Well No. 13. It is also possible that areas of the CPI development recharge groundwater flowing to Cherokee Marsh. However, site-specific data are not available at this time. (Source: Montgomery and Associates)

3. *What impact on Dane County's groundwater supply will the reduction of the water recharge rate have?*

As discussed under question 1, the CPI development will be designed to maintain groundwater recharge of 8 inches per year. This is approximately equivalent, and possibly greater than, current recharge at the site. (Source: Montgomery and Associates)

4. *Why haven't we used the Dane County Regional Hydrogeological Model that Rob Montgomery mentioned at the meeting?*

Montgomery Associates has conducted preliminary analyses using this model, as explained under question 1. (Source: Montgomery and Associates)

This model is typically used for analysis of City wells. The domestic water use in the proposed development would be approximately 200,000 gallons a day, which should have an insignificant impact on groundwater. The distance between the Marsh and Well 13 is such that the additional drawdown expected from this development would be minimal. (Source: Madison Water Utility)

5. *Will increased demand on this well cause nearby springs feeding Cherokee Marsh and the Yahara River to dry up?*

Montgomery Associates expects that the changes in the regional groundwater system due to the additional pumping will be minimal. Additionally, the recharge goal for the project should maintain the local recharge that may feed adjacent areas of Cherokee Marsh. At this time, Montgomery Associates does not have the data or analysis tools to specifically quantify

impacts on particular springs or portions of the Yahara River. (Source: Montgomery Associates)

The City's Well 13 feeds this area. At this time, the City doesn't have plans to drill another well in this area. The City's planned wells for its north side are on the other side of the airport. Right now, Well 13 is pumping at 65% of full capacity. This development would result in a minor increase from Well 13. (Sources: Madison Water Utility and Montgomery Associates)

6. *The recharge and discharge areas of Cherokee Marsh need to be mapped and the significance of these zones considered in any development approvals.*

Detailed delineation of groundwater discharge and recharge areas for Cherokee Marsh would require a detailed regional hydrologic study and such a study would cover a much larger area than proposed for development in this project. Such a regional hydrologic study would need to encompass a large area including portions of several towns, villages and cities. A regional groundwater model was prepared by the Wisconsin Geological and Natural History Survey, the United States Geological Survey and the City of Madison in the early 1990's. The model is rerun every year and when new wells are created. The Cherokee development is on the margin of the southernmost portion of the Cherokee Marsh. A regional understanding of groundwater recharge and discharge areas supporting the entire Cherokee Marsh system could be part of a regional planning process. Because the Cherokee development plan calls for maintaining recharge at approximately the existing rate, it is expected that impacts on the marsh caused by changes in recharge on the Cherokee development side will be small. (Source: Montgomery and Associates)

This is a much larger issue than just the proposed Cherokee development, and would include other developing areas in the City of Madison, Burke, and DeForest. Some springs may be fed by local recharge that is largely addressed by required infiltration. Other springs may be connected to the deep aquifer that is pumped for municipal wells, and would have to address pumping and recharge practices on a regional level. (Source: Madison Water Utility)

7. *What wetlands, fens and marshes will be impacted by this loss of groundwater recharge?*

As described above, the Cherokee development plan calls for no loss of groundwater recharge. (Montgomery and Associates) The Cherokee proposal is to provide recharge at the pre-development rate. (Source: Madison Water Utility)

8. *Where are these natural resource features? These areas need to be mapped and the development of the land's impacted should be evaluated before development is approved.*

Several studies are available that describe the extent of regulatory wetlands, and the nature of the wetlands within Cherokee Marsh. These include wetlands delineated by CPI's consultant, Natural Resources Consulting, Inc. (Source: Montgomery and Associates)

9. *A hydrogeologic study should be a major part of an environmental assessment. Can City do it? Will stormwater studies be sufficient?*

Stormwater management practices that infiltrate the same amount of water as pre-development conditions will largely resolve any issues with local impacts on shallow groundwater. Understanding and protecting the deep groundwater resources is a much larger and more complex issue. The regional groundwater study provides some background for this, but does not tell us the exact origin of the water feeding fens and springs; and does not tell us where the water goes after infiltrating at a given location. It does not tell us if, or where, there are major fractures or conduits that connect the shallow infiltrated groundwater that feeds springs to the deeper groundwater aquifer that is tapped by municipal wells. This is more an issue for managing well location and pumping than limiting development on a certain site. (Source: Madison Water Utility)

The City has staff qualified to evaluate these issues in detail. However, as discussed under question 6, detailed groundwater studies are not typically performed as part of the review process for proposed developments. City staff can review the detailed stormwater management plan for the Cherokee development, including the design to maintain groundwater recharge. (Source: Montgomery and Associates)

10. *Where does the well supplying the housing units in this development get its water?*

At this time, it has not been determined which well or wells would serve the CPI development. The nearest City of Madison well is No. 13, which is a deep well that draws water from both the upper and lower sandstone aquifers. Additionally, the existing Town of Burke could serve the project well, which draws its water from the lower aquifer. In the northeastern part of Madison, some supply wells are open to both aquifers, and some are open only to the lower aquifer. (Source: Montgomery and Associates)

Well 13 as stated above. Well 13 draws from the Mount Simon aquifer that serves all of the Madison area. (Source: Madison Water Utility)

11. *What is the capacity of the well or wells that will serve the CPI development?*

Well 13 currently pumps at roughly 2000 gpm and operates 65% of the time on an annual basis. The City's top producing well is at 80% of capacity, so if we went to that level, that equals about 410,000 gallons of additional capacity per day. Surplus capacity would serve approximately 1,400 single-family residences (+/-). (Source: Madison Water Utility)

Madison Well No.13 has a maximum pumping capacity of 3.3 million gallons per day. The actual 2004 pumping rate was 1.9 million gallons, and the approximate projected additional water use for the CPI development is 208,000 gallons per day. (Source: Montgomery and Associates)

Wetland Issues (Source: City Engineering Division)

1. *Will all plant life, insects, and wildlife dependent upon the springs, fens, and wetlands be able to survive in future years?*

The CPI development plans to maintain required vegetated buffers along sensitive areas such as wetlands. State regulations also require a buffer from existing wetlands. The development plans also call for maintaining existing groundwater recharge in order to maintain the supply to springs and seepage areas that is drawn from the CPI site, and to limit runoff volume to the Marsh. Converting local land use from agricultural to residential will decrease the sediment and nutrient load to the local receiving waters compared to existing conditions.

2. *The citizens of Dane County, and in the northside neighborhood, recognize these wetland values and expect the City of Madison and Cherokee Park to ensure that development impacts to these wetlands are eliminated or very minimal.*

As discussed under question 1 in the stormwater section, CPI is developing a comprehensive stormwater management plan to limit effects to the wetland system in the area. The stormwater management plan will be developed in greater detail after the special area plan has been approved and as engineering plans are developed as part of the preliminary and final plats.

3. *When was the most recent DNR wetland delineation done on the area around the development?*

The only "DNR wetland delineation" is the Wisconsin Wetland Inventory maps, which are advisory only, and are not usually based on detailed on-site analysis. Detailed wetland boundary delineations for the 5th Addition, the Hornung-Range property, and the Wheeler Triangle areas proposed by CPI for development have been prepared by another CPI Consultant, Natural Resources Consulting, Inc. These boundaries have been approved by the US Army Corps of Engineers (USACE), which is the governmental agency charged with the approval of regulatory wetland boundaries adjacent to waters of the State, by agreement between DNR and the Corps. DNR is in the process of reviewing these boundaries and their concurrence is also expected. A separate document attached consists of a table prepared by Montgomery Associates for CPI, and it details the delineation dates and USACE concurrence.

4. *Provide larger buffers (200-400 feet) between development and Marsh, wetlands, etc.*

Water Quality Certification for extension of urban services requires that there be a 75-foot buffer between impervious surfaces and wetlands. Dane County Community Planning and Analysis Division reviews this requirement, advisory to the DNR. Generally the buffer area is a separate lot that can be publicly or privately owned. In the past, on some developments, the City has allowed up to 25-feet of the total buffer to be within a separate, privately owned lot (with appropriate development restrictions). Currently, CPI is proposing this type of

buffer arrangement. As discussed previously, the CPI development calls for condominium ownership, meaning that lawns and other open spaces will be maintained by CPI or the homeowners' associations. Also, where applicable, shoreland zoning rules will be followed, which also require a 75-foot buffer from shorelands.

City Engineering is not supportive of the use of private lands for a wetland buffer due to the preference of property owners for short turf grass up to the perimeter of their properties and into the wetlands and the potential feeding of waterfowl.

5. *Why is the 200-foot setback recommended in the 1981 Open Space Plan not being respected?*

The 1981 Plan recommendations were not applied to land that had already been developed or approved for development, unless the development committed the land to open space. Based on the 1965 approval of the Cherokee Preliminary Plat, the Fifth Addition and the High Hill were considered approved for development, for the purpose of that Plan.

Environmental Assessment (Source: City Engineering Division)

1. *We need an environmental assessment of the entire region to determine the impact of development on wetlands, wildlife, etc. Can we do it in-house?*

Environmental assessments or environmental impact statements are not typically performed for city planning or engineering approval of development projects. Occasionally, environmental assessments are required in State DNR permitting of specific features of a project. A study of the entire Cherokee Marsh region would include areas far beyond the City's jurisdiction. The City has staff with technical expertise to evaluate most of the issues required in an environmental assessment, but the City does not typically conduct these studies.

2. *Has an EIS been done for this area?*

No.

Open Space Issues (Source: City Parks Division)

1. *Keep Hornung woodlot in open space. Keep Wheeler Triangle in open space. Preserve open space easement.*

The Hornung woodlot is considered a lower priority for protection as a conservation park than the areas abutting wetlands. Many of the largest oak trees have already died or been removed. The understory vegetation is quite disturbed, with abundant garlic mustard and other invasive species. Some of the southeast corner of the woods will be preserved as access into Whitetail Ridge Park. Some of the smaller oak trees may be preserved in the process of development, but most will be lost.

The Wheeler Triangle is not a high priority for either recreational open space or conservation open space. There are several other parks and schools nearby that meet the recreational needs. A higher conservation priority in that area is management of stormwater, and management and public access to the open space easement area.

2. *Can the City pursue options to turn the 5th Addition into parkland through a partnership of the City, County and private funding to purchase the parcel?*

The City plans to take some dedicated land for recreation in the Hornung – Range area where the most new housing will be developed. Any additional dedication required will be taken as conservancy land. The City will discuss the possibility of purchasing additional lands for conservancy, such as the Fifth Addition, and seeking county, state and private funding to support these acquisitions. The current owner would have to be a willing seller for most of these funds to be a possibility.

3. *Protect the High Hill. Exclusion of the “High Hill” from the Conservation Park gives many citizens the impression that the City staff is in collusion with the developer. Swap developable land potential in Wheeler Triangle to Cherokee Garden Condos open space. Preserve the triangle and develop the Cherokee Garden Condos open space.*

The High Hill is similar to other lands that may be considered for acquisition if they could be acquired from a willing seller and if City funds and other funds were available for the acquisition. Note that the Fifth Addition, the Wheeler Triangle and the High Hill were all approved for development in the adopted 1965 Preliminary Plat and have been within the Urban Service Area for many years and included as recommended for development in City plans for many years. There are currently two large homes developed on the “High Hill”.

The Parks Division would consider exchanging the Cherokee Garden Condos open space for other land of higher priority if the owners and adjacent residents in both areas are interested. However, the Wheeler Triangle may still be a low priority except for lands that improve stormwater management or wetland buffers.

4. *Pedestrian and bike paths aren't necessarily good for wildlife.*

Highways and streets lead to road kill of many species. Road kill is not an issue with pedestrian paths, and is rarely seen on bike paths. Research indicates that wildlife adjust to recreational trail use that stays in the same trail corridors. Trail system designs that route trails away from sensitive communities; leave large trail-free areas; and route major bike trails along the edge of the open space will reduce trail impacts.

5. *Preserve the area as a conservancy not a park. Protect the 5th Addition.*

See #2.

6. *How does the 10 to 1 ratio compare to the 200 – 400 foot buffer? The well-being of natural inhabitants, requires upwards of 10 acres nearby non-wetland relatively undeveloped or*

open acres for every acre of open water for life cycle activities including feeding, breeding and local seasonal changes. Uphold the agricultural zoning since it is not in the public interest, or ecologically sound, to change the zoning.

Protection of a large natural upland acreage adjacent to wetland is desirable for a variety of reasons: protection from runoff and pollution, better groundwater infiltration, wildlife habitat space and critical wildlife linkages to upland habitat, greater ecological diversity. Ecological studies can probably be found to support the value of ratios as high as 10 acres of upland per 1 acre of wetland, although the US Fish and Wildlife Service uses 4:1 as its administrative limit that will be funded for protection by the Federal Wetland Reserve Program. The 4:1 ratio was developed based on waterfowl reproduction research. The 1981 Long Range Plan for Cherokee Marsh used a 200-foot minimum buffer in most areas not already committed to other uses to recommend a proposed open space of 2,200 acres upland and 4,000 acres wetland (0.5:1). To reach the 4:1 ratio for Cherokee Marsh would require 16,000 acres of upland, which could be achieved with an additional 1-mile buffer around the entire Token Creek - Cherokee Marsh preservation boundary from the 1981 Plan. This would place all CPI lands in a buffer category as well as large portions of Westport and Burke.

7. *P.C. wants more information on the upland ratio. Where do the numbers come from?*

See #7.

8. *Using buffer areas as an extension of backyards negates the buffer.*

Buffer areas are used for different purposes. See #4 under Wetlands.

A 75-foot upland buffer of public land is desirable adjacent to public-owned wetlands, to provide enough space for a public trail corridor. In cases where the buffer is less than 75 feet, it forces the trail to be very close to private lot lines.

A buffer for screening is desirable for a Conservation Park such as Cherokee Marsh north of the Fifth Addition. Ideally it would be 200+ feet of upland so that trees can be grown to screen out adjacent development, even in winter. In some areas, existing trees on upland in the park may reduce the width needed for this purpose. In the High Point – Raymond Neighborhood Plan near the Ice Age Trail, a 40-foot planting strip was required on the rear of the private property abutting all open space.

9. *The importance of having “area conservancies” that truly work for wildlife, not just “city parks” for recreation.*

In addition to meeting the recreation needs of residents, the Madison Parks Division provides more natural areas throughout the park system than most cities. The total open space system of parks and drainage greenways is about 6000 acres. Mowing was reduced by 100 acres in 2006, so current management practices include 2100 acres (35%) mowed and developed, 2500 acres (42%) that are never mowed (conservation, woods, wetlands) and 1400 acres (24%) that are meadows mowed approximately once each year.

There was also suggestion of a regional public conservancy that would be bordered or buffered by private agricultural and open space land protected by zoning. Previous plans for the areas around Cherokee Marsh have recognized future development of certain areas, so long term preservation of agriculture would likely require purchase of land or easements for open space.

Traffic Issues (Source: City Traffic Engineering Division)

1. *Concerned about the affect that increased traffic will have on N. Sherman Ave, Wheeler Road and Comanche Way.*
2. *Many concerns about the Comanche Way/Wheeler Road intersection. Belief that this intersection already has too much traffic, making it dangerous for school children and vehicles.*

The traffic consultant for Cherokee Park, Schreiber Anderson Associates (SAA), has developed a preliminary traffic review of the proposed development area (see separate document from SAA attached). The proposed development in the neighborhood plan is estimated to generate approximately 600 peak hour trips and 7,500 vehicles per day. This traffic is estimated to be distributed over the surrounding street system in various directions.

While there is no physical connection to Comanche Way from the proposed development, it is estimated that an additional 40 vehicles per day will be generated on Comanche Way at Wheeler Road, depending on the development of the parcel called the "Wheeler Triangle." It is estimated that an additional 350 vehicles per day will be generated on Wheeler Road west of N. Sherman Avenue. Currently the intersection of Comanche Way and Wheeler Road is a two-way stop controlled intersection, with stop signs on Comanche Way. There have been no reported crashes at this intersection for the last five years (years 2001-2005) per WisDOT data and Madison Police Department records. The intersection is also the location of an adult school crossing guard on the east leg of Wheeler Road, for the Gompers and Blackhawk schools. Approximately 30-50 students cross at this location in the morning and afternoon. Additional information on this school crossing is available from the Traffic Engineering Division.

Current volumes on Comanche Way are approximately 2,300 vehicles per day and on Wheeler Road 4,800 vehicles per day (year 2004). Given the small estimated increases in traffic on both Comanche Way and Wheeler Road, it is expected that intersection operations would not change substantially. A preliminary multi-way stop analysis for all-way stops at this intersection indicates the intersection falls short of the standards required by the industry standard *Manual of Uniform Traffic Control Devices* (MUTCD) for an all-way stop sign, under both existing and development-added traffic. The intersection falls approximately 40% below the standard. In a separate process with the neighborhood and alderperson, traffic calming islands have been proposed along this section of Wheeler Road, and specifically at the intersection of Comanche Way and Wheeler Road. The proposed traffic calming islands would help pedestrians cross the street and make traffic more regulated at

this intersection. Those islands are still pending installation until further review by the neighborhood and the alderperson. As traffic volumes increase along Wheeler Road, further monitoring of this intersection is recommended to review potential changes to traffic control.

The intersection of N. Sherman Avenue and Wheeler Road is one of the intersections more affected by the proposed special area plan and development proposal. The proposed development is estimated to add approximately 2,500-3,000 vehicles per day at this intersection. Current volumes are in the 5,000 vpd range. This intersection is currently controlled with all-way stop signs, these being installed in 1996. The average number of crashes at the intersection is a little less than two reported crashes per year (0 in 2005; 1 in 2004; 4 in 2003). The Wheeler Road-Sherman Avenue intersection has street width for three traffic lanes, allowing for a separate left lane and a shared through and right lane on each of the approaches. The intersection has a fair amount of reserve capacity to accommodate additional traffic, including the amount estimated with the subject development. A longer-term plan for this intersection is to reconstruct it as a single-lane roundabout, such that capacity, operations and safety would be enhanced. It is planned to require additional right-of-way from the parcels along this corner to provide for future reconstruction if and when the City pursues such reconstruction. In the interim, the all-way stop intersection should adequately and reasonably control and accommodate traffic for many years to come.

Another intersection of interest is Wheeler Road and County Trunk Highway 'CV'. CTH 'CV' is a County jurisdiction roadway such that reconstruction would have to be coordinated and funded by Dane County. The City of Madison has an interest to reconstruct this intersection for additional capacity needs for not only this development but also the larger area as a whole. Alternative options for the intersection are traffic signals with exclusive left-turn lanes on all approaches, or an alternative of a roundabout. The alignment of CTH CV is of concern such that the curve along the intersection should be revised to accommodate a better and safer intersection. Additional right-of-way needs would be required with the development. Additionally some funding for this intersection may require special assessments of the surrounding properties that benefit.

The street section of N. Sherman Avenue from Wheeler Road to Northport Drive (a.k.a STH 113) is also an area of interest for traffic. Currently N. Sherman Avenue south of Wheeler Rd. carries approximately 5,000-8,000 vehicles per day, the exact volume depending on its distance from Northport Drive. The Special Area Plan is expected to add approximately 2,500-3,500 vehicles per day to N. Sherman Ave. These future volumes are still consistent with a street like Sherman Avenue and a street that would require really only one lane in each direction plus some left-turn lanes at specific intersections. Additional traffic calming options and marking and signing are suggested on North Sherman Avenue in the future to provide for safer, slower and multi-modal (bicycle lanes) accommodations on the street. It is suggested that a special earmark of approximately \$20,000 from the Cherokee development be required and allocated to North Sherman Avenue for this purpose. The specific design of N. Sherman Ave would be developed after further neighborhood meetings with the residents and alderperson.

The intersection of N. Sherman Avenue and Northport Drive (STH 113) is another area of interest for traffic and transportation. A deliberate and specific engineering design review should be conducted at the intersection of North Sherman Avenue and Northport Drive to look at potential options and right-of-way available to pursue reconstruction. In the future, Wisconsin DOT and the City may be reconstructing Northport Drive/STH 113. This could enable the possibility of looking at the intersection for additional measures for all users, including motorists, bicyclists and pedestrians as well as transit.

3. *North Sherman Avenue north of Golf Parkway should be expanded to a minimum width of 32 feet curb face-to curb face.*

Specific recommendations for North Sherman Avenue between Wheeler Road and Golf Parkway are that the street be a minimum of two lanes with bike lanes or wide shoulder. A separate off-road ped/bike facility is proposed along the eastern side of North Sherman Avenue that would also service golf carts. Due to the wetlands and environmental issues around this roadway, the Department of Natural Resources (DNR) also has some jurisdiction over how wide a street can be on this section. The main goal of the street design, however, is to include provisions for pedestrians, bicyclists and motorists.

4. *Supports roundabout at N. Sherman Avenue and Wheeler Road.*
5. *Roundabouts are confusing to many drivers.*

Roundabouts are considered one of several alternative treatments at intersections. Alternative intersection treatments could include no traffic control, stop sign control, traffic islands, traffic circles, traffic signals, and roundabouts. Modern roundabouts are being considered as intersection alternatives more recently due to their safety and operational benefits. Several major safety and industry groups have recommended roundabouts due to some of their features. One such group, the National Insurance Institute for Highway Safety, has found that roundabouts reduce motor vehicle crashes by 40% and injury crashes by 80%. Crash reductions are accompanied by significant improvements in traffic flow, thus reducing vehicle delays, fuel consumption and air pollution.

Roundabouts also have less operations and maintenance costs. They cost very little in terms of annual maintenance costs, whereas traffic signals cost about \$4,000 per year to operate and maintain.

The savings in crash reductions for personal injury and property damage are also significant. According to the National Safety Council, the average cost of one injury crash is \$49,700. The average cost of one property damage-only crash is \$7,400. These costs accumulated over several years account to a significant value.

As roundabouts are newer to the United States and the Madison and Dane County area, drivers are still becoming accustomed to their design and operation. However, their design and operation is consistent with other, traditional forms of traffic control. More information

on roundabouts can be found in separate documents available through the Traffic Engineering Division.

6. *For a variety of reasons, proposed bicycle paths are liked by some and disliked by others.*

A number of bicycle paths are proposed throughout the development. The City of Madison subscribes to the policy of promoting bicycling through various facility improvements, including bicycle lanes and bicycle paths. The specific design of these facilities are reviewed at the final plat stage for such things as separation of pedestrians and bikes, and connections and crossings to City streets.

Preliminary analysis of groundwater issues associated with proposed development at Cherokee Park, Madison, WI

- The proposed Cherokee Park development will meet all applicable surface water quality and quantity standards, and will also be designed to provide 8 in/yr recharge to groundwater for development areas, based on objective to maintain groundwater supply to Cherokee Marsh from local upland areas.
- The preliminary analysis described in these slides evaluates the possible effect of additional potable water supply withdrawal to supply the completed project, which would be drawn from municipal wells in the area.
- This analysis is PRELIMINARY, and was conducted by Montgomery Associates to as a first effort to evaluate water resource issues associated with the project. The analysis has not been submitted to any regulatory agency for formal review or approval.

CPI Proposed Development

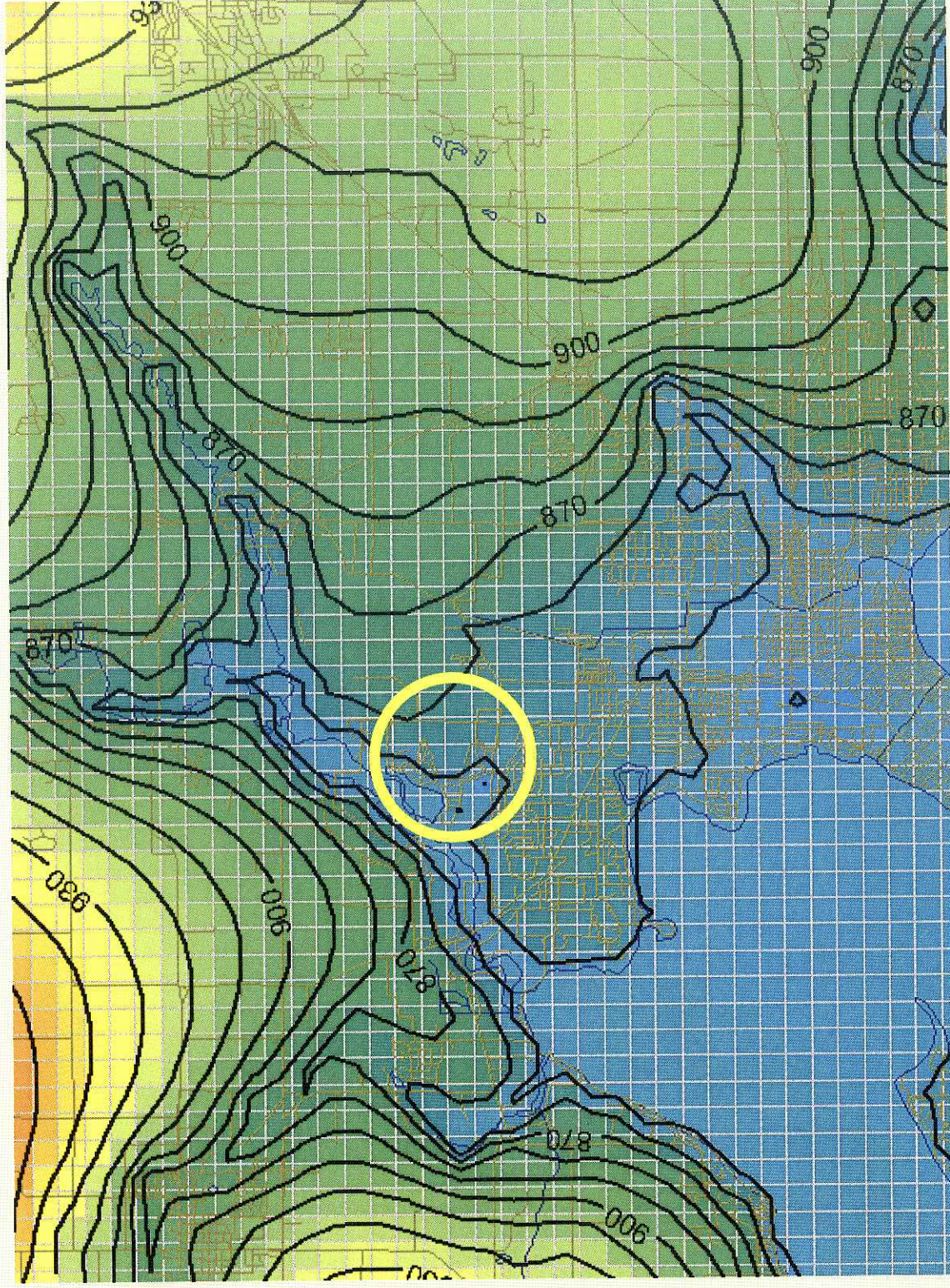


Hatched areas are proposed for residential development by Cherokee Park, Inc. (CPI)

Yellow line is extent of CPI land ownership

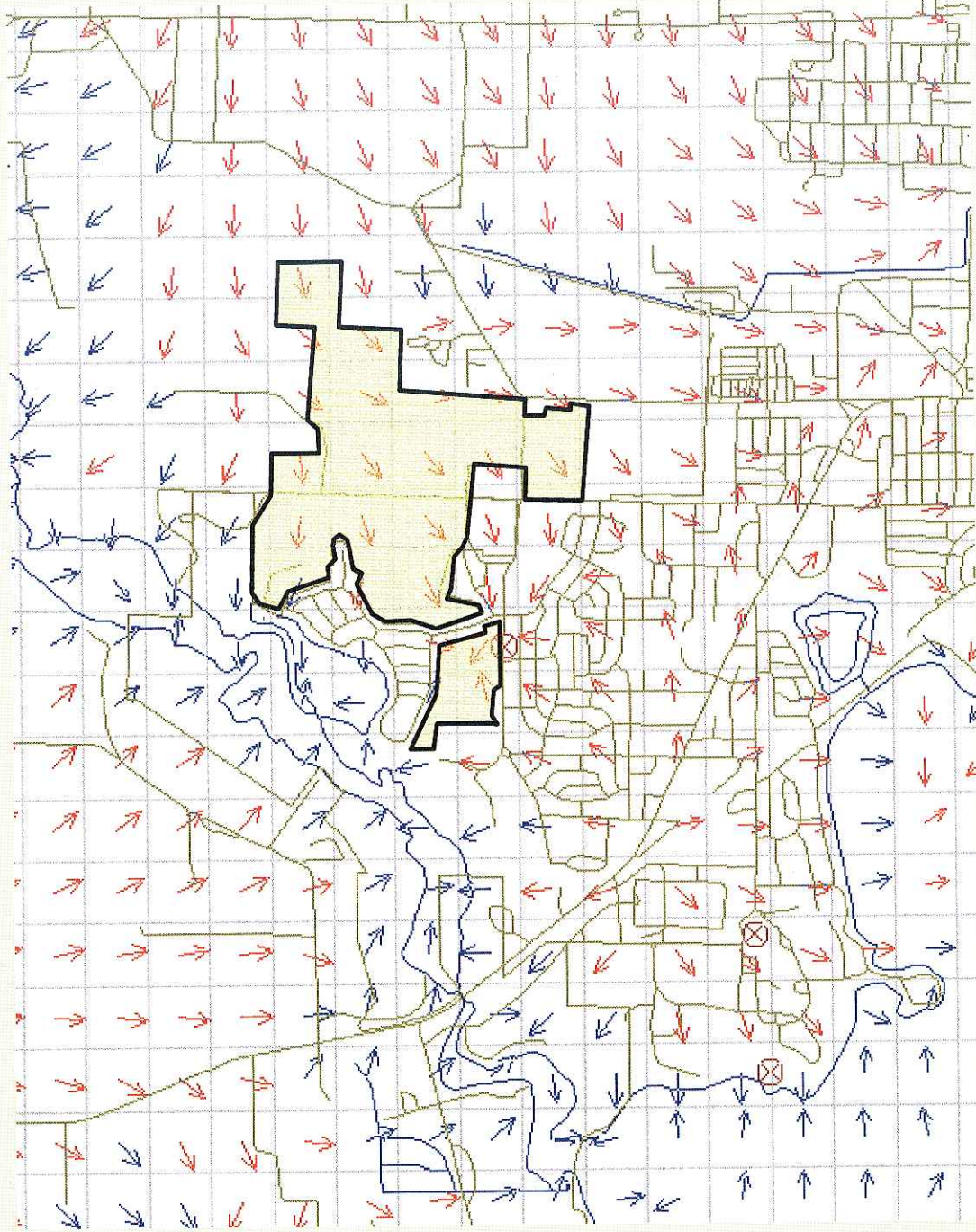
Regional Groundwater System

- Upper aquifer elevation, from Dane County groundwater model
- Groundwater flow from east to west at Cherokee



Upper aquifer flow directions and recharge / discharge areas, existing conditions

- Results from Dane County groundwater model
- Arrow indicates upper aquifer flow direction
- Blue arrow indicates upward flow from upper aquifer to surface water
- Red Arrow indicates downward flow to recharge aquifer
- Groundwater at CPI site recharges from uplands to east & south
- Discharge to Cherokee Marsh & Yahara River

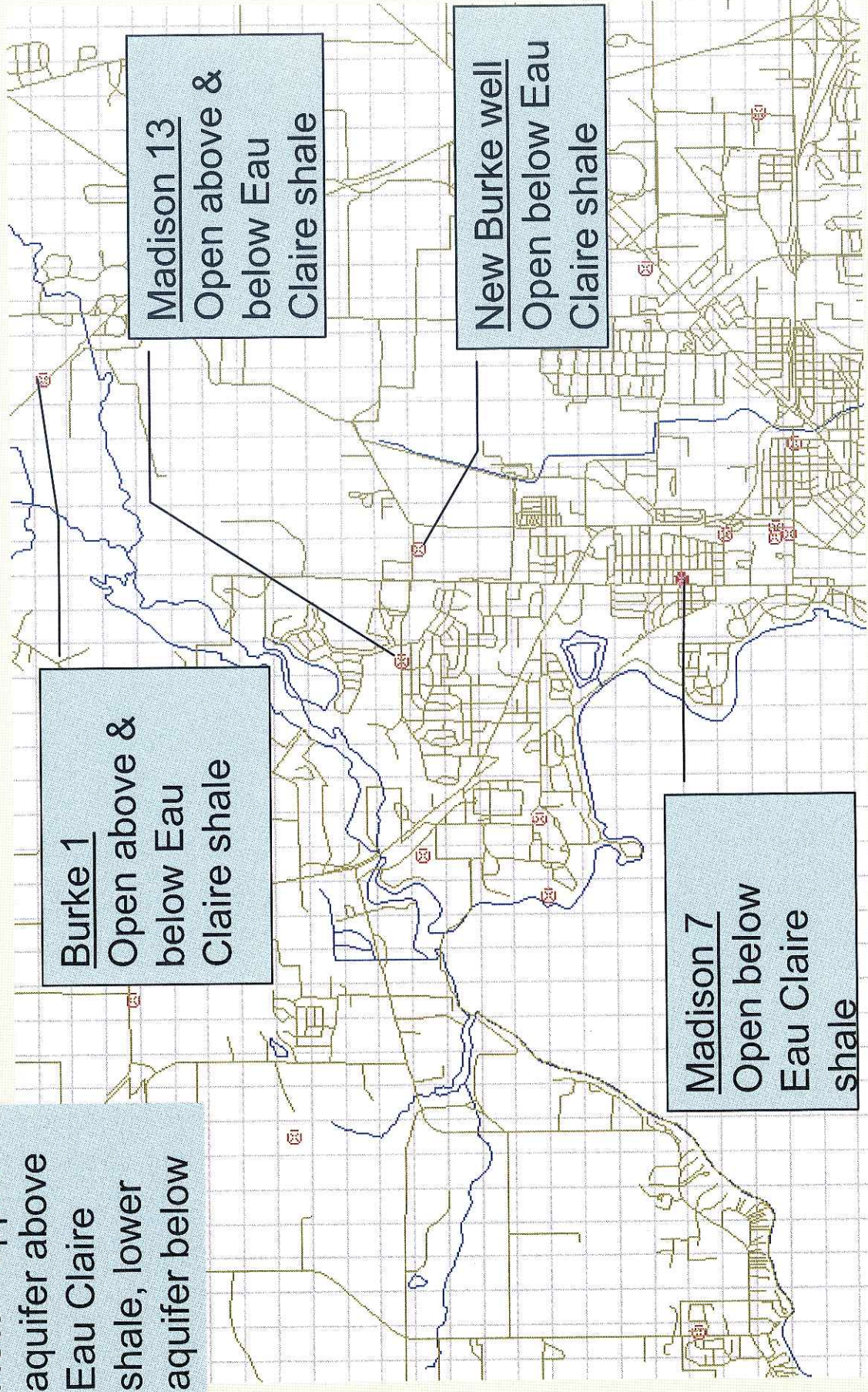


Projected Water Use for New CPI Development

Number of new residences	800
Density (persons/residence)	2.6
Projected per capita water use	100 gal/d/person
Total additional water supply requirement	208,000 gal/d
	27,807 ft ³ /d

Aquifer formations tapped by existing municipal wells

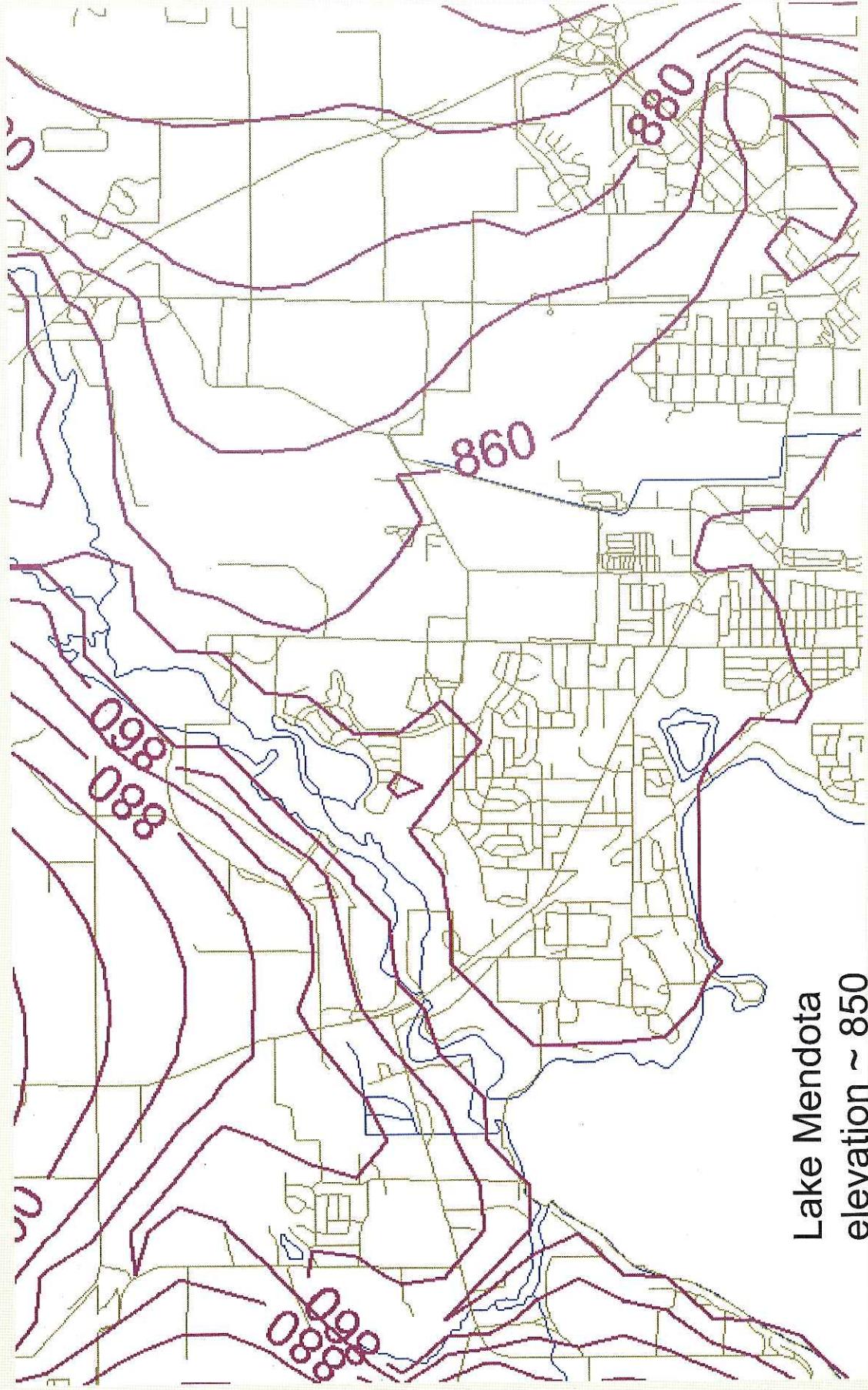
Note: Upper aquifer above Eau Claire shale, lower aquifer below



Procedure for initial assessment of impacts of water supply pumping to serve CPI residents

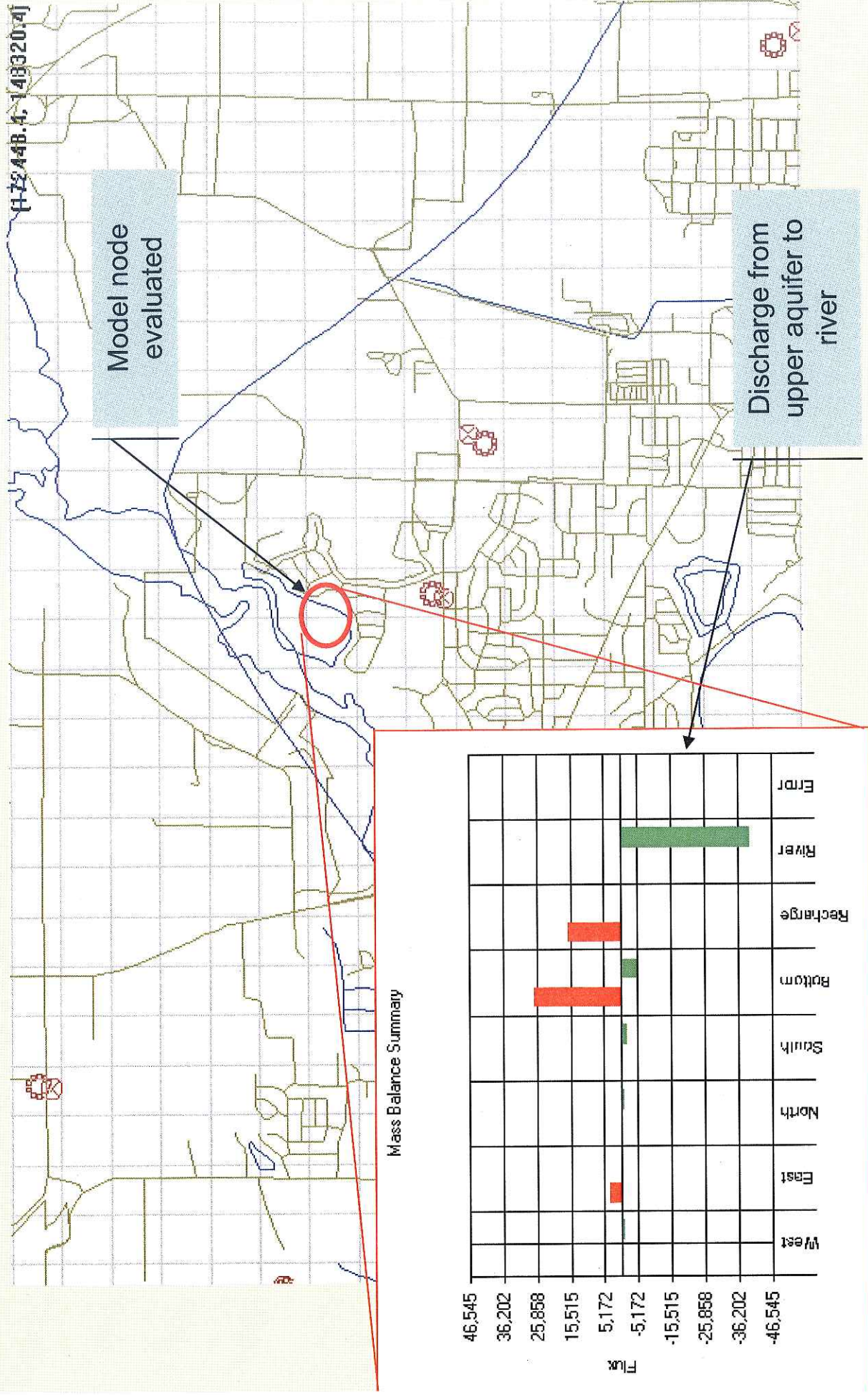
- Used Dane Co. Regional Groundwater Model (version 2002b)
- Only change to model was increased pumping by the estimated additional water use (27,807 ft³/d)
- Two scenarios evaluated: all increased pumping applied at the new Burke well or Madison well 13.
- Plotted upper aquifer heads & mass balance for example grid cell along Yahara River for existing conditions, increased pumping at the Burke well, and increased pumping at Madison No. 13.

Upper aquifer head, existing conditions

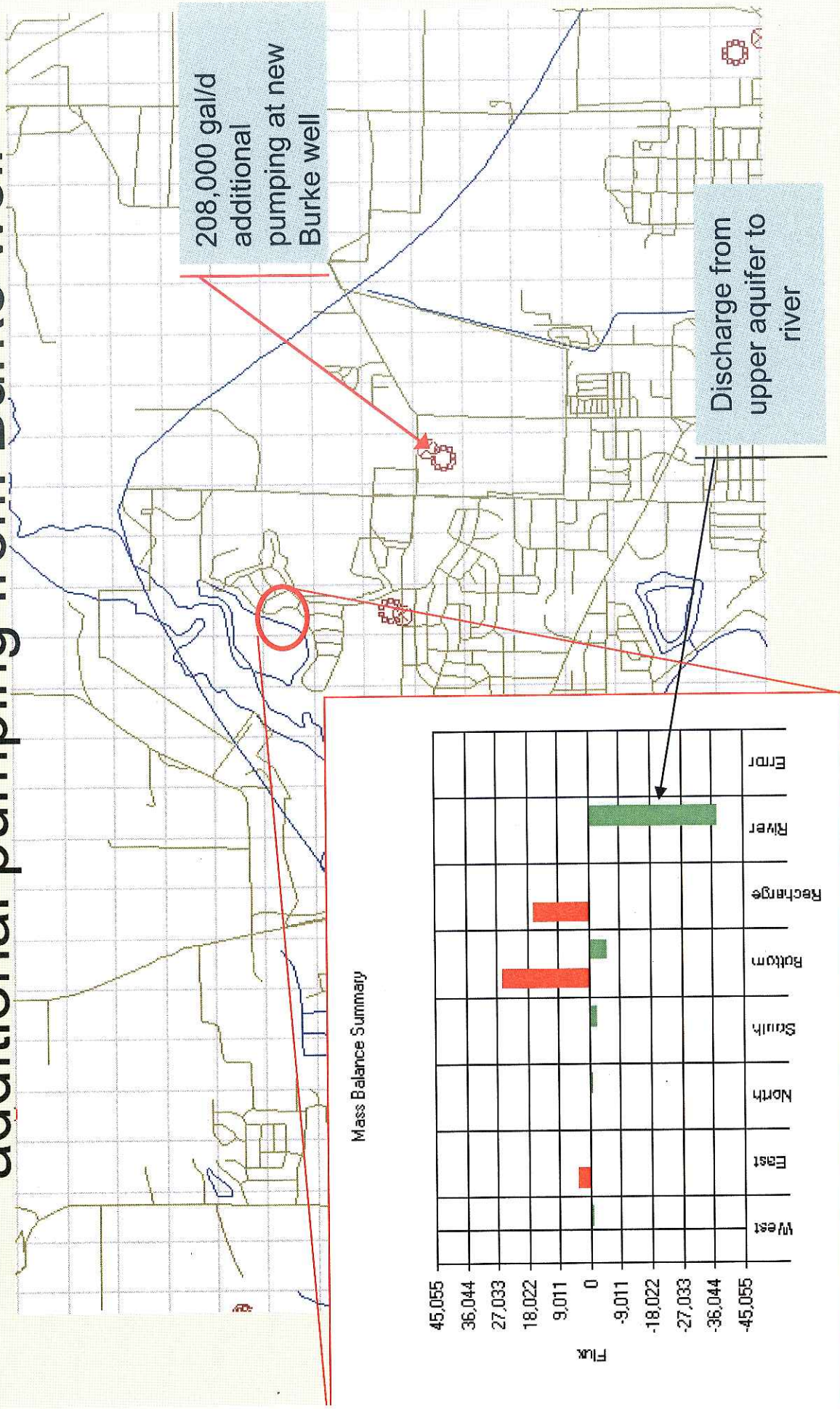


Lake Mendota
elevation ~ 850

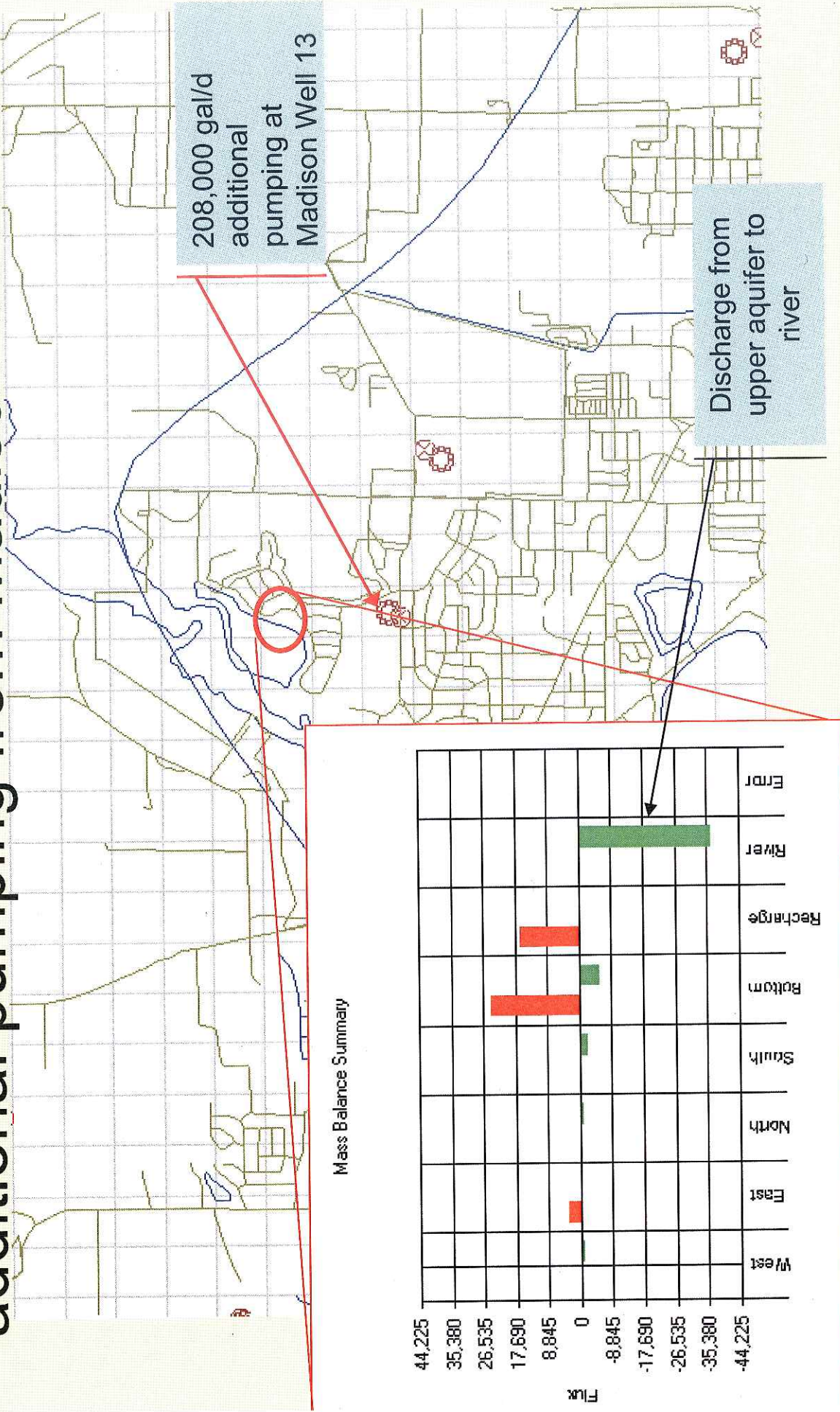
Water balance from upper aquifer model node located adjacent to the Yahara River, existing conditions



Water balance from upper aquifer model node located adjacent to the Yahara River, with additional pumping from Burke well

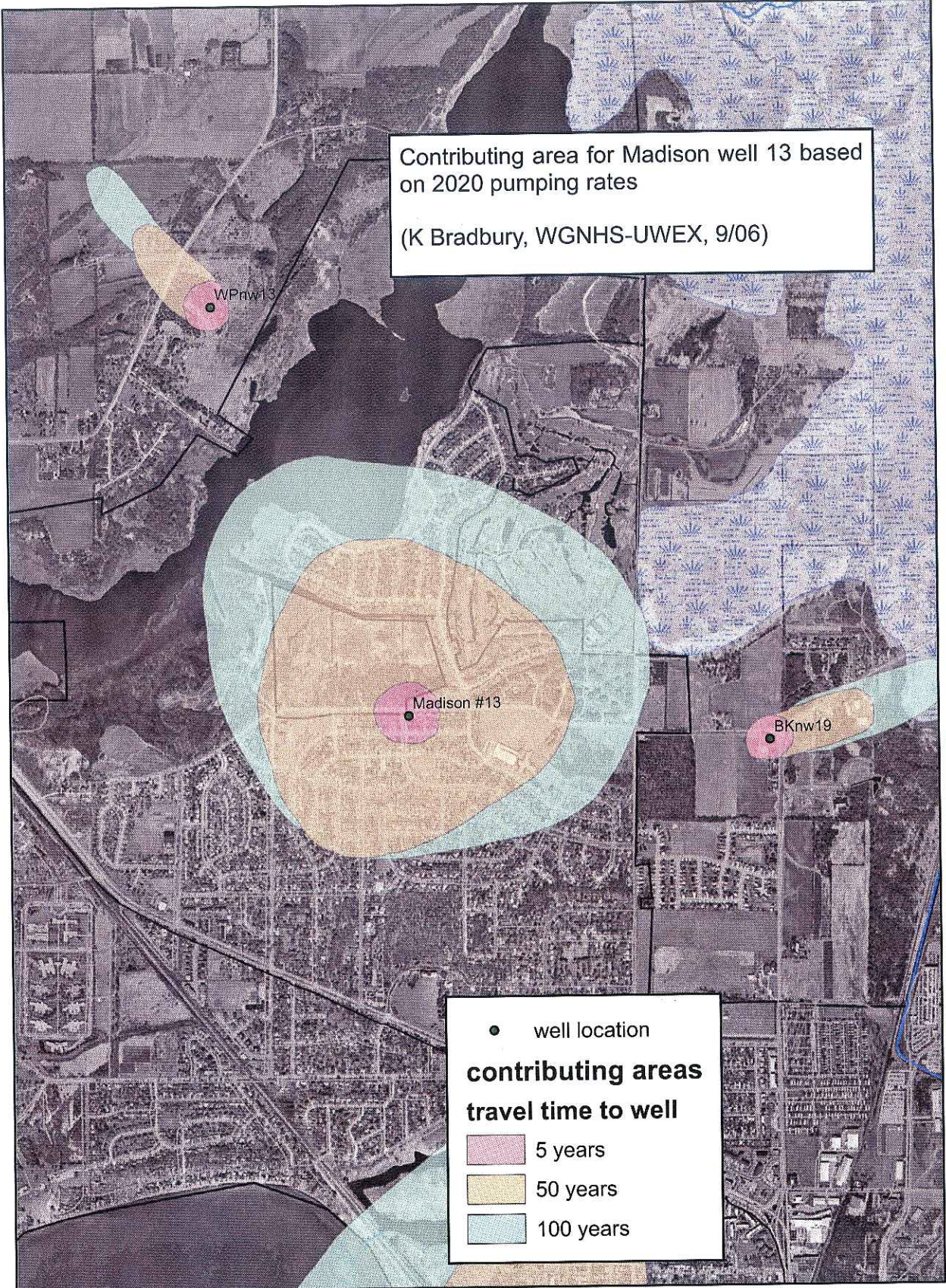


Water balance from upper aquifer model node located adjacent to the Yahara River, with additional pumping from Madison well no. 13



Preliminary Conclusions

- Additional water supply pumping for proposed CPI development produces minimal change to regional groundwater discharge



Cherokee Park Traffic Analysis

A preliminary analysis was completed of the impact of the proposed development on the local transportation system. It is estimated that the full development will generate approximately 600 peak hour trips when fully developed. These additional trips will be distributed over the existing transportation system. The major roadways impacted will be Sherman Avenue, Wheeler Road to the east of Sherman Avenue, and CTH CV. With the additional traffic volumes, each of the streets will be able to function as two lane facilities with the exception of CTH CV which may need to be four lanes with or without the development. Improvements to the local roadway system will include the following:

- Reconstruction of Wheeler Road as a two lane collector from Sherman Avenue to CTH V.
- Reconstruction of Sherman Avenue from just north of Sherman Avenue to the entrance to the Fifth addition.
- Signalization/Channelization or a roundabout at Wheeler Road and CTH V.
- Signalization/Channelization or a roundabout at Wheeler Road and Sherman Avenue.

In addition to street improvements, there will also be an extensive walkway/bikepath and golf cart path system that will extend throughout the development that will enhance the areas recreation needs and provide an alternative means of traveling through the development.



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Madison, WI 53713
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Fax. 608.255.7250
www.saa-madison.com

Cherokee Park
TRIP GENERATION ASSUMPTIONS 6/26/06

Land Use	Week Day Trip Generation Rate		Daily		PM		SATURDAY	
	Weekday Trips 9.5/DU	Saturday Trips 10/DU	IN	OUT	IN	OUT	IN	OUT
Single Family and Duplexes			50%	50%	63%	37%	50%	50%
Fifth Addition 141 DU	1340	1410	670	670	89	52	705	705
Hornung/Range 205 DU	1948	2050	974	974	129	76	1025	1025
High Hill 50 DU	475	500	238	250	32	19	250	250
Subtotal	3763	3960	1881.5	1894	249	147	1980	1980
Fourplexes and 16 plexes	Weekday Trips 6 per DU	Saturday 6 Trips per DU	50%	50%	67%	37%	50%	50%
Fifth Addition 72 DU	432	432	216	216	24	13	216	216
Hornung/Range 288 DU	1728	1728	864	864	96	53	864	864
Wheeler Parcel 24 DU	144	144	72	72	8	4	72	72
High Hill 50 DU	300	300	150	150	17	9	150	150
Clubhouse Area 28 DU	168	168	84	84	9	5	84	84
Subtotal	2772	2772	1386	1386	155	85	1386	1386
Specialty Retail 20,000 sf	Weekday 44.3 trips per 1,000 sf	Saturday 42 trips per 1,000 sf	50%	50%	44%	56%	50%	50%
Subtotal	886	840	443	443	24	30	420	420
Total Trips Generated	7421	7572	3711	3723	429	262	3786	3786



Cherokee Park

MADISON, WI

PRELIMINARY TRAFFIC REVIEW



- 000 2004 ADT
(Source: City of Madison)
- (000) Projected ADT with Development (2030)
- Intersection Improvements
- Possible Intersection Improvements
- Cherokee Park Development Project Site

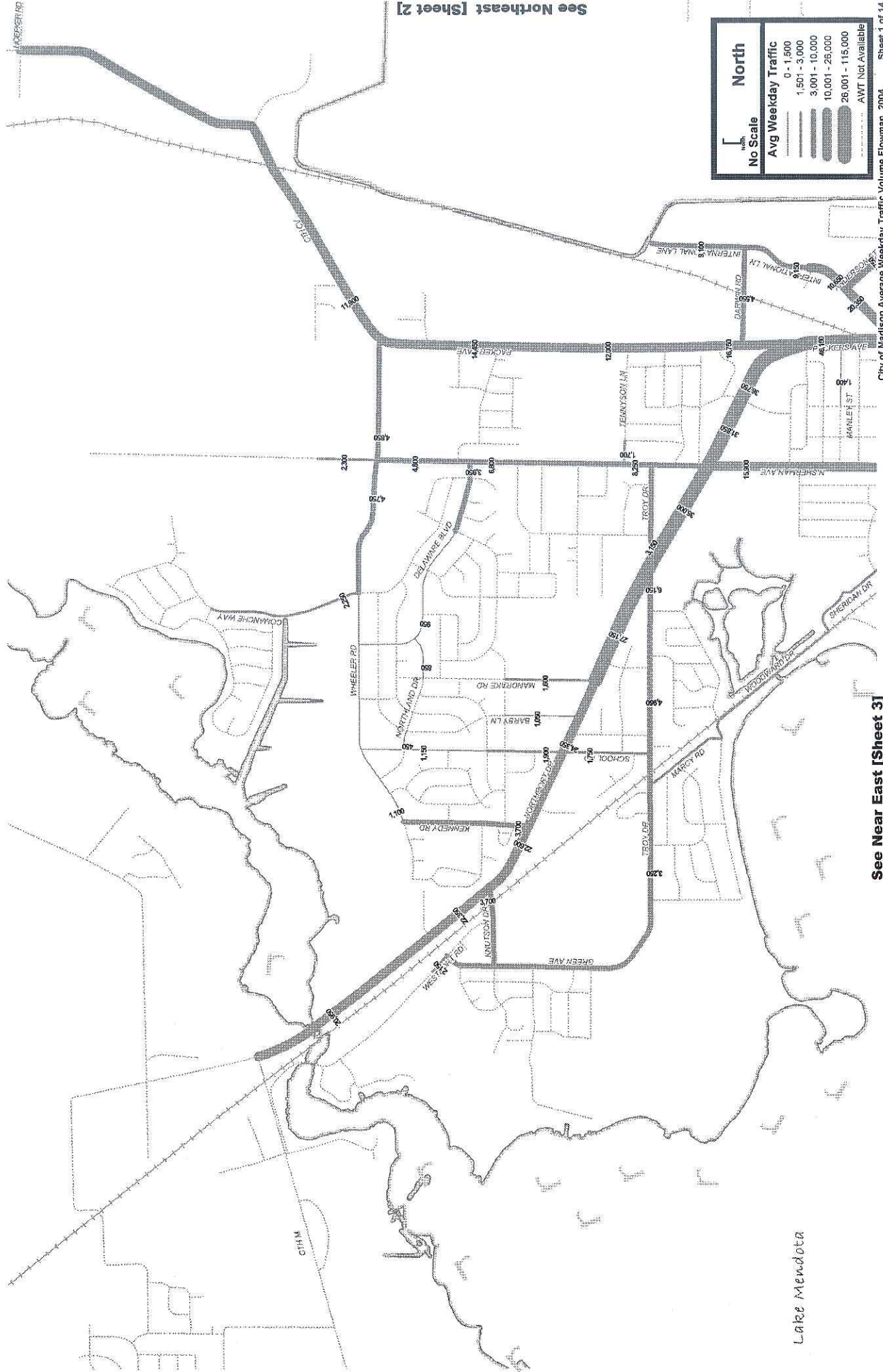


0 250 500 1000

Date: June 2006
Project No. 2069.03



117 Main Street
Madison, WI 53703
www.saa-engineers.com



City of Madison Average Weekday Traffic Volume Flowmap 2004 Sheet 1 of 14

See Near East [Sheet 3]

See Northeast [Sheet 2]

Lake Mendota

Modern roundabouts are a new form of intersection in the U.S. that provide safe and efficient traffic flow. They incorporate extensive study and traffic volume research conducted over the past 25 years from other countries and more recently the United States. Roundabouts are much smaller in size than older traffic circles and rotaries that were built 30 to 50 years ago.

Roundabouts move traffic safely and efficiently through an intersection with:

- » slower speeds
- » fewer conflict points
- » easy decision making

Studies* show roundabouts provide a:

- » 90% reduction in fatal crashes
- » 76% reduction in injury crashes
- » 30-40% reduction in pedestrian crashes
- » 10% reduction in bicycle crashes

Before a roundabout is selected for an intersection, a thorough analysis must be completed and compared to other alternatives to determine the appropriate solution.

Note to bicyclists:

If you are riding on the shoulder or bike lane, merge into the traffic lane before the shoulder ends. Prepare for this move early, look over your shoulder, and signal your intent to move into traffic. Don't be intimidated; assert your position upon entering the roundabout.

Once in the roundabout, don't hug the curb. Ride close to the middle of the lane to prevent cars from passing and cutting you off. Watch for cars waiting to enter the roundabout, as they may not see you.

If you do not want to ride your bike in the roundabout, you may enter the sidewalk using the ramps, and proceed as a pedestrian.

For additional brochures or information, call (608)266-8486.

* Insurance Institute for Highway Safety study of 24 roundabout intersections in eight states, and other studies.

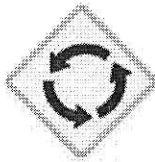
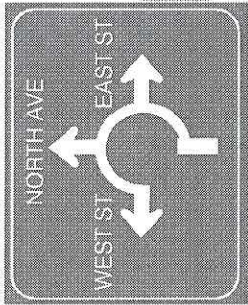
HS310 2/2006



All about the ROUNDABOUT



General rules for driving a roundabout



Slow down.
Watch for
traffic signs.

Yield to pedestrians
and bicyclists as you
enter and exit the
roundabout.



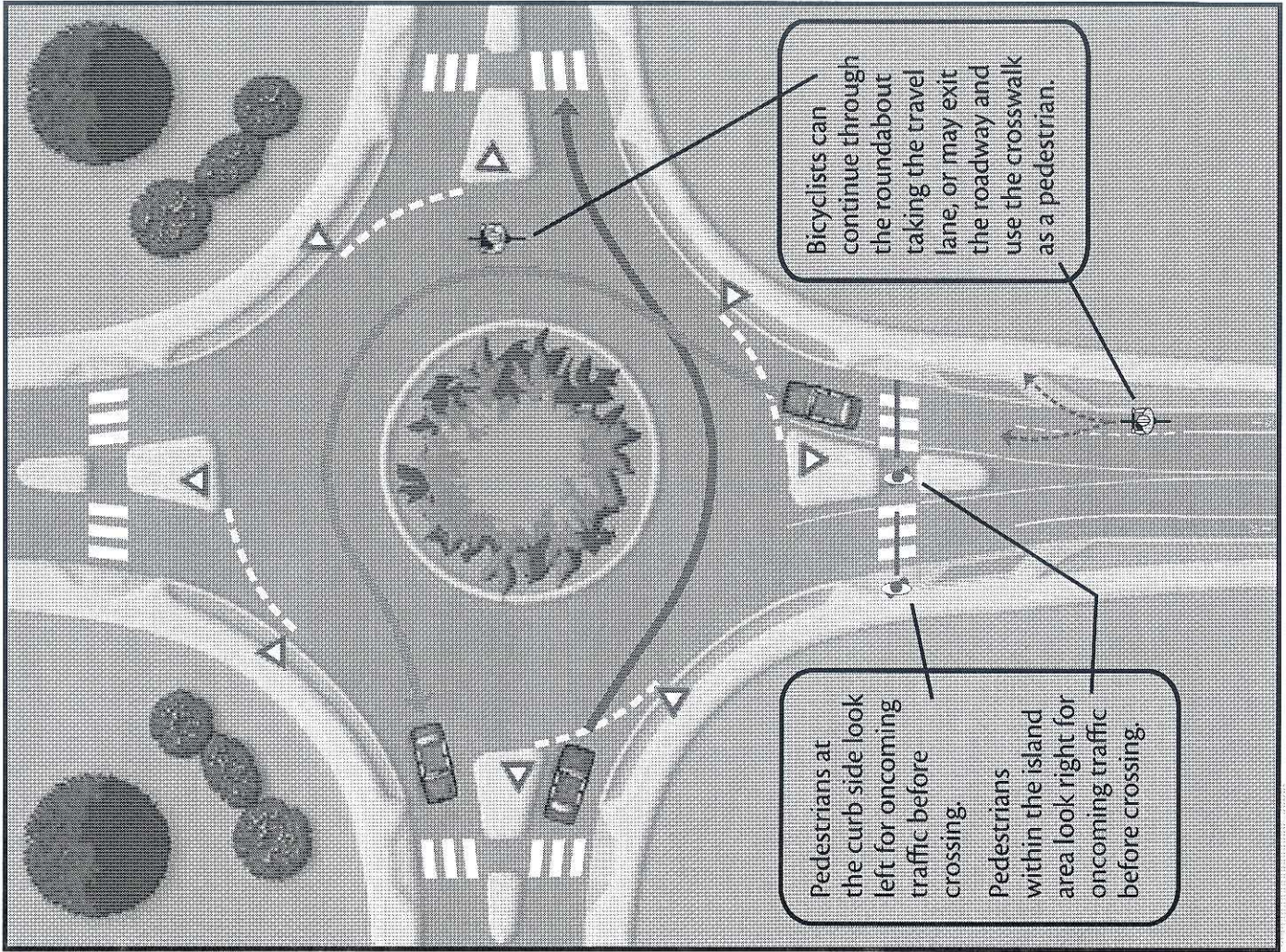
Look left and yield
to traffic already in
the roundabout.



Once in the roundabout,
you have the right-of-way.
Keep your speed low
within the roundabout.



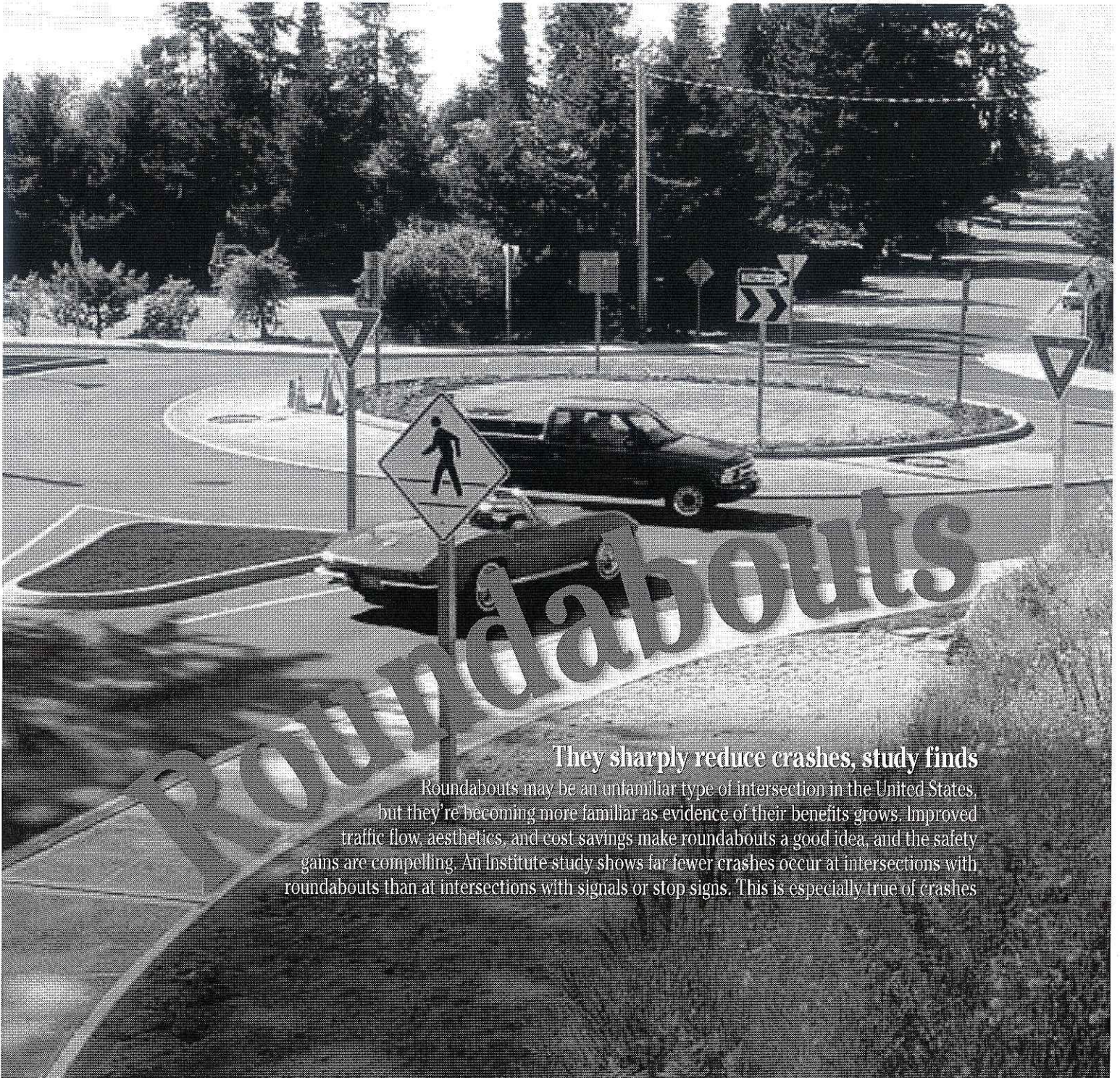
Turn right onto your
destination street.



STATUS REPORT

INSURANCE INSTITUTE
FOR HIGHWAY SAFETY

Vol. 35, No. 5, May 13, 2000



They sharply reduce crashes, study finds

Roundabouts may be an unfamiliar type of intersection in the United States, but they're becoming more familiar as evidence of their benefits grows. Improved traffic flow, aesthetics, and cost savings make roundabouts a good idea, and the safety gains are compelling. An Institute study shows far fewer crashes occur at intersections with roundabouts than at intersections with signals or stop signs. This is especially true of crashes

resulting in occupant injuries. Researchers at Ryerson Polytechnic University, the Institute, and the University of Maine studied crashes and injuries at 24 intersections before and after construction of roundabouts. The study found a 39 percent overall decrease in crashes and a 76 percent decrease in injury-producing crashes. Collisions involving fatal or incapacitating injuries fell as much as 90 percent.

These findings are consistent with those from other countries where roundabouts have been used extensively for decades. They also are consistent with preliminary studies of U.S. roundabouts.

The safety benefits don't come at the expense of traffic flow. In fact, where roundabouts replace intersections with stop signs or traffic signals, delays in traffic can be reduced by as much as 75 percent.

"Given the magnitude of these crash reductions, there's no doubt that roundabouts are an important countermeasure for many intersection safety problems," says Institute president Brian O'Neill. "Replacing signals or stop signs with roundabouts will reduce the number of crashes and save lives while at the same time improving traffic flow."

The recent study focuses on urban and rural intersections in California, Colorado, Florida, Kansas, Maine, Maryland, South Carolina, and Vermont. The roundabouts replaced stop controls or traffic signals.

Old idea improved: Rotary intersections aren't new. They predate the automobile. In 1905, the first U.S. traffic circle, then known as a "gyratory," was constructed in New York City, and European countries built them in great numbers through the early part of this century.

In its basic form, a traffic circle consists of a raised island at the center of an ordinary right-angle intersection. The island, which directs cars counterclockwise, is intended to reduce speeds, although this goal isn't always achieved. Other configurations can be more complex. They may involve split lanes and combinations of yield signs, stop signs, and traffic lights — all of which can be confusing to drivers trying to negotiate them.

The modern roundabout improves on such designs. This is an important distinction, because the older traffic circles aren't always easy to navigate, so they haven't been very popular.

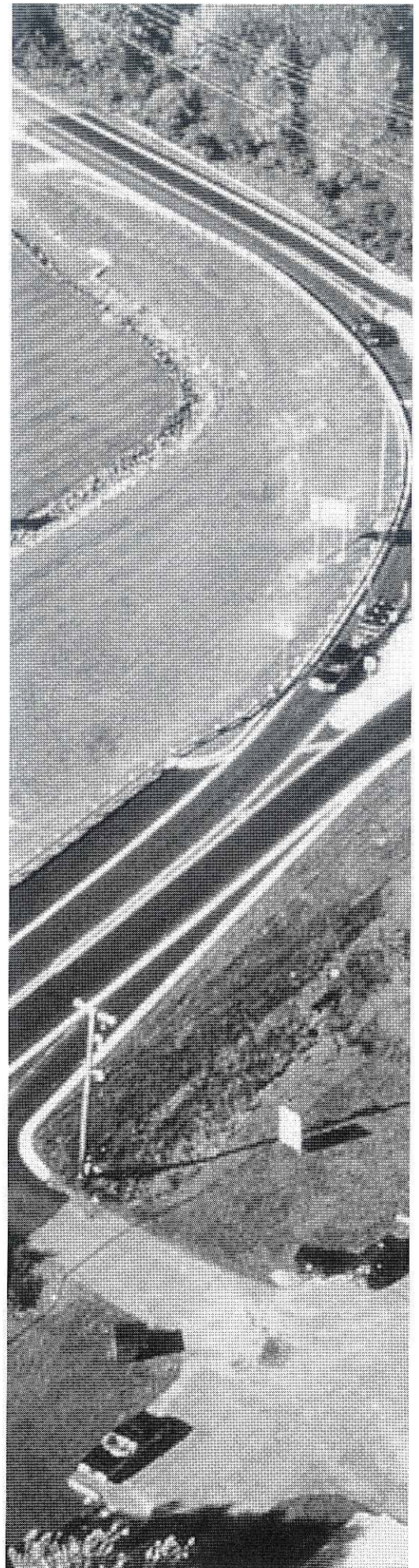
"At modern roundabouts, triangular islands at each entrance slow approaching vehicles," explains Richard Retting, Institute senior traffic engineer and an author of the study. "In older traffic circles, no physical structures prevent drivers from speeding right into the intersection. This lack of control contributes to high-speed conflicts inside the circle" — a problem solved by the islands at roundabouts.

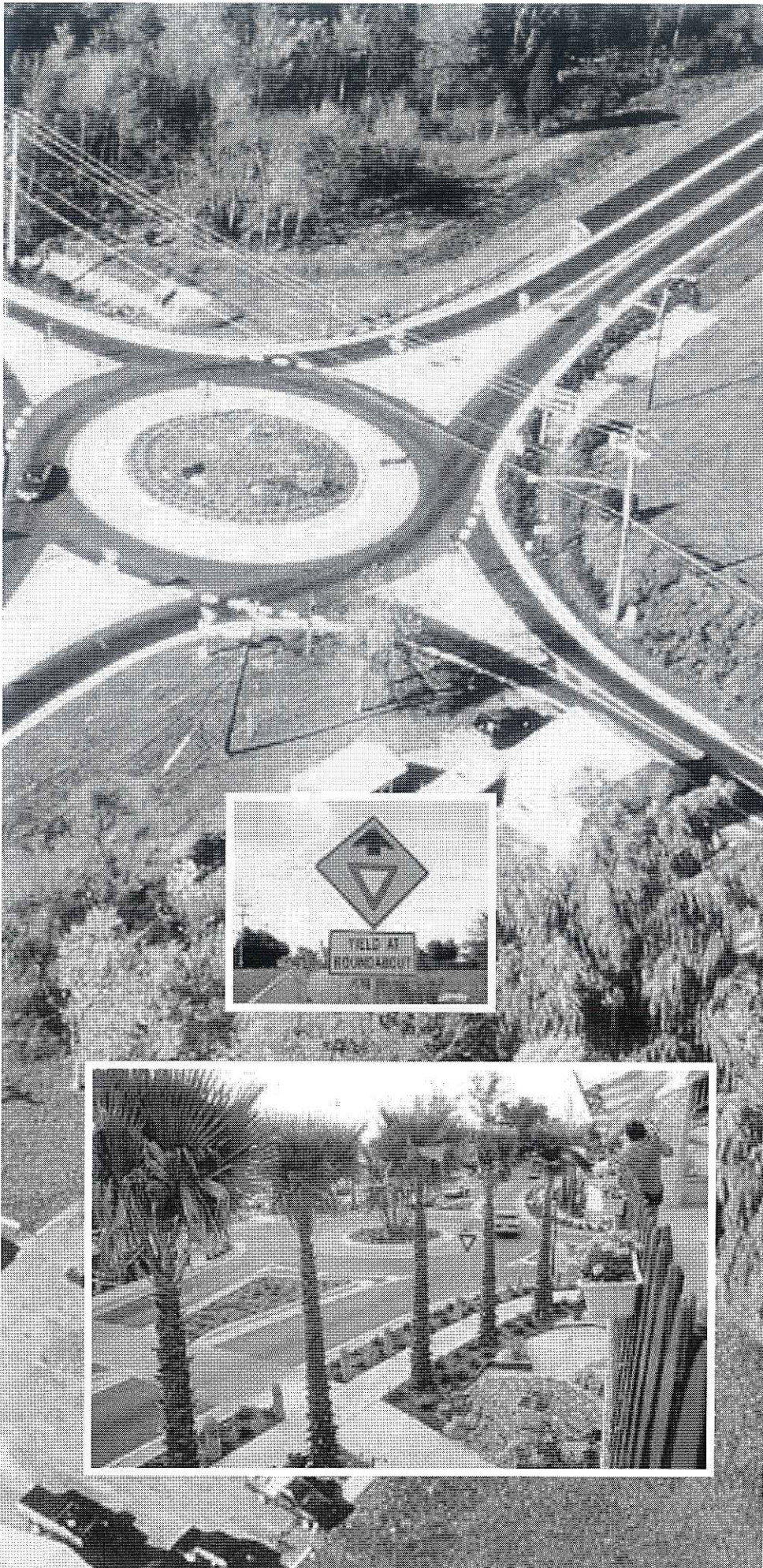
Another feature is that vehicles approaching roundabouts yield to circulating traffic. No stopping is required. Some older traffic circles and many conventional intersections alternate traffic with stop signs or signals. Roundabouts enable all cars to move continuously through intersections at the same low speed.

"People assume that because there are so many traffic signals out there, they must be efficient. The fact is, they're not. When half of the cars are stopped at an intersection at any given time, delays are inevitable. It may seem counterintuitive that roundabouts increase capacity while lowering speeds, but that's exactly what happens," Retting points out.

Other design elements set roundabouts apart from traffic circles. Pedestrians cross only at the perimeter, vehicles can't turn left ahead of the central island, and parking isn't allowed inside the circle. These requirements minimize distractions and opportunities for collisions.

More common in other countries: The traffic calming properties of roundabouts may explain why they've been widely used in other countries but not in the United States. The American penchant for fast driving has created a culture where "slowing down" seems an encroachment on convenience. But the bias for speed isn't just among drivers. American universities and institutions that influence road planning and engineering have reinforced the historical practice of building high-speed intersec-





tions. Teachings haven't emphasized traffic calming as a preventive measure, at least not until recently.

"The priority for road planners and engineers in this country has been to process as much traffic as possible. Traffic signals have become the technology of choice. It's hard to deviate from that approach," O'Neill explains. "Countries in Europe and elsewhere have been much more progressive in focusing on traffic calming and making intersections safe for pedestrians. They caught on long ago to something we've ignored because of our fascination with technology. Recent interest in roundabouts in the United States is one sign that priorities finally are shifting."

Geometry eliminates the worst crashes:

Roundabouts benefit from good geometry, exhibiting only a fraction of the troublesome crash patterns typical of right-angle intersections. Such intersections "place vehicles on a high-speed collision course, with crashes avoided only if drivers obey traffic laws and use good judgment. Research shows many drivers don't, so the potential is high for right-angle, left-turn, and rear-end conflicts," Retting explains. Such conflicts make up about two-thirds of police-reported crashes on urban arterials.

The geometry of roundabouts eliminates many of the angles and traffic flows that create opportunities for crashes, particularly the right-angle and rear-end kind that tend to produce injuries. The lack of right angles, combined with reductions in speed, make the intersections safer for pedestrians and bicyclists as well as people in cars. The speed depends on the intersection but generally remains at about 15 mph. At that speed, drivers and others on the road have more time to react, so there's a smaller chance of collision. When crashes do happen, most will be minor.

Fewer pedestrian crashes: Concern has been expressed that installing roundabouts might endanger pedestrians, but these fears appear unfounded. Experience in Europe shows roundabouts reduce the risk of pedestrian crashes. Such crashes also declined at the U.S. roundabouts (continues on p.6)

In pedestrian crashes, it's vehicle speed that matters the most

Elderly pedestrians are at greater risk of dying than younger pedestrians

Regardless of age, pedestrians involved in crashes are more likely to be killed as vehicle speeds increase. In crashes at any speed, older pedestrians are more likely to die than younger ones. These are the two main findings of a report on pedestrian injuries recently prepared by the Preusser Research Group for the National Highway Traffic Safety Administration.

Analyzing crashes across the country, researchers found that fewer than 2 percent of struck pedestrians died in crashes that occurred where posted speed limits were slower than 25 mph. Where speed limits were 50 mph or higher, more than 22 percent of struck pedestrians died. The correlation was much the same when researchers looked at vehicle travel speeds — crash data from Florida show the proportion of serious injuries and fatalities among pedestrians went up along with vehicle speeds, as estimated by police investigating the crashes.

"Pedestrians age 65 and older are more than 5 times as likely to die in crashes than pedestrians age 14 or less, and the likelihood of death increases steadily for ages in between," the authors observe. Younger pedestrians generally have a greater chance of withstanding impacts unharmed, while elderly pedestrians are more susceptible to serious injury or death.

These findings aren't surprising given the physical disproportions between cars and pedestrians. Anyone who has walked along a street and felt the rush of cars whizzing by has a visceral sense of the danger. Car occupants have several tons of metal surrounding them, and safety belts and airbags buffer them from crash forces. In contrast, pedestrians are unprotected and weigh a small fraction of any car that strikes them, so they're extremely vulnerable.

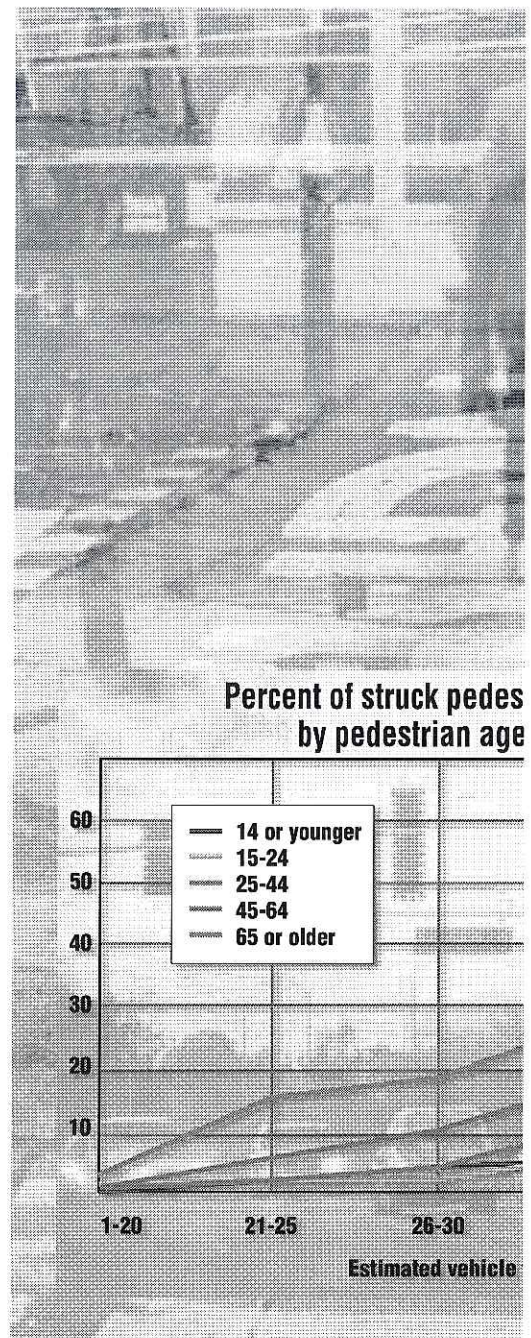
The logical solution is to limit vehicle speeds in areas where pedestrians are present, because speed determines impact severity. With every small increase in speed, pedestrian deaths go up even faster. The authors cite research concluding that about 5 percent of pedestrians hit by a vehicle traveling 20 mph will die. The fatality rate jumps to 40 percent for cars traveling 30 mph, 80 percent for cars going 40 mph, and 100 percent for cars going 50 mph or faster.

Lowering speed limits alone can bring small improvements. In most studies, the authors report, actual travel speeds dropped by a quarter or less of the posted speed limit reductions. Effective enforcement is more critical. Institute senior vice president Allan Williams explains that "for enforcement to

Lowering speed limits can bring small improvements, but effective enforcement is more critical. The consequences of getting stopped for speeding have to be meaningful enough to keep drivers from knowingly taking the risk.

deter speeding, drivers must believe the enforcement efforts are being made in the specific locations where they drive and at the times when they drive there. Even the presence of enforcement isn't enough. The consequences of getting stopped for speeding have to be meaningful enough to keep drivers from knowingly taking the risk."

It's impossible to put a police officer on every street, so cameras are a practical means of increasing the perception of enforcement. Red-light cameras already have won favor in jurisdictions around the country. Speed cameras aren't as popular, but they're equally effective deterrents (see *Status Report*, March 11, 2000; on the web at www.highwaysafety.org).



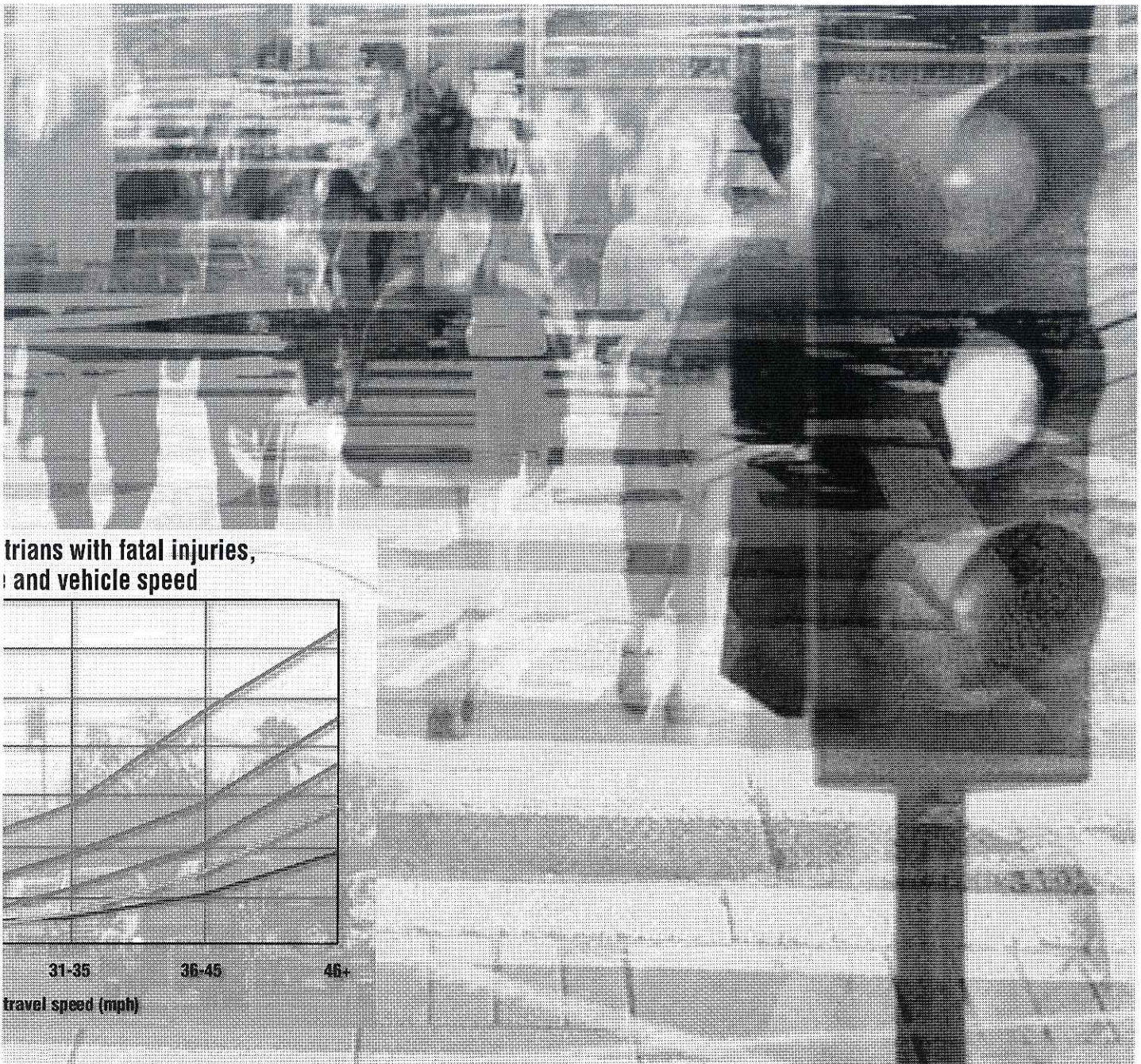
On the other hand, the designs of roadways often encourage drivers to go faster than the posted speed limits. Travel speeds can be restricted by introducing road treatments such as humps, rumble strips, paving stones or other rough surfaces instead of asphalt, and by road narrowing (see *Status Report*, May 2, 1998; on the web at www.highwaysafety.org). With the right planning,

modern roundabouts and other road treatments designed to reduce speeds can serve pedestrian safety as well as ease other traffic problems.

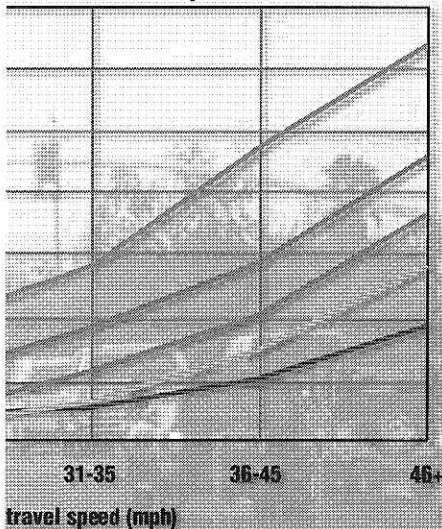
To make roads safer for pedestrians, engineers also should place crosswalks away from stop lines and merge areas. Traffic signal intervals should be set to allow pedestrians enough time to cross. And installing

sidewalks or better lighting can prevent unnecessary collisions.

“Literature review on vehicle travel speeds and pedestrian injuries” by W.A. Leaf and D.F. Preusser is available by writing to the National Technical Information Service, Springfield, VA 22161. Or find the study at www.nhtsa.gov/people/injury/research/pub/HS809012.html.



pedestrians with fatal injuries, and vehicle speed



(continued from p.3) in the new study, but the numbers were too small to be significant.

The combination of a rotary design and yield at entry, as opposed to right angles

Technical guide on the way

The Federal Highway Administration (FHWA) has laid some groundwork to support roundabouts. The agency's new guide aims to be "the definitive source of information related to the planning, operation, design, and configuration of modern roundabouts in the United States."

As FHWA points out, roundabouts have limitations as well as strengths. The guide presents information on both positives and negatives to help engineers and planners make the best decisions about when and how to use roundabouts.

This information comes just in time. "Interest in modern roundabouts has grown as a result of positive international experience," says FHWA's Joe Bared, who directed the project. "Hundreds of research papers are now available, and designs are being copied from the Australians and Europeans." The publication interprets best practices from around the world in light of accepted U.S. design standards.

"Designing roundabouts requires a lot of skill," Bared notes. "It's not high tech, but it takes skill to get the speed right and leave enough room inside the circle for vehicles to maneuver."

This attention is important in boosting roundabout construction — and helping towns and cities reap the benefits. "The more roundabouts, the better," Bared says.

"Roundabouts: an informational guide" (FHWA-RD-00-067) will be on the internet at www.fhrc.gov. It also will be available by faxing FHWA's Report Center, 301/577-1421.

and stop controls, lends other safety benefits. Because there are no traffic signals to obey, drivers don't feel compelled to "beat the red light" or be first to cross the line when the light turns green. This not only reduces collisions but also takes the edge off at least one manifestation of aggressive driving. Plus the absence of a traffic signal and the curved roadway associated with roundabouts force drivers to pay attention to their surroundings, which further enhances road safety.

Cheaper, cleaner, and a nicer view:

Roundabouts are becoming popular in the United States for more than just safety reasons. They're less expensive than intersections controlled by traffic signals, saving up to \$5,000 per year per intersection in electricity and maintenance.

Fewer traffic snarls due to blocked intersections or backups can mean additional savings. For example, a pair of roundabouts introduced at a freeway interchange in Vail, Colorado, saves \$85,000 each year in traffic control costs.

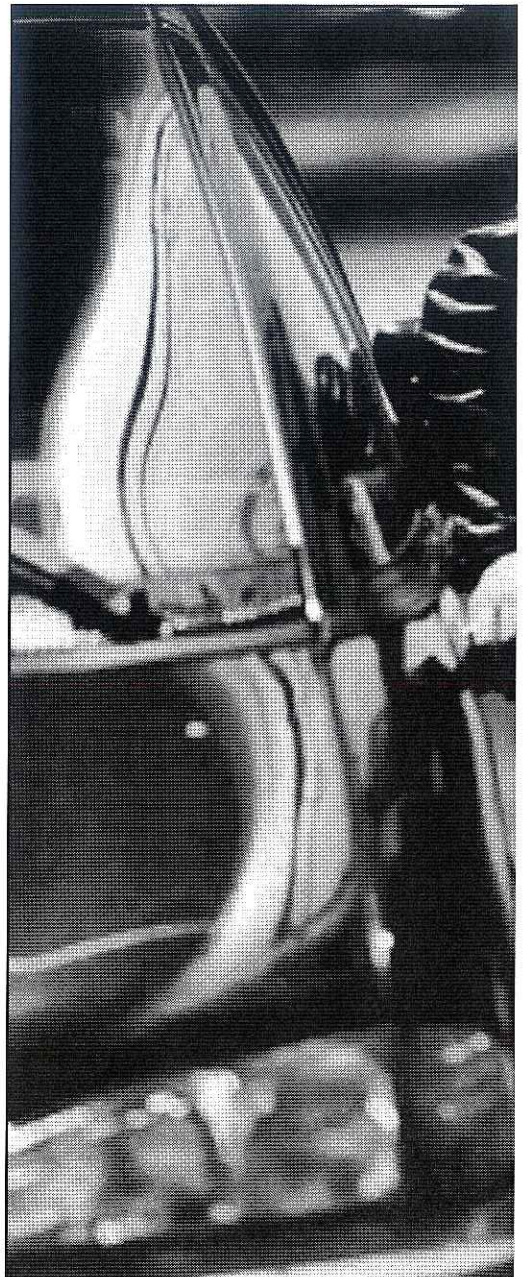
Environmental and aesthetic benefits add to the appeal. Roundabouts cut vehicle emissions and fuel consumption by reducing the time drivers sit idling at intersections. Traffic that moves more slowly through intersections creates less noise and congestion, minimizing the expressway look and feel of roads in urban and suburban areas. Landscaping on the islands replaces the asphalt of conventional intersections, which offers visual appeal and restores a bit of nature. Roundabouts also create visual gateways to communities or neighborhoods, and in commercial areas they can improve access to adjacent properties.

"Roundabout construction should be strongly promoted as an effective safety treatment at intersections," Retting concludes. "There's nothing to lose from constructing them and everything to gain. The proof is already there."

For a copy of "Crash reductions following installation of roundabouts in the United States" by B. Persaud et al., write: Publications, Insurance Institute for Highway Safety, 1005 N. Glebe Rd., Arlington, VA 22201.

Worst theft losses are for Mercedes model; 2 of 3 worst are Acuras

The Mercedes S class, a very large luxury car, heads the list of passenger vehicles with the highest insurance losses for theft. Overall losses for this car are 10 times higher than the average for all passenger cars.



This is the first time in five years that a utility vehicle hasn't topped the list of vehicles with the worst theft losses, which are published annually by the Highway Loss Data Institute (HLDI).

"The Mercedes S class has appeared on the 10 worst list for 5 years. It's obviously an attractive target for professional thieves because of its value," says Kim Hazelbaker, HLDI senior vice president.

The two-door Acura Integra has the second worst result, with losses also 10 times higher than the average among 1997-99 passenger vehicles. These high overall losses are produced by different factors, Hazelbaker explains. The Mercedes has extremely high average loss payments per claim, while the Acura's claim frequency is very high.

The four-door Integra has the third highest overall theft loss result. Now Honda,

which manufactures Acuras, has equipped all Integras for the 2000 model year with passive immobilizing antitheft devices.

During the 1980-99 model years, theft claim frequencies have declined significantly, but this trend has been mostly offset by increasing theft losses per claim. In 1999, the last year for which information is available, the average theft loss payment per claim also declined.

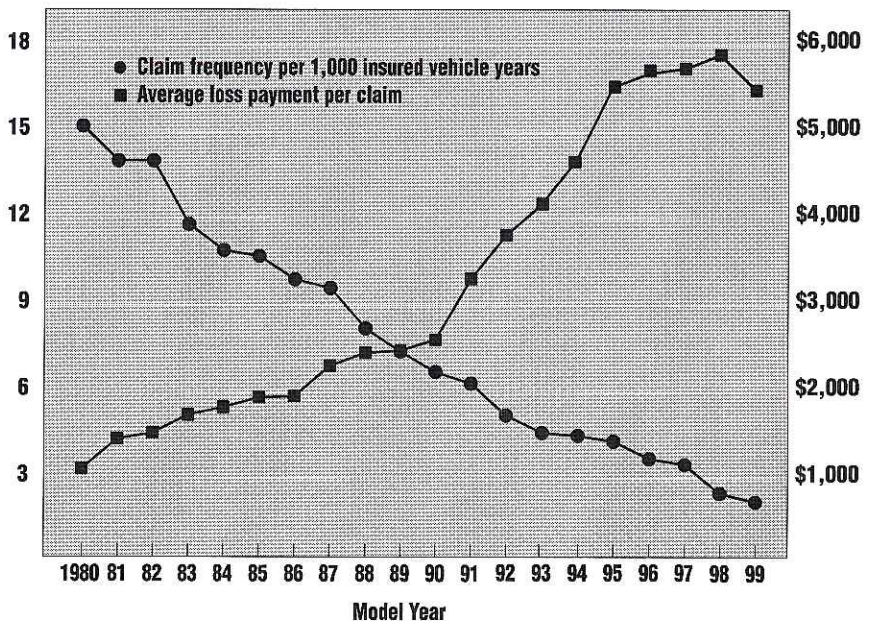


Worst overall theft losses

Make and series	Model years	Size and type	Result
Mercedes S class long wheelbase	1997-99	Very large luxury four-door car	1001
Acura Integra	1997-99	Small two-door car	996
Acura Integra	1997-99	Small four-door car	757
Mitsubishi Montero Sport 4 wheel drive	1997-99	Midsize four-door utility vehicle	616
Mercedes SL class convertible	1997-99	Small sports car	539
Nissan Maxima	1997-99	Midsize four-door car	509
Lexus GS 300/400	1997-99	Large luxury four-door car	421
BMW 3 series	1997-99	Midsize luxury two-door car	409
BMW 7 series long wheelbase	1997-99	Very large luxury four-door car	387
Lincoln Navigator 4 wheel drive	1998-99	Large four-door utility vehicle	387

Note: Results are relative average loss payments per insured vehicle year; 100 represents the average for all cars.

Insurance theft claim frequencies and average loss payments per claim, 1980-99



STATUS REPORT

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Vol. 35, No. 5, May 13, 2000

Roundabouts are becoming more familiar on U.S. roads, not just for safety reasons p.1

Pedestrian deaths increase with the speed of crashes; older pedestrians die more often in crashes at all speeds p.4

New FHWA guide to roundabouts p.6

Insurance theft losses vary widely among passenger vehicles p.6

Photos on pp. 1-3 courtesy of Walkable Communities, Inc.

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The Insurance Institute for Highway Safety is an independent, nonprofit, scientific and educational organization dedicated to reducing the losses — deaths, injuries, and property damage — from crashes on the nation's highways. The Institute is wholly supported by automobile insurers:

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Allstate Insurance Group	Foundation Reserve	Oklahoma Farm Bureau
American Express Property and Casualty	Frankenmuth	Old Guard Insurance
American Family Insurance	The GEICO Group	Oregon Mutual Group
American National Property and Casualty	General Casualty Insurance Companies	OrionAuto
Amica Mutual Insurance Company	GMAC Insurance Group	Palisades Safety and Insurance Association
Amwest Insurance Group	Grange Insurance	Pekin Insurance
Auto Club South Insurance Company	Harleysville Insurance Companies	PEMCO Insurance Companies
Automobile Club of Michigan Group	The Hartford	The Progressive Corporation
Baldwin & Lyons Group	Idaho Farm Bureau	The Prudential
Bituminous Insurance Companies	Instant Auto Insurance	Response Insurance
Brotherhood Mutual	Kansas Farm Bureau	Rockingham Group
California Insurance Group	Kemper Insurance Companies	Royal & SunAlliance
California State Automobile Association	Liberty Mutual Insurance Group	SAFECO Insurance Companies
Cameron Companies	Merastar	SECURA
CGU Insurance Group	Mercury General Group	Shelter Insurance Companies
Chubb Group of Insurance Companies	MetLife Auto & Home	State Auto Insurance Companies
Church Mutual	Middlesex Mutual	State Farm Insurance Companies
Colonial Penn.	Montgomery Insurance Companies	The St. Paul Companies
Concord Group Insurance Companies	Motor Club of America Insurance Company	Tokio Marine
Cotton States	Motorists Insurance Companies	USAA
Country Companies	MSI Insurance Companies	Virginia Mutual Insurance Company
Erie Insurance Group	National Grange Mutual	Warrior Insurance Group
Farmers Insurance Group of Companies	Nationwide Insurance	Yasuda Fire and Marine of America
Farmers Mutual of Nebraska	North Carolina Farm Bureau	Zurich U.S.

STATUS REPORT

INSURANCE INSTITUTE
FOR HIGHWAY SAFETY

Vol. 40, No. 9, Nov. 19, 2005

WHEN
ROADWAY DESIGN
OPTIONS ARE WIDE OPEN,
WHY NOT GO AHEAD AND BUILD A

ROUNDAABOUT?

TOO MANY NEW DEVELOPMENTS LIKE
THIS AREN'T BEING DESIGNED TO REAP
THE BENEFITS OF ROUNDAABOUTS.

When traffic engineers plan the roads that eventually will accommodate traffic in new developments like this, the plans usually involve intersections with stop signs or signal lights. But the barren site of a future intersection might be an opportunity to consider another option for traffic management, the modern roundabout. These have been built by the tens of thousands worldwide. The main benefits have



been to improve traffic flow and reduce injury crashes by as much as 75 percent compared with intersections controlled by stop lights or signs (see *Status Report*, May 13, 2000; on the web at www.iilhs.org). But only about 1,000 roundabouts have been built in the United States.

"Transportation engineers, like everybody else, generally go with what they're used to, and what they're used to on U.S. roads is constructing standard four-way intersections equipped with stop signs or signal lights. Doing this means missing the benefits of roundabouts, so we'd like to encourage officials to consider roundabouts earlier and more often in the roadway planning process," says Richard Retting, the In-

stitute's senior transportation engineer and author of two new studies that suggest how to overcome traditional impediments to building roundabouts.

One impediment is logistical: It can be costly and disruptive to tear up an existing intersection and replace it with a roundabout. The easiest way around this is to construct the roundabout to begin with, before an intersection with a traffic light or stop sign is installed. Another roundabout opportunity is when an intersection with a signal light is scheduled for major modification.

Institute researchers studied 10 intersections where roundabouts could have been constructed but weren't. Instead local officials either outfitted the new intersections with traffic signals or retained the signal lights at intersections that were undergoing major modifications. The researchers measured traffic volumes, monitored the number of crashes that occurred, and estimated vehicle delays and fuel consumption at the intersections with the signals. Results were



compared with estimates of what could have been expected with roundabouts instead.

A key finding is that vehicle delays at the 10 intersections would have been reduced by 62-74 percent, saving 325,000 hours of motorists' time annually. Fuel consumption would have gone down by about 235,000 gallons per year, and there would have been commensurate reductions in vehicle emissions.

The safety benefits also are considerable. Previous research indicates that roundabouts reduce crashes by 37 percent overall — injury crashes by 75 percent — compared with intersections that have signals. Applying these risk reductions to 5 of the 10 intersections for which crash data were available, researchers estimated there would have been 62 fewer crashes over 5 years. There would have been 41 fewer injury crashes.

"If only 10 percent of the 250,000 intersections with signals in the United States were modified as roundabouts, the national safety and fuel saving benefits would be enormous," Retting points out, "and you can reap these benefits without as many logistical challenges if you 'think roundabout' from the very beginning of a (continues on p.4)



FLORIDA COMMUNITY GETS IT RIGHT

When the first roundabout (above) was constructed in Clearwater, Florida, the community's traffic operations manager wasn't a fan. "I'm an old signals and sign man. I never would have believed this would have worked, but it has convinced me that roundabouts do a remarkable job of accommodating all different kinds of users including cars, pedestrians, and bicycles," says Paul Bertels. He recalls that the multiple signal lights that had controlled traffic at this location regularly brought vehicles to a halt and caused massive backups, but now the traffic keeps moving.

Bertels wasn't the only skeptic when this roundabout opened in December 1999. Opposition began before construction and continued for a while afterward. But once engineers tweaked the design and motorists got used to the new traffic pattern, the complaints abated. In fact, Clearwater residents came to like the first roundabout so much that they requested another (below). They even collected \$3,000 toward its construction and then held a party to celebrate when it opened (right).

Since then 3 more roundabouts have been constructed in Clearwater, and 7 more are being designed. All 10 of them were proposed by local residents.



photos courtesy Ken Slides

(continued from p.3) roadway project, for example when new housing or shopping developments create the need for roadway construction. Then it can be less expensive to construct a roundabout than to install traffic lights. Plus the developers may be required to fund the roundabout construction as a condition of zoning approval.

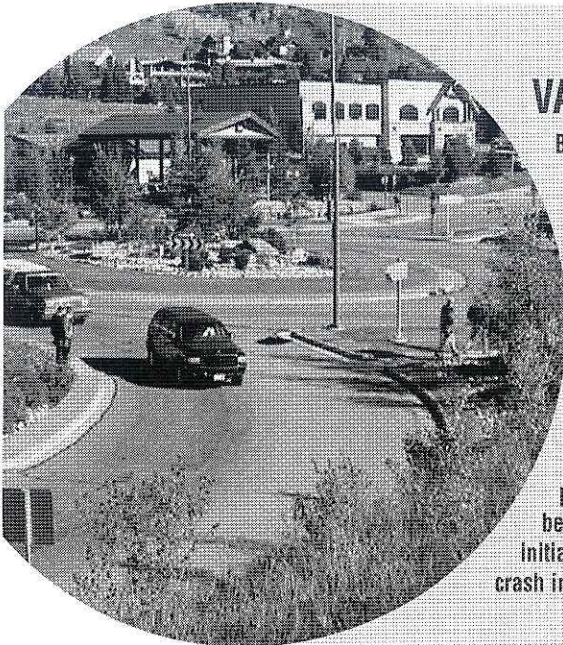
Initial opinion may be an impediment: Study after study, including the Institute's most recent one in northern Virginia, indicates the benefits of roundabouts in reducing both crashes and traffic congestion. Yet roundabouts frequently run into opposition, especially before they're constructed.

opposed. These proportions changed considerably right after construction, as motorists began getting used to the roundabouts. Then only 36 percent said they were opposed, and the proportion in favor increased from 36 to 50 percent.

"It might not sound like much of a victory to find out that half of the respondents expressed their approval for roundabouts. But the first follow-up surveys were conducted soon after motorists began navigating this new form of traffic control. Roundabouts weren't yet routine," Retting explains. Opinion surveys conducted more recently show growing approval. More respondents now

Message for transportation officials: "What these two studies teach us is simple. Just build them. Go ahead and construct a roundabout where it's appropriate, and do it, if possible, when a roadway is first engineered," Retting advises. Especially in suburban areas where population growth and housing development are escalating and new roads are planned, officials would do well to consider roundabouts.

"Don't let initial opposition get in the way," Retting adds. "Many U.S. motorists aren't familiar with roundabouts yet, so they're wary of them. But once the roundabouts are built, the traffic flow and safety



VAIL, COLORADO: TOWN WITHOUT SIGNAL LIGHTS

Before the first roundabout was constructed in Vail, Colorado, ski season traffic was leaving visitors and local residents alike wanting to ditch their cars and just ski into town. Now traffic at every exit from an interstate highway entering Vail is governed by a roundabout. The result is that traffic backups have largely disappeared.

But the process wasn't easy. The first proposals for roundabouts were resisted. Warren Miller, a local filmmaker, protested in the newspaper for six months. Still two roundabouts were built in 1995, and the opposition diminished as motorists got used to the new traffic patterns and noticed that vehicles were moving more smoothly. The newspaper published letters from Miller, who admitted he had been wrong. With public support, two more roundabouts opened in 1997. Now Vail is known as a town without signal lights.

Besides enduring fewer backups, motorists benefit in terms of safety. Greg Hall, director of public works and transportation, says crashes were reduced by about 20 percent from 3 years before the first roundabout to 3 years after. Injury crashes have gone down 85 percent. And despite initial concerns that bicyclists and others wouldn't adapt to the roundabouts, there has been only 1 crash involving a bicycle in the 10 years since Vail opened its first roundabout.

Institute researchers conducted telephone surveys of residents in three communities in New Hampshire, New York, and Washington State where intersections with stop signs or traffic lights were being replaced with roundabouts in 2004. The opinion surveys were conducted before the roundabouts were built and twice more, about six weeks after construction and then about a year later.

Fifty-four percent of the survey participants initially said they opposed roundabouts. One-third said they were strongly

say they like the roundabouts, while fewer say they disapprove.

Previous before-and-after surveys have revealed similar turnarounds in public opinion (see *Status Report*, July 28, 2001; on the web at www.iihs.org). This is because many motorists find out, through their own experience, that vehicles generally flow more smoothly through roundabouts than through intersections controlled by traffic signals. Delays are reduced. In many cases there's no need to stop at a roundabout, just slow down.

benefits turn people around, even people who weren't enthusiastic from the get-go."

For a copy of "Continued reliance on traffic signals: a case study in missed opportunities to improve traffic flow and safety at urban intersections" by C. Bergh et. al and "Traffic flow and public opinion: newly installed roundabouts in New Hampshire, New York, and Washington" by R.A. Retting et al., write: Publications, Insurance Institute for Highway Safety, 1005 North Glebe Road, Arlington VA 22201, or email publications@iihs.org.

Risks are higher for teenage drivers with teen passengers, and new research points to behaviors that are increasing the risks

When teenagers drive with peers in their vehicles, they drive faster than other motorists and leave less distance between themselves and the vehicles in front of them. They more frequently engage in other risky behaviors like speeding. These are the findings of a recent study by researchers at the National Institutes of Health and Westat.

In light traffic with longer distances between vehicles, drivers of all ages increased their speeds — and teenagers increased them more than older drivers. Exceeding the speed limit by more than 15 mph was significantly more likely when male passengers were traveling with a teenager at the wheel. About 1 of every 4 teenage drivers with males in their vehicles drove this fast compared with about 1 in 20 teenage drivers who were traveling alone or with a female passenger.

With a teenage passenger who was male, drivers of both genders maintained higher speeds than when driving alone. But when the passengers were female, the drivers' speeds were slightly slower than when driving alone.

Teenage drivers of both genders maintained shorter headways, or distances to the vehicles in front of them, compared with other drivers. Headways didn't vary much according to whether the teen driver was male or female, but headways did become shorter with male passengers in the vehicles. When the passenger was female, the headways were longer than when driving alone or when the passenger was a male. The longest headways were maintained by female drivers with female passengers.

"Crash rates are much higher when teenagers travel together, and this new study sheds light on some of the reasons,"

says Institute senior vice president for research Susan Ferguson. Evidence from an Institute study indicates that when teen passengers ride with teen drivers their crash rates, including fatal crash rates, go up (see *Status Report*, Dec. 4, 1999; on the web at www.iihs.org). This is especially true when the passengers are males. The more passengers the greater the risks.

In 2004 a little more than half of all crash deaths involving 16-year-old drivers occurred when they had teen passengers in their vehicles.

Lead author of the new study, Bruce Simons-Morton, notes that "peers in vehicles, especially males, not only can distract

licensing systems. Seventeen states still don't include such restrictions.

The researchers collected the data for the study at 13 sites on roads near 10 different public schools in the Washington, D.C., metropolitan area. Teams of 3 observers worked together during after-school hours. One observer estimated the ages and genders of the drivers and passengers leaving school parking lots and recorded the types and colors of their vehicles. The other two observers captured the vehicles on videotape, one from across the street and the other from a nearby road.

More than 3,000 passing vehicles were observed. A total of 471 were driven by



teen drivers but also may encourage them to take more risks than they ordinarily would — risks like driving faster and closer to the cars in front of them."

Simons-Morton says these findings support the idea of establishing passenger restrictions as part of states' graduated

teenagers, 245 boys and 226 girls. No passengers were in 232 of the 471 vehicles, and the rest had 1 or more passengers.

"Observed effects of teenage passengers on the risky driving behavior of teenage drivers" by B. Simons-Morton et al. is published in *Accident Analysis & Prevention* 37 (2005).

When used as directed, big passenger vans are more likely to roll over

They account for a small share of crash deaths, but passenger vans can be risky

Fifteen-passenger vans are intended to transport up to, well, 15 people. But there's a safety downside — as the occupants pile in, the risk of rolling over goes up. Most rollovers involve one vehicle, and single-vehicle rollover crash risk actually is lower for lone drivers of 15-passenger vans than for drivers traveling alone in SUVs. But a government

analysis indicates that adding more people to either kind of vehicle raises the risk of rolling over by about 9 to 12 percent per person — and vans hold more people.

“So the fact of high occupancy is the problem. The purpose of the vans also is the source of their risk,” says Susan Ferguson, the Institute’s senior vice president for research.

A 2001 report conducted for the National Highway Traffic Safety Administration (NHTSA) associates the increased rollover risk of 15-passenger vans with their centers of gravity. A high center of gravity means a higher risk of rolling over, and a 15-passenger van’s center of gravity rises about 4 inches as the vehicle

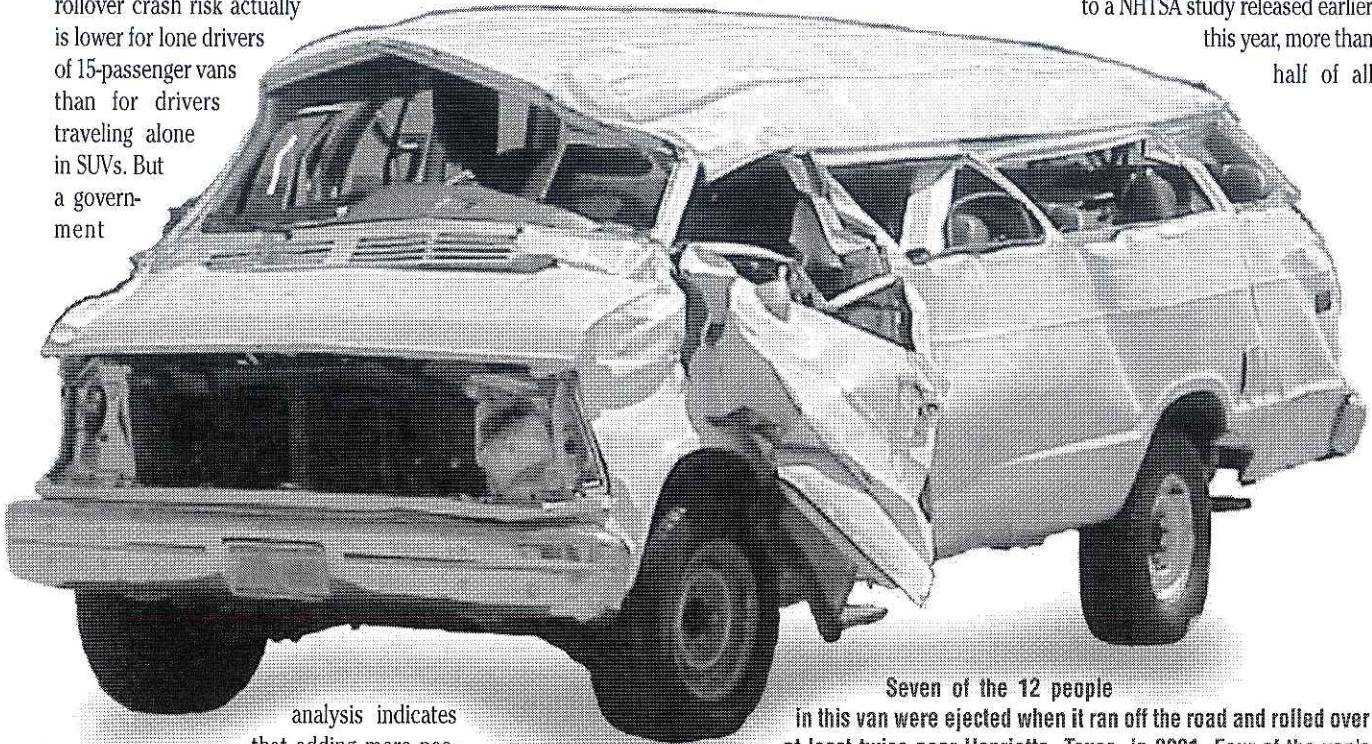
is fully loaded. This compares with 1.4 inches for a fully loaded 7-passenger van and 0.9 inch for a minivan. NHTSA says the 4-inch difference translates into a 40 percent increase in the propensity to roll over.

Another NHTSA report compares the odds of rollover when a vehicle is fully loaded versus a driver only. This ratio is 1.2 for cars, 1.5 for pickups, about 2 for SUVs and minivans, and 5 for 15-passenger vans. Given these comparisons, it’s not surprising that a greater proportion of deaths in single-vehicle crashes of vans occurs in rollovers. During 2000-04 the

real-world experience of vehicles with and without ESC also demonstrate the benefits of this technology in reducing single-vehicle rollovers (see *Status Report*, Jan. 3, 2005; on the web at www.iihs.org).

Last year NHTSA began publishing the results of handling tests conducted to rate the stability of some passenger vehicles (see *Status Report*, March 6, 2004; on the web at www.iihs.org). Now Congress has told the agency to begin conducting the same tests to rate 15-passenger van stability.

Maintenance is another issue, and tire pressure might be affecting van stability. According to a NHTSA study released earlier this year, more than half of all



Seven of the 12 people in this van were ejected when it ran off the road and rolled over at least twice near Henrietta, Texas, in 2001. Four of the van’s occupants were killed and the other eight were seriously injured.

proportion of all occupant deaths in single-vehicle crashes that occurred in rollovers was 83 percent for the vans compared with 76 percent for SUVs, 60 percent for pickups, 58 percent for minivans, and 45 percent for cars.

To reduce the risk of rolling over, most new 15-passenger vans are being equipped with electronic stability control (ESC) — important because NHTSA tests show that drivers of big vans with ESC are less likely to lose control of their vehicles in the kinds of high-speed maneuvers that can result in rollovers. Studies of

15-passenger vans have at least one substantially underinflated tire. This compares with about 30 percent for cars, SUVs, and pickups. About 1 in 4 vans has an overinflated tire.

And what about the van drivers? Some of them might not operate such big vehicles on a regular basis. They might be unfamiliar with the way 15-passenger vans handle and the extra risks when fully loaded. Yet the drivers don’t have to undergo any special training. Commercial licenses are required to drive vans with room for 16 or more people but not for

vans designed for 15. States may impose their own restrictions if vans are used commercially, but no special license is needed for mom or dad, for example, to transport a sports team or church group.

Extending commercial licensing requirements to 15-passenger van drivers might sound like a good idea, but there are unknowns. If the result were that fewer groups traveled by van because of a shortage of licensed drivers, the occupants might spread out into multiple vehicles. The safety consequences of putting more vehicles on the road to transport the same number of people are unknown.

This is worth thinking about because, despite their stability problems and high proportion of deaths in rollover crashes, 15-passenger vans don't have alarmingly high overall death rates. Driver deaths per million registered vans during 2000-04 numbered 57. This compares with an average of 108 for all passenger vehicles (cars, pickups, SUVs, and vans).

The death rate for all occupants, not just drivers, was higher in the vans than in the other kinds of passenger vehicles — 231 per million versus an average of 156 — but this is largely attributable to the vans' higher occupancy. When big vans crash, more people risk dying.

The usual safety measures like buckling up can reduce these deaths. Fifteen-passenger vans have belt systems at every seat, but only about 20 percent of people killed in van crashes during 2000-04 were using their belts. More than half of the fatally injured occupants without belts were ejected from the vehicles.

"The perspective we need to keep is that 15-passenger vans aren't menaces on the road. They aren't accounting for a big proportion of motor vehicle deaths. But when they're loaded they do pose a risk to their occupants. This problem should lessen in newer vans equipped with ESC, but still we need to pay attention to who's driving the vans, how they're maintained, and whether their occupants are doing what all vehicle occupants should do, like buckle up," Ferguson concludes.

Flawed analysis of red light camera program draws Institute critique

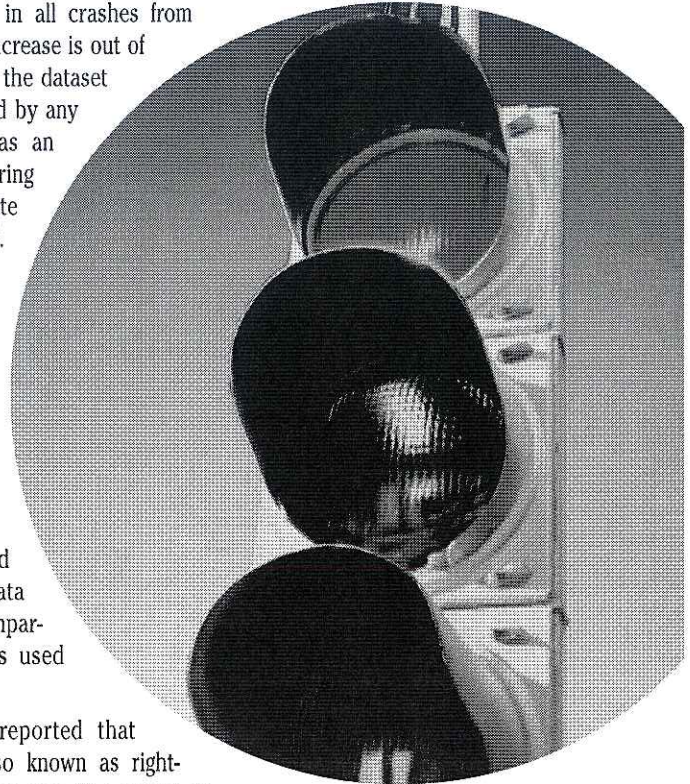
Editor's note: On October 4, 2005, The Washington Post published a review of the District of Columbia's red light camera program by reporters Del Quentin Wilber and Derek Willis. The gist was that the cameras haven't reduced crashes. Institute researchers reviewed the reporters' analyses, finding fundamental flaws, and communicated the following critique to The Post on October 7.

The most obvious flaw is in the data that were used, which appear to show an almost 50 percent citywide increase in all crashes from 1999 to 2000. Such an increase is out of line with other years in the dataset and cannot be explained by any obvious factors such as an increase in traffic. Inquiring about this, the Institute learned from the D.C. Police Department's Inspector Patrick Burke that a change in the way crash statistics were reported and recorded was instigated between 1999 and 2000. Burke said he informed the reporters of this and cautioned them not to use the data for before-and-after comparisons. Yet the reporters used the invalid dataset.

Wilber and Willis reported that "broadside crashes, also known as right-angle or T-bone collisions, rose 30 percent" at camera intersections from 1998 to 2004. This should have raised an instant red flag because (1) it is illogical on its face, and (2) the finding is so far out of line with numerous findings published in peer-reviewed scientific journals. There is absolutely no reason to believe that cameras cause right-angle crashes to increase; the worst that could be expected is that cameras would fail to reduce crashes. Not even the most vociferous opponents of red light cameras claim they increase right-angle impacts.

Wilber and Willis should have been more skeptical. They should have dug deeper into the data. Scientists do this routinely, especially when they come up with findings that are out of line with other scientific research. Before reaching apparently contradictory findings, good researchers go back to the datasets they are using to try to understand why the apparent findings are different from prior research. When reporters conduct their own analyses, they should apply the same rigor.

Wilber and Willis should have first reviewed existing research, which among other findings indicates that cameras reduce red light running and crashes at all intersections in a community,



not just those with cameras; this is referred to as a spillover effect. Yet in their analysis Wilber and Willis compared crashes at D.C. intersections with and without cameras to assess the effectiveness of the cameras. Thus, the analysis lacks the very first requirement for estimating effects — a reasonable expectation of what would have happened without the cameras.

Lives are at stake, and *The Post* needs to take more care before reporting inaccuracies that could mean more traffic deaths.

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On the inside

- Best time to consider a roundabout?**
When a road is being built or an intersection is scheduled for modificationp.1
- Clearwater, Florida roundabout**p.3
- Vail, Colorado roundabout**p.4
- More evidence that teenage passengers increase the risk for teen drivers**p.5
- Rollover risk for 15-passenger vans goes up as occupants are added**p.6
- Institute responds to Washington Post concerning red light cameras**p.7

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| | National Grange Mutual | West Bend Mutual Insurance Company |
| | Nationwide Insurance | Zurich North America |
| | N.C. Farm Bureau Mutual Insurance Company | FUNDING ASSOCIATIONS |
| | Nodak Mutual Insurance | American Insurance Association |
| | Norfolk & Dedham Group | National Association of Mutual Insurance Companies |
| | Occidental Fire & Casualty of North Carolina | Property Casualty Insurers Association of America |

Draft

Map 1 MUNICIPAL JURISDICTION

Cherokee Special Area Plan
April 20, 2006

CORE PLANNING SUB-AREAS

- 1 Homung/Range
- 2 Cherokee Country Club
- 3 Wheeler Road and Comanche Way
- 4 5th Addition
- 5 North Sherman Avenue Hill

MUNICIPAL JURISDICTION

- City of Madison
- Unincorporated Town
- Township Boundary
- Town of Burke
- Town of Westport

KEY OWNERSHIPS

- Cherokee Park Inc.
- Stricker, Steven et. al.
- Tiziani, Dennis et. al.

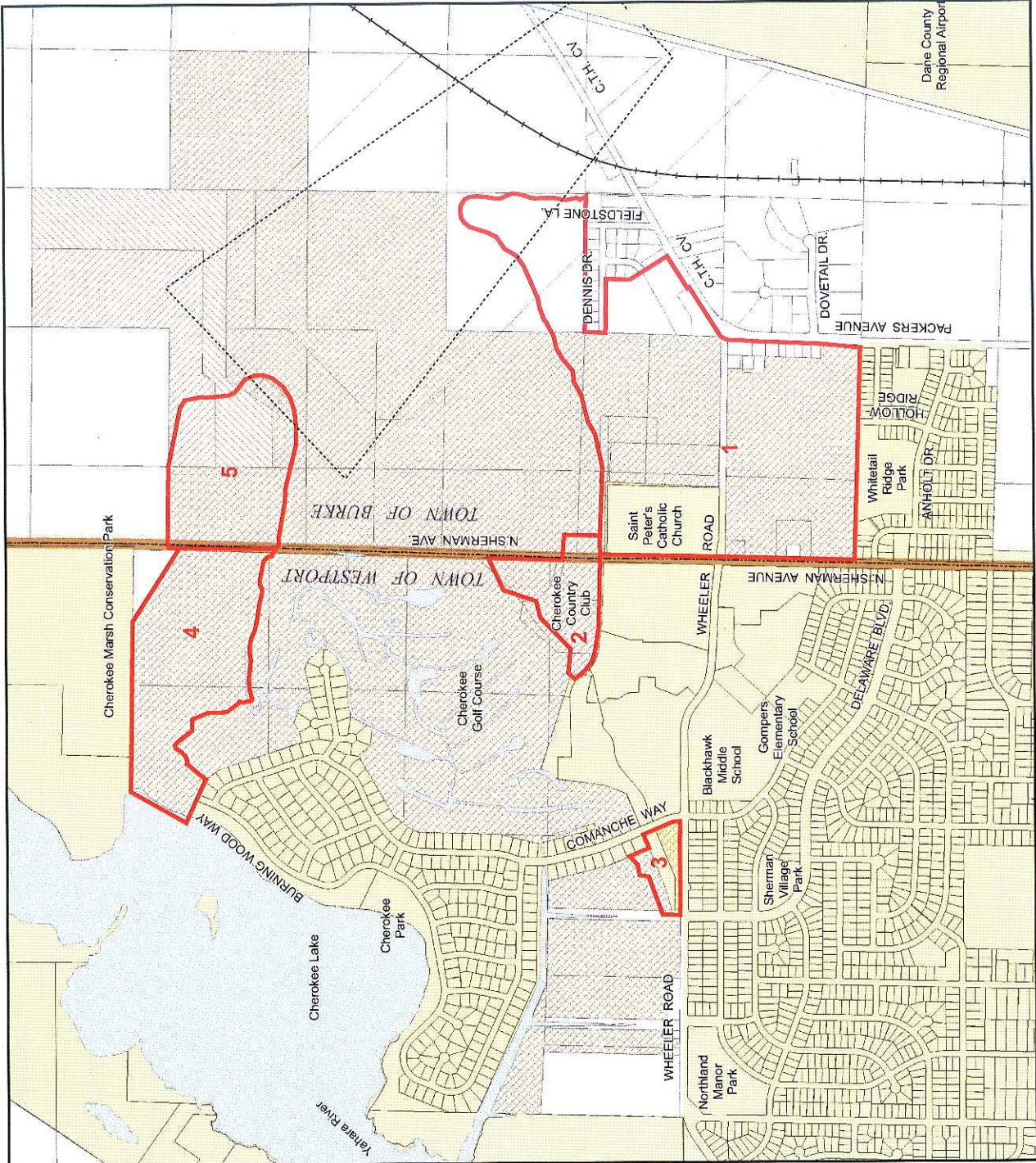
SPECIAL FEATURE

- Runway Protection Zone
- Proposed Railroad Realignment

Date Source: City of Madison, Dept. of Planning and Development, Planning Unit



City of Madison
Dept. of Planning and Development, Planning Unit



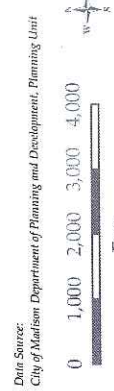
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MAP 2 GENERALIZED FUTURE LAND USE PLAN

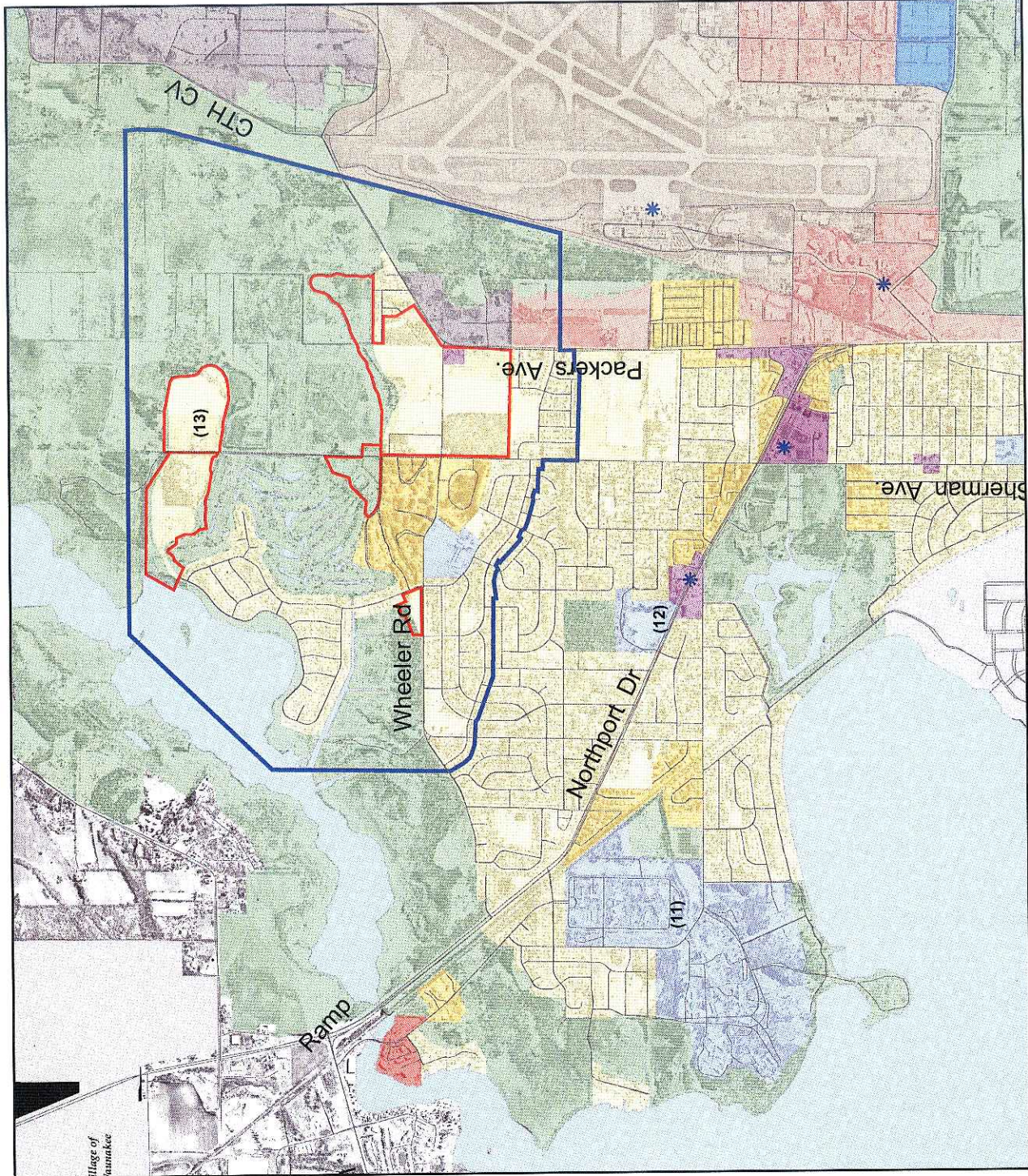
City of Madison
January 2006

Cherokee Special Area Plan

- GENERAL STUDY AREA**
CORE PLANNING SUB-AREAS
- RESIDENTIAL DISTRICTS**
 LDR Low Density (0 - 15 units/acre)
 MDR Medium Density (16 - 40 units/acre)
 HDR High Density (41 - 60 units/acre)
- MIXED USE DISTRICTS**
 NMU Neighborhood Mixed Use
 CMU Community Mixed Use
 RMLU Regional Mixed Use
- COMMERCIAL/EMPLOYMENT DISTRICTS**
 GC General Commercial
 RC Regional Commercial
 E Employment
 I Industrial
- OPEN SPACE - AGRICULTURE DISTRICTS**
 P Park and Open Space
 A Agriculture/Rural Uses
- SPECIAL DISTRICTS**
 SI Special Institutional
 AP Airport
 C Campus
- Downtown Districts** (See Volume II Map 2-3)
 NPA Neighborhood Planning Area
 (TND Encouraged)
- SPECIAL OVERLAY DESIGNATIONS**
 TOD Transit Oriented Development
 (Conceptual Locations)
 TND Traditional Neighborhood Development
 (May be applied to NPA and residential
 districts as specified in neighborhood and
 special area plans.)
- (0) Land Use Note Reference Number**
 Other Cities and Villages



City of Madison
COMPREHENSIVE PLAN



intended to be used in conjunction with the Cherokee Special Area Plan maps.

Draft

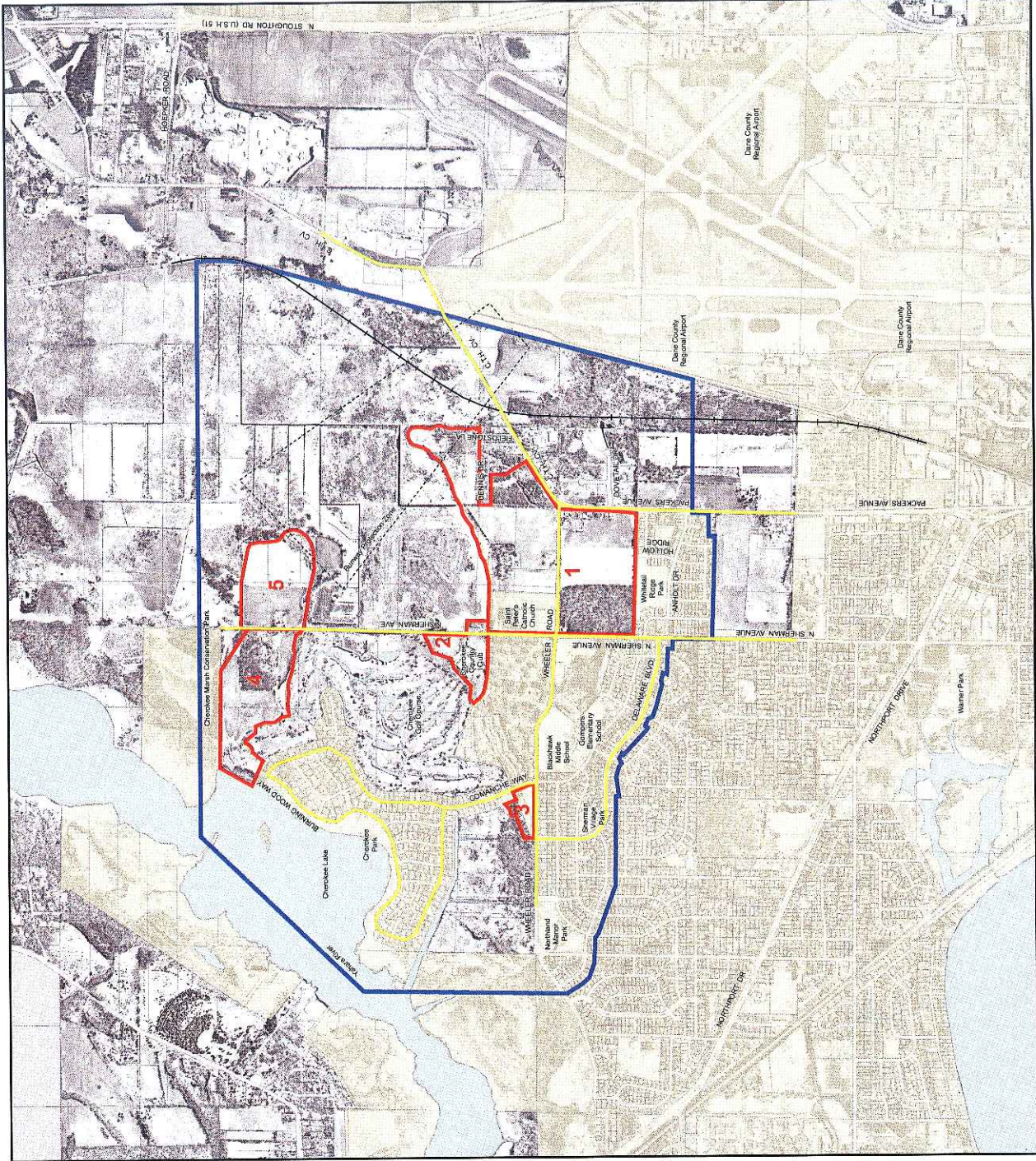
MAP 3
PLANNING AREA
Cherokee Special Area Plan
April 21, 2006

- GENERAL STUDY AREA
- CORE PLANNING SUB-AREAS
 - 1 Homung/Range
 - 2 Wheeler Road & Comanche Way
 - 3 Cherokee Country Club
 - 4 5th Addition
 - 5 North Sherman Ave. Hill
- CITY OF MADISON
- UNINCORPORATED TOWN LAND
- SPECIAL FEATURE
 - Runway Protection Zone
 - Proposed Railroad Realignment
 - Travel Corridor

Date Source:
City of Madison Dept. of Planning and Development, Planning Unit
Dixie County Regional Airport



City of Madison
Dept. of Planning and Development, Planning Unit



Draft

Map 4

EXISTING OWNERSHIP

Cherokee Special Area Plan

April 20, 2006

CORE PLANNING SUB-AREAS

- 1 Hornung/Range
- 2 Cherokee Country Club
- 3 Wheeler Road and Comanche Way
- 4 5th Addition
- 5 North Sherman Avenue Hill

PUBLIC OWNERSHIP

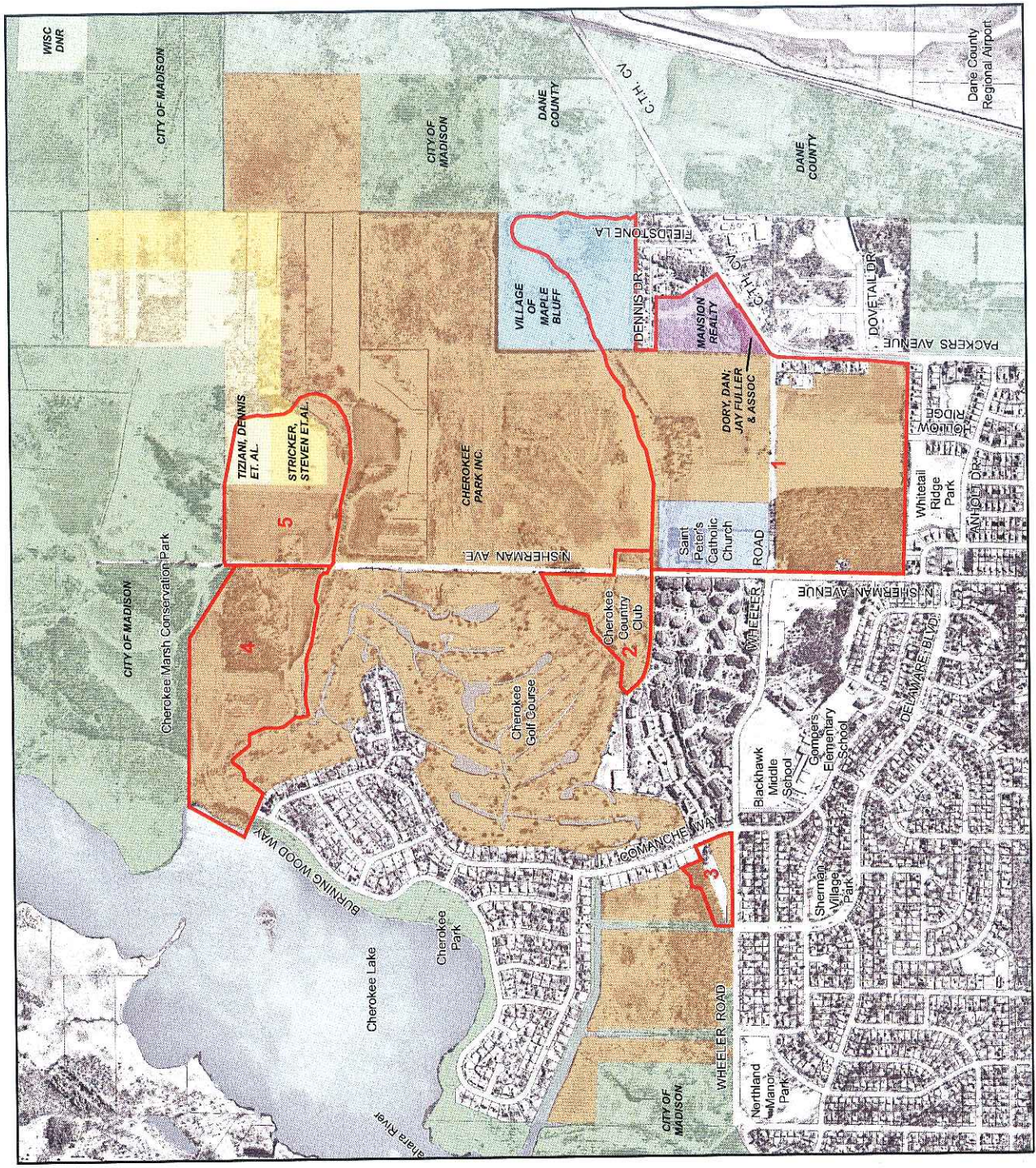
- City of Madison
- Dane County
- Wisconsin Dept. of Natural Resources
- Village of Maple Bluff

PRIVATE OWNERSHIP

- Cherokee Park Inc.
- Stricker, Steven et. al.
- Tiziani, Dennis et. al.
- St. Peter's Catholic Church
- Dory, Dan; Jay Fuller and Associates
- Mansion Realty Inc.
- CMST & P Railroad

Data Source:
City of Madison, Dept. of Planning and Development, Planning Unit

City of Madison
Dept. of Planning and Development, Planning Unit



Draft

MAP 5 EXISTING LAND USE Cherokee Special Area Plan

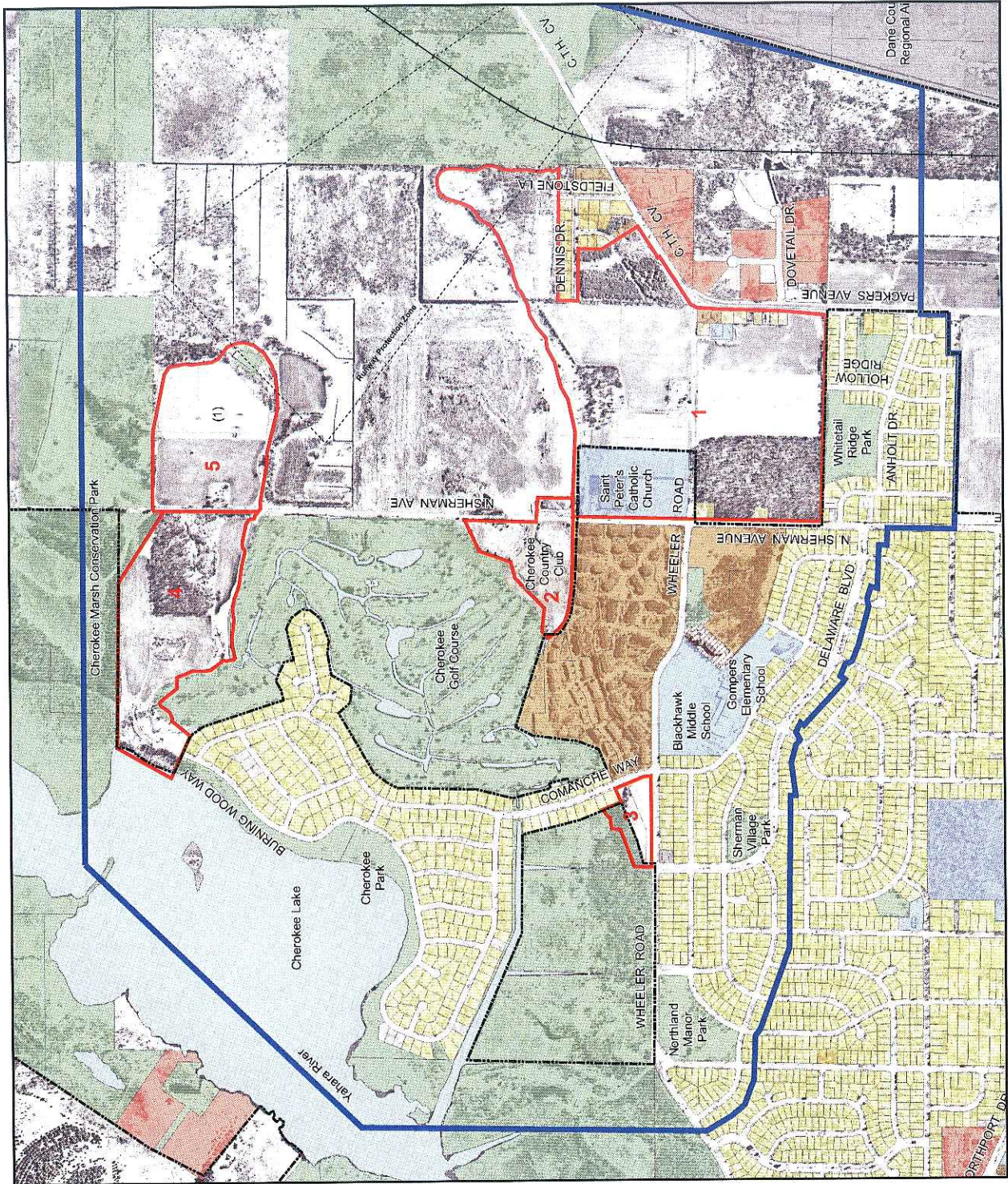
April 21, 2006

- GENERAL STUDY AREA**
- CORE PLANNING SUB-AREAS**
 - 1 Hornug/Ridge
 - 2 Cherokee Country Club
 - 3 Wheeler Road and Comanche Way
 - 4 5th Addition
 - 5 North Sherman Avenue Hill
- CITY OF MADISON LIMITS**
- LAND USE**
- RESIDENTIAL**
 - Single-Family
 - Two Family
 - Three or More Units
 - Other Residential
- COMMERCIAL**
- AIRPORT**
- INSTITUTIONAL**
- PARK, OPEN SPACE, DRAINAGE**
- AGRICULTURE / VACANT**
- SPECIAL FEATURES**
 - Runway Protection Zone
 - Proposed Railroad Realignment

Source: City of Madison Dept. of Planning and Development



City of Madison
Dept. of Planning and Development, Planning Unit



Draft

Map 6

NATURAL FEATURES and PLANNING CONSIDERATIONS Cherokee Special Area Plan April 21, 2006

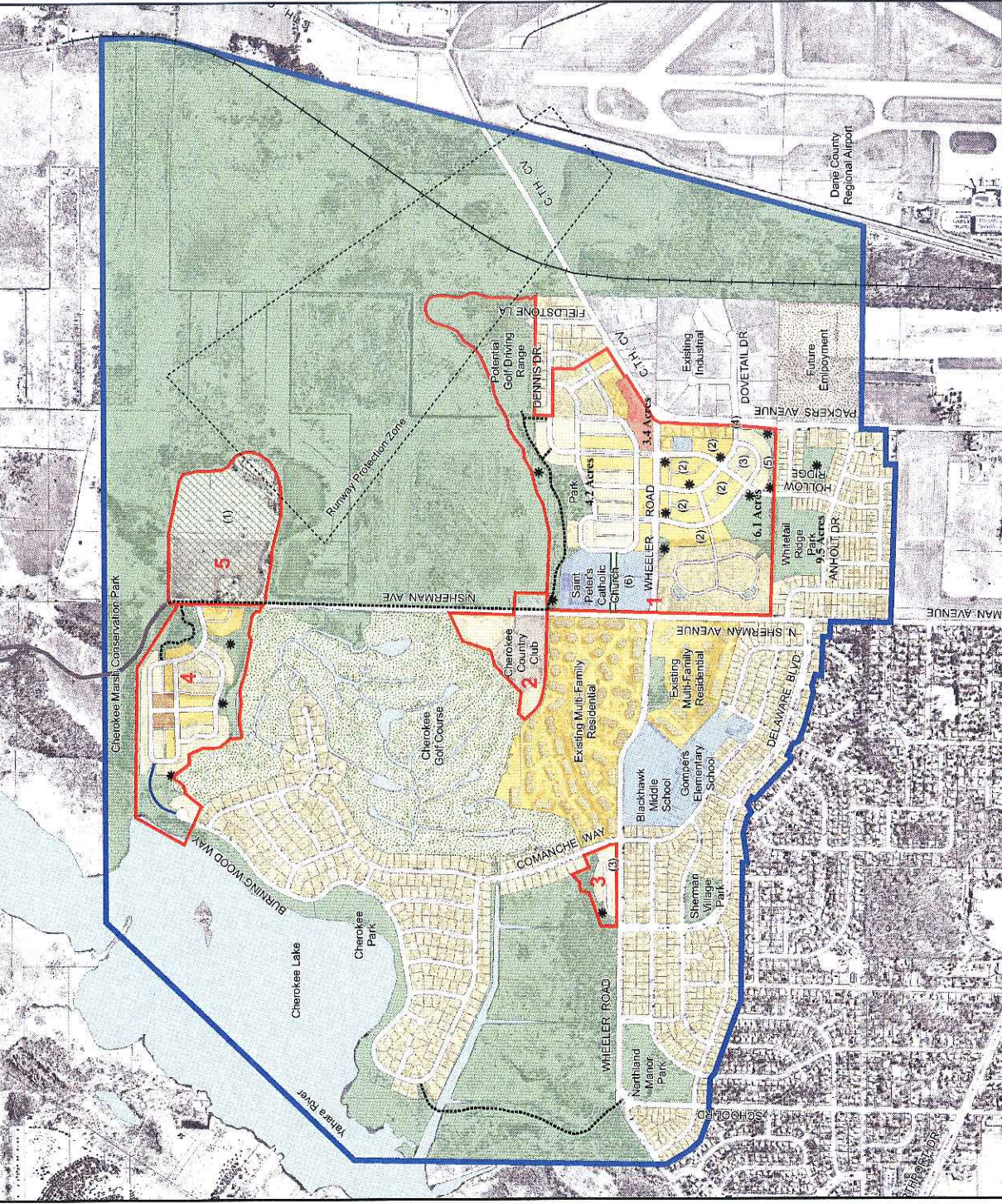
- Core Planning Sub-Areas
 - Travel Corridor
 - Potential Street Connections
 - Interactions With Existing Development
 - Cherokee Golf Course and Country Club
 - Whitehall Ridge Park
Also Northland Manor and Sherman Village Parks
 - Floodplain (100 Year Flood)
 - Wetland
 - Wooded Areas
 - Topography, 10' contours
 - (1) Land Use Note
- "It is recommended that there be no additional development on the top portion of the hill. Future development may be allowed around the lower portions of this hill only if such development is done with sensitivity to the topography in a manner that preserves open space and views to the hill from surrounding properties, and provides adequate vegetative buffers from the existing park property."
(City of Madison Comprehensive Plan)
- Runway Protection Zone
 - Proposed Railroad Realignment

Data Source:
City of Madison Dept of Planning and Development, Planning Unit
Dane County Regional Airport



City of Madison
Dept of Planning and Development, Planning Unit





Map 7
PRELIMINARY DRAFT
RECOMMENDED
LAND USE
 Cherokee Special Area Plan
 June 20, 2006

- GENERAL STUDY AREA**
- CORE PLANNING SUB-AREAS**
- RESIDENTIAL**
 Low Density Residential
 Density Range (<8 du/net ac)
 Density Range (8-15 du/net ac)
 Medium Density Residential (16-25 du/net ac)
- COMMERCIAL/EMPLOYMENT**
 Mixed Use Com-Residential
 Industrial
 Employment
 Cherokee Country Club
- INSTITUTIONAL**
 PARK, OPEN SPACE AND STORMWATER MANAGEMENT
 Public Park
 Other Open Space
- Golf Course**
 Proposed Stormwater Detention
- FUTURE DEVELOPMENT REVIEW AREA**

- LAND USE NOTES**
- (1) It is recommended that there be no additional development on the top portion of the hill. Future development may be limited to the lower portion of the hill. The proposed development in this area is consistent with the topography of the site and provides open space and views to the hill from surrounding properties, and provides adequate vegetative buffers for the site. (City of Madison, Comprehensive Plan)
 - (2) A variety of type and size of structure are sought in these areas.
 - (3) Smaller walk-structures are sought in these areas.
 - (4) Street alignment planning will continue to coordinate a connection to Packers Avenue at Devoval Drive as a preferred option.
 - (5) Single-family detached housing recommended for this area.
 - (6) The St. Peter's Church institutional use will continue. Should the church be sold, the site should be developed at 10-15 dwelling units per acre as recommended.

- STREET ROW (Public and Private)**
- SPECIAL FEATURES**
 Runway Protection Zone
 Cherokee Marsh Cons. Park Access Road
 Cherokee Marsh Cons. Park Access Road
 Trail/Emergency Access Road
 Off-Street Paths and Trails

Data Source:
 City of Madison, Dept. of Planning and Development
 City of Madison
 Dept. of Planning and Development, Planning Unit

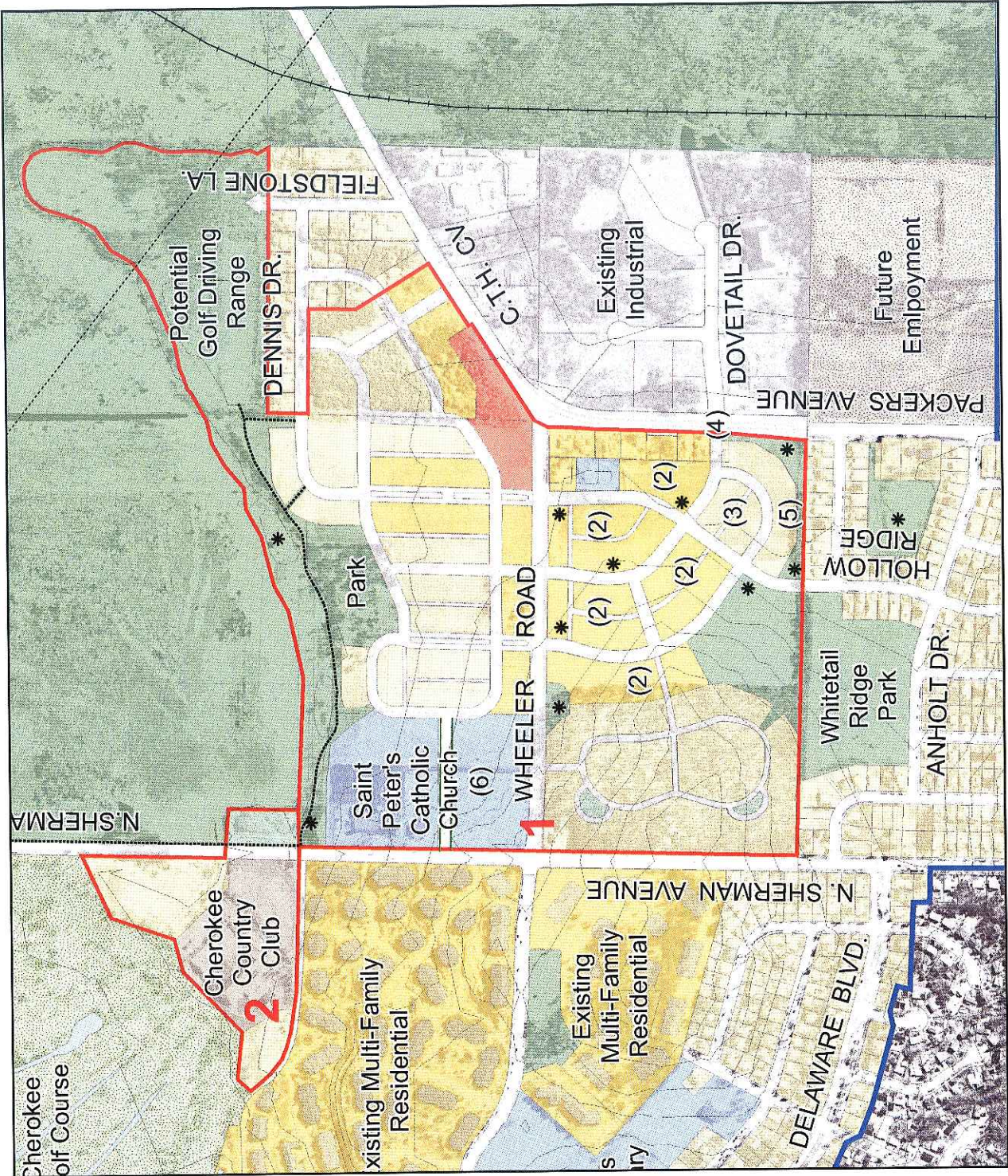
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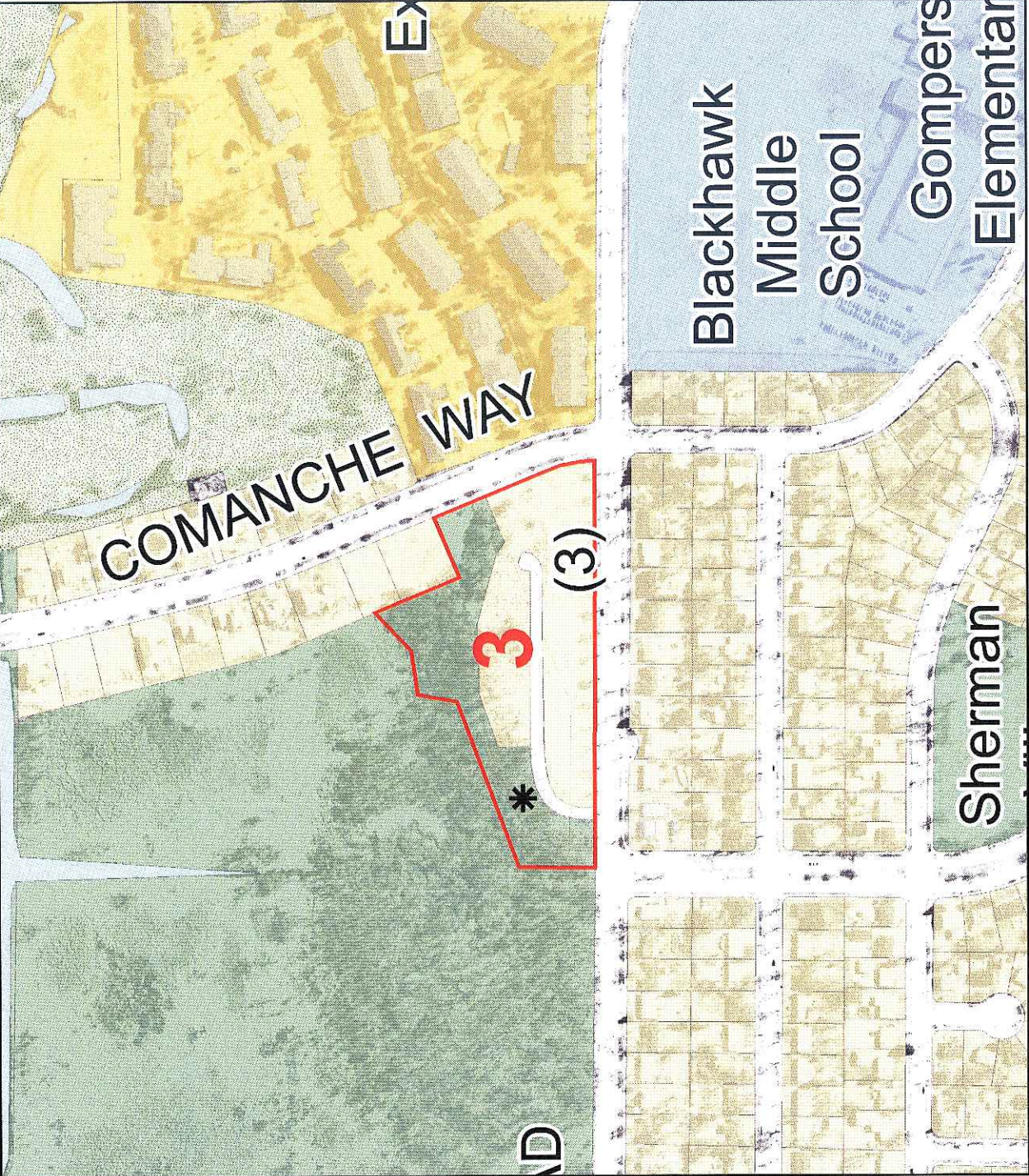
North Arrow

Map 7A
PRELIMINARY DRAFT
RECOMMENDED
LAND USE
 Cherokee Special Area Plan
 June 20, 2006

- GENERAL STUDY AREA**
- CORE PLANNING SUB-AREAS**
- RESIDENTIAL**
- Low Density Residential Density Range L (<8 du/net ac)
 - Density Range LM (8-15 du/net ac)
 - Medium Density Residential (16-25 du/net ac)
- COMMERCIAL/Employment**
- Mixed Use Com-Residential
 - Industrial
 - Employment
 - Cherokee Country Club
- INSTITUTIONAL**
- Park, Open Space and Stormwater Management
 - Public Park
 - Other Open Space
 - Golf Course
- Proposed Stormwater Detention**
- FUTURE DEVELOPMENT REVIEW AREA**
- LAND USE NOTES**
- (1) If a site is not included here, no additional development is allowed on the site. Future development may be allowed around the lower portions of this hill only if such development is done with sensitivity to the topography and surrounding properties, and provides adequate vegetative buffers from the existing past property. (City of Madison Comprehensive Plan)
 - (2) A variety of type and size of structures are sought in these areas.
 - (3) Smaller scale structures are sought in these areas.
 - (4) Street alignment planning will continue to examine a connection to Packers Avenue at Doreval Drive as a potential option.
 - (5) Single-family detached housing recommended for this area.
 - (6) The St. Peter's Church institutional use will continue. Special provisions to develop residential at 8-15 dwelling units per net acre is recommended.
- STREET ROW (Public and Private)**
- SPECIAL FEATURES**
- Runway Protection Zone
 - Proposed Railroad Realignment
 - Cherokee Marsh Cons. Park Access Road
 - Trail/Emergency Access Road
 - Off-Street Paths and Trails

Map Source:
 City of Madison, Dept. of Planning and Development
 City of Madison
 Dept. of Planning and Development, Planning Unit





Map 7B
**PRELIMINARY DRAFT
 RECOMMENDED
 LAND USE**
 Cherokee Special Area Plan
 June 20, 2006

- GENERAL STUDY AREA
- CORE PLANNING SUB-AREAS
- RESIDENTIAL**
- Low Density Residential (8 du/net ac)
- Density Range LM (8-15 du/net ac)
- Medium Density Residential (16-25 du/net ac)
- COMMERCIAL/EMPLOYMENT**
- Mixed Use Com-Residential
- Industrial
- Employment
- Cherokee County Club
- INSTITUTIONAL**
- PARK, OPEN SPACE AND STORMWATER MANAGEMENT
- Public Park
- Other Open Space
- Golf Course
- *** Proposed Stormwater Detention
- XXXX** FUTURE DEVELOPMENT REVIEW AREA

LAND USE NOTES

(1) It is recommended that there be no additional development on the top portion of the hill. Future development may be encouraged on the lower portion of the hill. Future development in this area should be done with sensitivity to the topography in a manner that preserves open space and views to the hill from surrounding properties, and provide adequate vegetative buffers from the hill (City of Madison Comprehensive Plan)

(2) A variety of type and size of structure are sought these areas.

(3) Smaller scale structures are sought in these areas.

(4) Street alignment planning will continue to evaluate a connection to Broken Avenue at Drowsell Drive as a preferred option.

(5) Single-family detached housing recommended for this area.

(6) The St. Peter's Church institutional use will continue. Should permit redevelopment, residential at 4-15 dwelling units per acre is recommended.

- STREET ROW (Public and Private)
- SPECIAL FEATURES**
- Runway Protection Zone
- Proposed Railroad Realignment
- Cherokee Marsh Cons. Park Access Road
- Trail/Emergency Access Road
- On-Street Paths and Trails

Date: Source:
 City of Madison, Dept. of Planning and Development

City of Madison
 Dept. of Planning and Development, Planning Unit

1000'

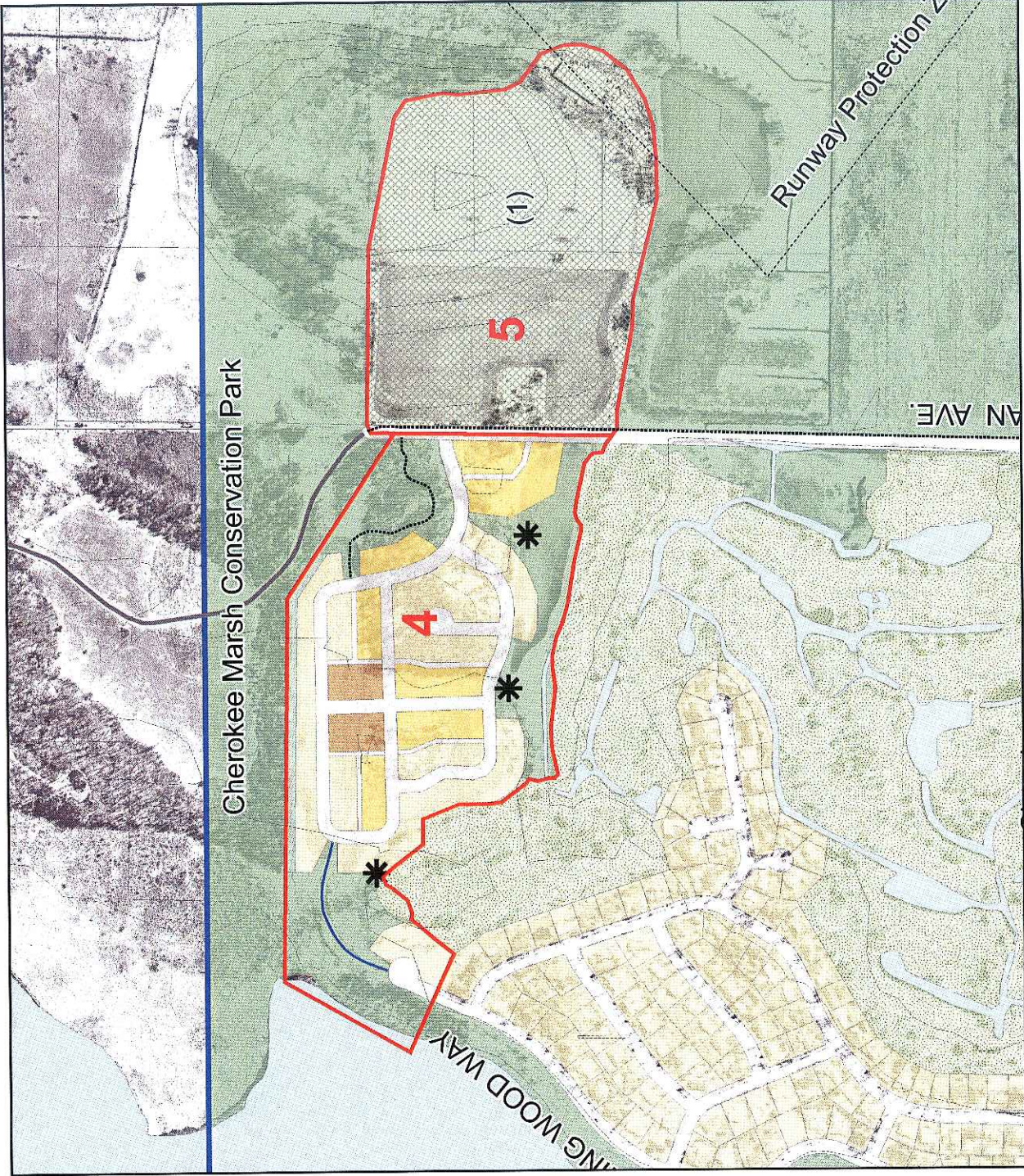
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Map 7C
**PRELIMINARY DRAFT
 RECOMMENDED
 LAND USE**
 Cherokee Special Area Plan
 June 20, 2006

- GENERAL STUDY AREA**
 CORE PLANNING SUB-AREAS
- RESIDENTIAL**
 - Low Density Residential (Density Range (<5 du/net ac))
 - Medium Density Residential (16-25 du/net ac)
 - COMMERCIAL/EMPLOYMENT**
 - Mixed Use Com-Residential
 - Industrial
 - Employment
 - Cherokee Country Club
 - INSTITUTIONAL**
 - PARK, OPEN SPACE, AND STORMWATER MANAGEMENT**
 - Public Park
 - Other Open Space
 - Golf Course
 - Proposed Stormwater Detention
 - FUTURE DEVELOPMENT REVIEW AREA**
- LAND USE NOTES**
 (1) It is recommended that there be no additional development on the top portion of the hill. Future development may be allowed around the hill. The hillside should be developed with a mixture of uses, including open space and views to the hill from surrounding properties, and provides adequate vegetative buffers from the street. (City of Madison Comprehensive Plan)
 (2) A variety of type and size of structure are sought in these areas.
 (3) Smaller scale structures are sought in these areas.
 (4) Street alignment planning will be required to determine a preferred option.
 (5) Single-family detached housing recommended for this area.
 (6) The St. Peter's Church institutional use will continue. Should perform redevelopment, residential at 8-15 dwelling units per net acre is recommended.

- STREET ROW (Public and Private)**
- SPECIAL FEATURES**
 - Runway Protection Zone
 - Proposed Railroad Realignment
 - Cherokee Marsh Conservation Park Access Road
 - Emergency Access Road
 - On-Street Paths and Trails

Data Source:
 City of Madison, Dept. of Planning and Development
 City of Madison
 Dept. of Planning and Development, Planning Unit



intermediate, pinpointed neighborhood parks/conservation special area plan map/imp 6