Eastgate

PLANNED COMMUNITY

Revised Master Plan

City of Ceres
February 2004

EASTGATE PLANNED COMMUNITY
REVISED MASTER PLAN

PREPARED FOR

Pinehurst Properties, Inc.
801 10th Street, 5th Floor, Suite 1
Modesto, California 95354-2303

PREPARED BY

EMC Planning Group Inc
301 Lighthouse Avenue Suite C
Monterey CA 93940
Tel 831.649.1799
Fax 831.649.8399
contactus@emcplanning.com
www.emcplanning.com

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1.0 Introduction

1.1 Background

The Eastgate Planned Community Master Plan (Master Plan) has been prepared by EMC Planning Group Inc., on behalf of Pinehurst Properties, Inc. for the City of Ceres. The Master Plan includes annexation of approximately 377 acres ("planning area") located in the Ceres Sphere-of-Influence. The planning area is bounded by Whitmore Avenue, Faith Home Road, Hatch Road, and Boothe Road.

The City of Ceres General Plan Policy Document (General Plan) includes the Eastgate Planning Area (planning area) within its Phase 1 Urban Growth Area. The Phase 1 Urban Growth Area encompasses all land envisioned for development within the City of Ceres through the year 2015. The City of Ceres Annexation Policy directs all applications for annexation to be accompanied by and based on an appropriate area-wide plan, such as a master plan, that addresses land use, circulation, housing, infrastructure, public facilities, and public services. This Master Plan has been prepared to carry out this policy.

The Master Plan was approved by the City of Ceres in 2000. As originally proposed and approved, the Master Plan included a 36-acre Community Park, and a 10 to 12 acre soccer center. After Master Plan approval, the City acquired a 76-acre park site immediately north of the planning area along the Tuolumne River. The City approved the site for development of Ceres River Bluff Regional Park on March 24, 2003. The park will have soccer and baseball fields, picnic areas, open space, and trials. Approval of Ceres River Bluff Regional Park adjacent to the planning area eliminates the need for the community park and soccer fields within the Master Plan. Therefore, the Master Plan was amended in 2004 to replace the community park and soccer center with a neighborhood park, and more very low density residential land uses. Eastgate Boulevard was also re-aligned to form a four-way intersection at Hatch Road and the entrance to Ceres River Bluff Regional Park.

1.2 Purpose of the Master Plan

The planning area is zoned P-C, Planned Community. Ceres Zoning Ordinance, chapter 18.20 sets forth specific requirements for development in P-C zones. Applications for a P-C zone are required to include a master plan. Policy 1.D.1 of the General Plan identifies the various requirements of the contents of a master plan. This Master Plan has been prepared to address these requirements. Subsequent development plans are required to be in conformance with the Master Plan and are required to address several specific criteria identified in the Ceres Zoning Ordinance section 18.20.080.

The purpose and intent of this Master Plan is to create a "unique and innovative community design" with respect to the development of this area as specified under section 18.20.020 of the Ceres Zoning Ordinance. Subsequent development plan and tentative map submittals shall be evaluated to determine their consistency with this Master Plan and the P-C zone standards contained in chapter 18.20 of the Ceres Zoning Ordinance. Where there are discrepancies between this Master Plan and the P-C zone standards in the Ceres Zoning Ordinance, the standards contained in this Master Plan shall govern. All subsequent development plans and tentative maps that conform to the standards set forth in this Master Plan shall be deemed consistent with this Master Plan.

The Master Plan includes a land use plan and supporting text, a circulation element, and an infrastructure and public services element. Implementation of the Master Plan will require commitments to public and private improvements. Future projects will include development plans consistent with the Master Plan policies and standards; tentative maps; and may include development agreements.

1.3 Planning Process and Approach

With the General Plan serving as the foundation on which to build, the master plan process provides an opportunity to analyze existing resources, opportunities and constraints, carry out traffic and infrastructure studies, and evaluate parks, open space and public facility needs as building blocks for the design, layout and ultimate development of this planning area within the context of the Ceres community. This process has led to the creation of the Master Plan.

1.4 Organization of the Master Plan

This Master Plan includes the following components:

- A description of the planning area;
- An overview of the land use plan;
- A discussion of development phasing;
- Land use development standards;
- A circulation analysis;
- An infrastructure and public services analysis;
- Identification of applicable fees; and
- An overview of the environmental review process.

2.0 Planning Area Description

2.1 Location

The planning area is located adjacent to the City of Ceres, which lies along State Highway 99 in central Stanislaus County, adjacent to and south of Modesto, the county seat. Ceres is about 75 miles south of Sacramento and 100 miles east of Oakland. The Tuolumne River runs along the northern edge of Ceres.

The planning area is located on the east side of Ceres. The planning area is rectangular in shape, bounded by Boothe Road to the west, Hatch Road to the north, Faith Home Road to the east, and Whitmore Avenue to the south. The planning area is within Section 12, Township 4 South, Range 9 East, Mount Diablo Base and Meridian as shown on the U.S.G.S. *Ceres, California*, quadrangle. Figure 1 illustrates the planning area vicinity. The planning area is level, and at an average elevation of approximately 100 feet above mean sea level.

2.2 Existing Conditions

The planning area consists of 24 separate parcels of land owned by approximately 16 individuals or groups plus a portion of the TID Ceres Main Canal. Existing land uses within the planning area include orchards, fallow and cultivated agricultural land, an elementary school, a church, a trucking business, and eight single-family residences. There is currently one paved road within the planning area. Helen Perry Road runs east from Boothe Road and provides access to the Samuel Vaughn Elementary School, which is located adjacent to and south of the road. Helen Perry Road terminates at the eastern border of the elementary school. Figure 2 illustrates the property lines and existing land uses within the planning area.

Since the Master Plan was approved in 2000, several subdivision maps and a development plan have been approved within the planning area as of July 1, 2003. A final map has been approved for the Claremont Oaks subdivision in the southwest corner of the planning area, and streets and utility infrastructure are under construction in that area, including the southern portion of Eastgate Boulevard. A final map has been approved for the Pinehurst North subdivision in the west central portion of the planning area and is under construction. Tentative maps have been approved for Pinehurst South, Pinehurst East, and Capistrano. A 68-unit development, not involving a subdivision, has been approved for Ledbetter. The status of each development is summarized in Table 1. The location of each development is shown in Figure 3.

TABLE 1

Approved Development Projects

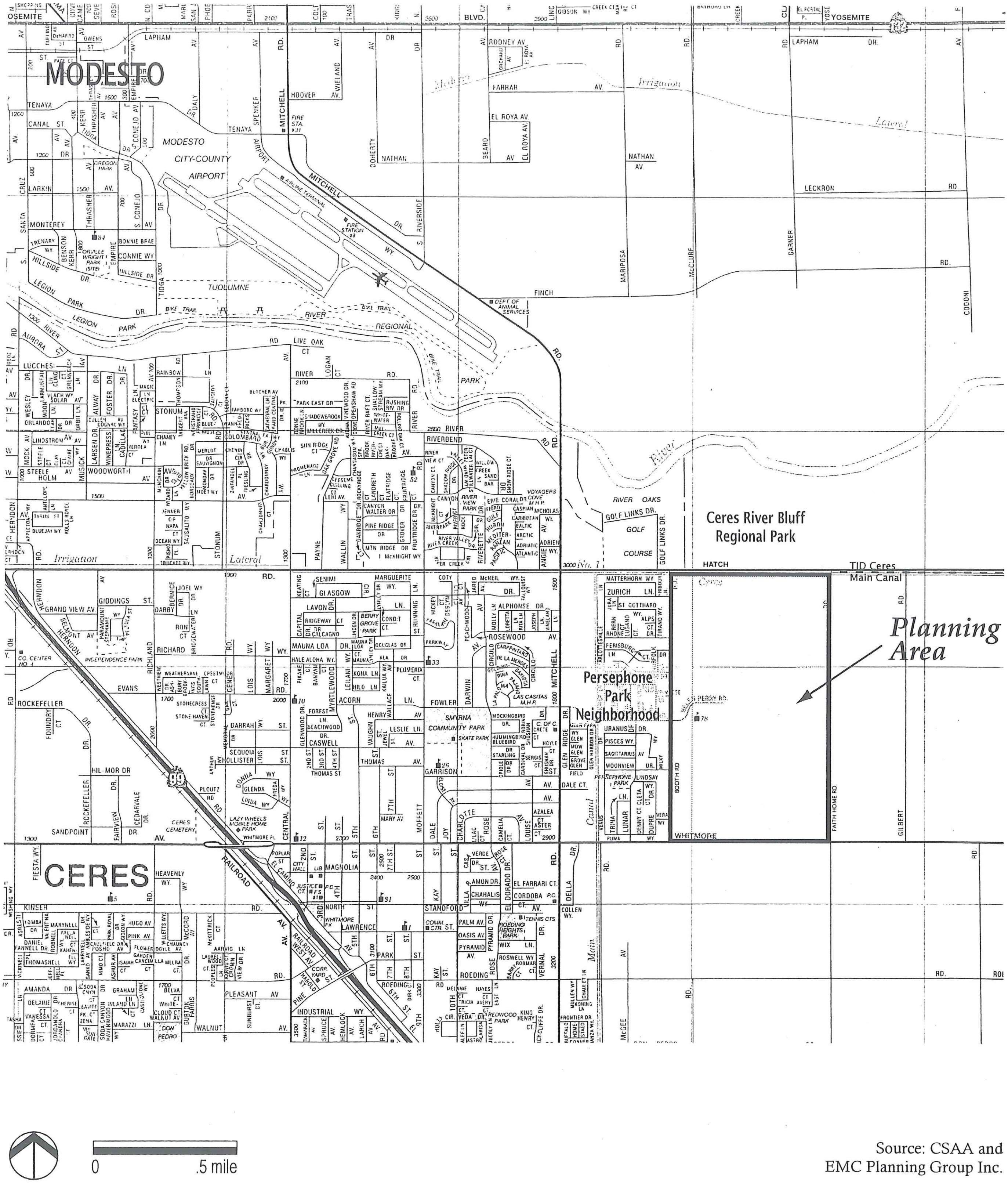
Subdivision Name	General Location	Approval	Units	Status
Claremont Oaks	Southwest	Final Map	172	Under construction
Pinehurst South	Southeast	Tentative Map	195	Awaiting sewer treatment capacity
Capistrano	East	Tentative Map	191	Awaiting sewer treatment capacity
Pinehurst East	East	Tentative Map	89	Awaiting sewer treatment capacity
Ledbetter	West	Development Plan	68	Awaiting sewer treatment capacity
Pinehurst North	West	Final Map	244	Under construction
Ortiz	Northeast	Tentative Map	38	Awaiting sewer treatment capacity
Total			997	

Source: City of Ceres

The existing Persephone Park neighborhood is located to the west of the planning area. To the north of the planning area (north of the TID Ceres Main Canal and Hatch Road is the site of the approved Ceres River Bluff Regional Park. Land to the north (the regional park site and adjacent land), east, and south is primarily in agricultural uses currently. Downtown Ceres is approximately one mile to the west of the planning area, and the Tuolumne River is approximately one-half mile north of the planning area. The Modesto City-County Airport is approximately one mile northwest of the planning area.

2.3 Development Constraints

The primary constraints affecting development within the planning area are roadway access, water supply and sewage collection infrastructure, and the Modesto City-County Airport safety zones. Figure 4 shows the airport safety zones within the planning area.



Source: CSAA and
EMC Planning Group Inc.

Figure 1
Planning Area Vicinity

Eastgate Planned Community Revised Master Plan

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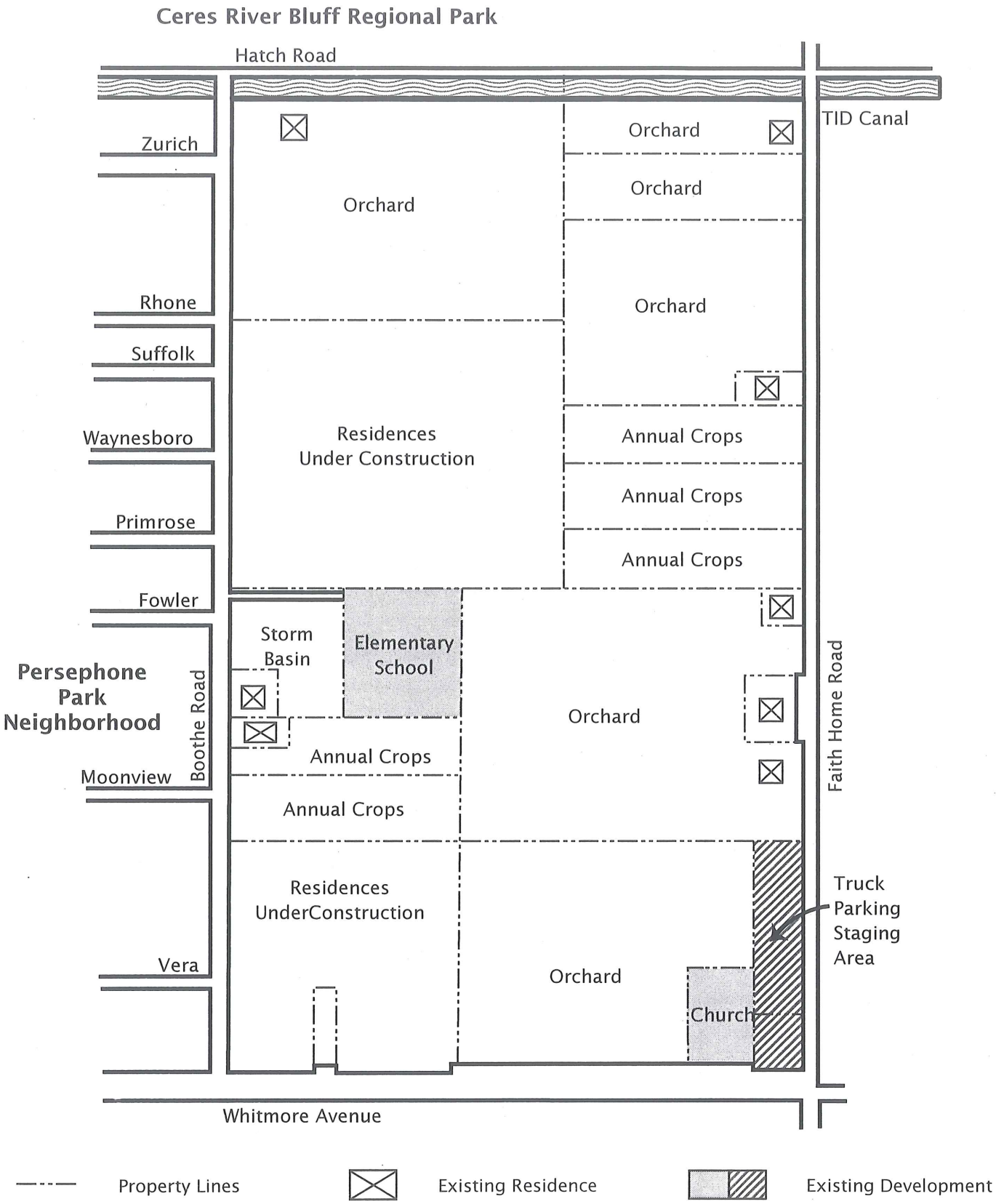

Source: EMC Planning Group Inc.

Figure 2
Existing Land Uses

Eastgate Planned Community Revised Master Plan

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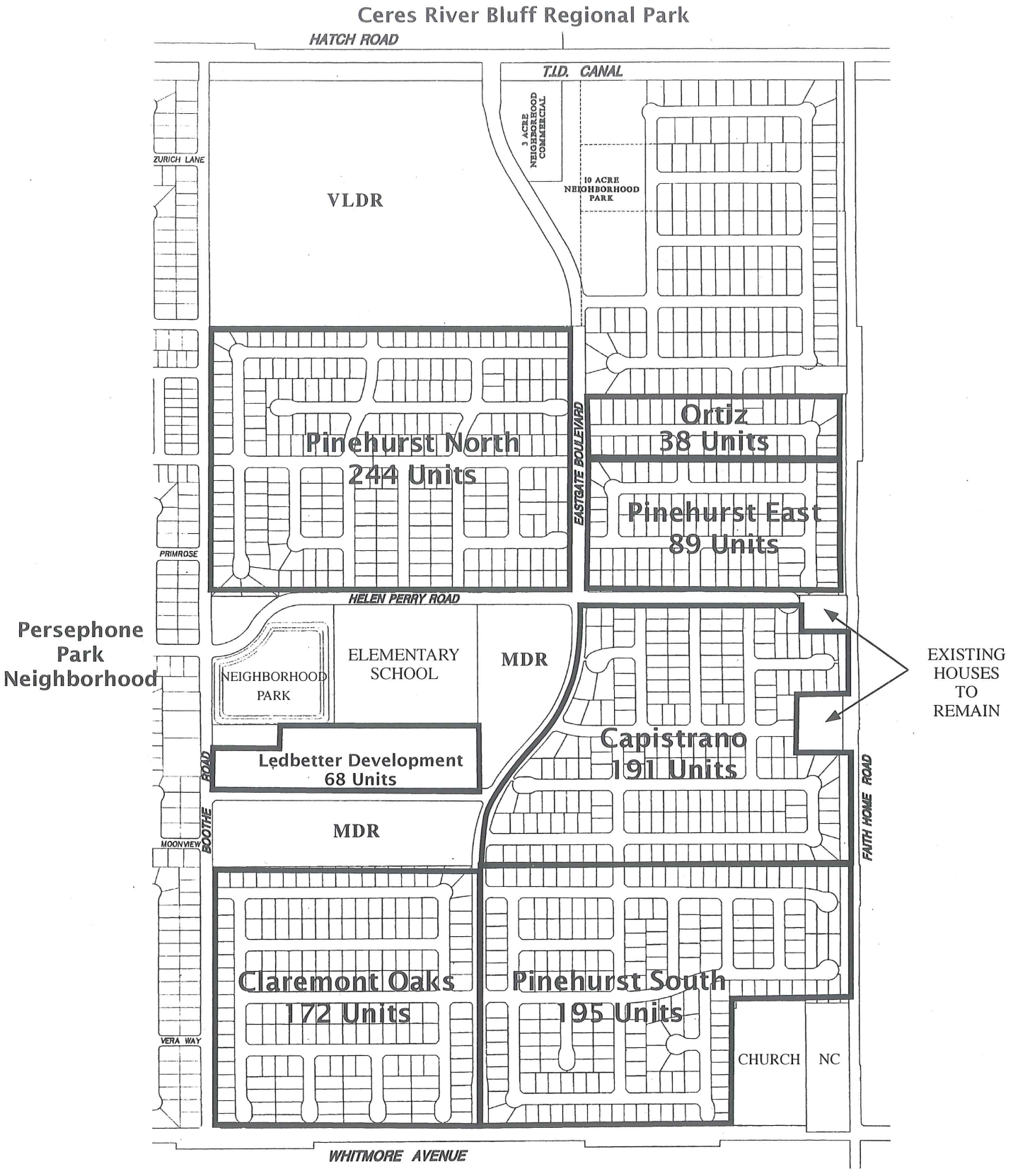

Source: Garcia-Davis-Ringler and EMC Planning Group Inc.

Figure 3

Approved Development

Eastgate Planned Community Revised Master Plan

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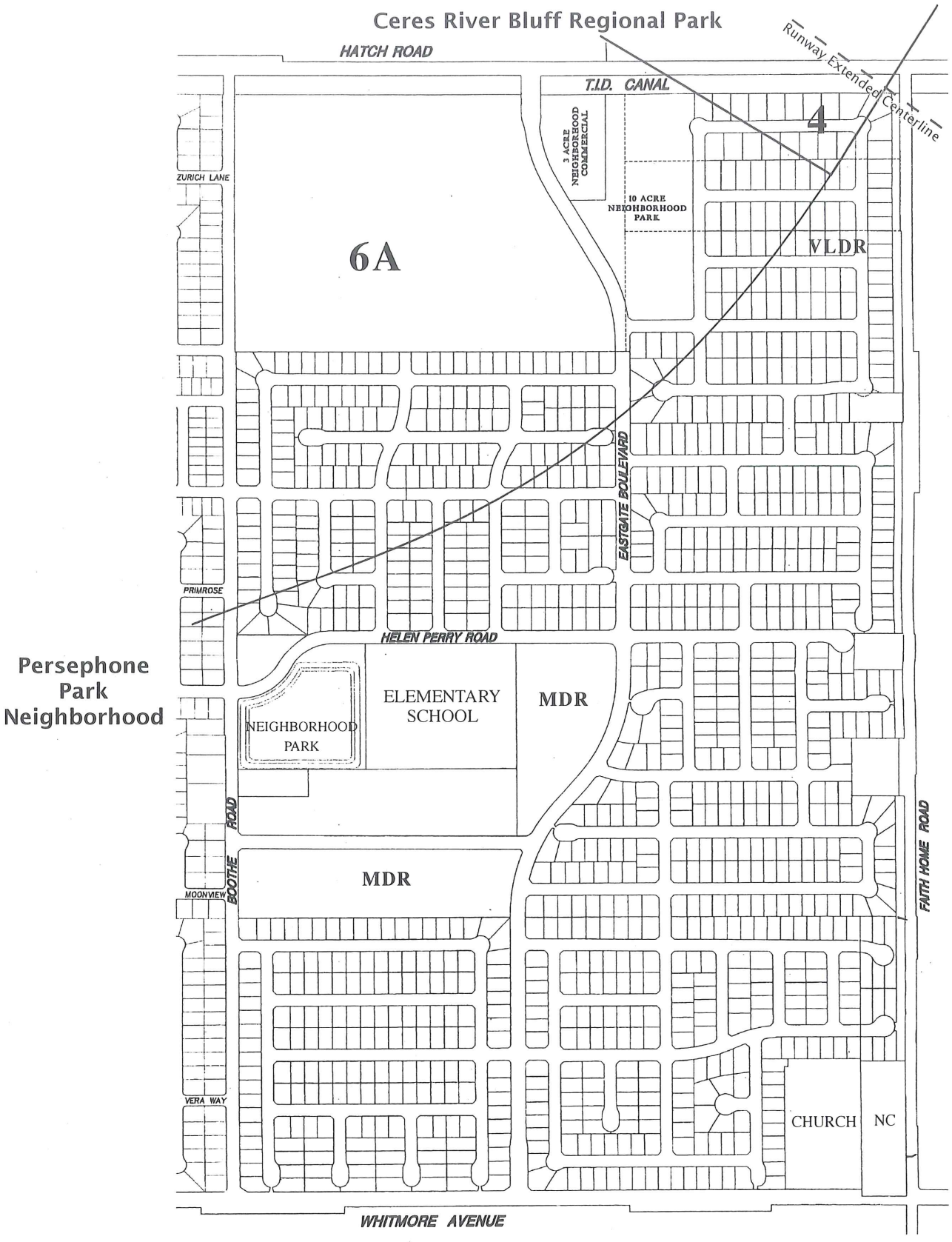

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Zone Boundaries

Extended Runway Centerline

Source: Garcia-Davis-Ringler and EMC Planning Group Inc.

Figure 4
Airport Zones

Eastgate Planned Community Revised Master Plan

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Roadway Access

The General Plan classifies Faith Home Road and Hatch Road as future expressways. Expressways are limited access, moderate- to high-speed facilities that are intended to carry in excess of 25,000 vehicles per day. Faith Home Road is designated for Class B expressway status. This designation includes restricted access from driveways and minor streets, and allows right-turn in, right-turn out access movements from collectors. Hatch Road is planned for a Class C expressway, which may have right-turn only access restrictions for occasional minor streets, and allow left-turn median staging for occasional collector streets. The Ceres Main Canal presents a barrier to connections between the planning area and Hatch Road.

Water Supply and Sewage Disposal

The City of Ceres water supply comes from groundwater wells. Due to long-range water quality concerns, the City is investigating the potential for further augmentation of its supply with surface water.

The City of Ceres wastewater treatment plant is located in southwest Ceres, and has an existing capacity of 3.5 million gallons per day (mgd). A portion of the wastewater generated in Ceres is treated at the City of Modesto plant, and the City of Ceres has entered into an agreement with the City of Turlock for additional treatment capacity. The trunk sewer on Mitchell Road feeding the Ceres plant is at capacity, and an alternative line is in the planning stages. Development of most of the approved subdivisions in the planning area is contingent on the increased wastewater treatment capacity agreement with the City of Turlock.

Airport Issues

The Modesto City-County Airport runway is aligned in a southeast-northwest direction, which creates a centerline approach path that crosses the intersection of Hatch and Faith Home Roads at approximately 1.5 miles linear distance from the runway touchdown zone. Aircraft approaching a landing to the northwest, which is the dominant pattern of approach, are approximately 1,500 feet above ground level at the intersection of Hatch Road and Faith Home Road. The Airport Land Use Commission has reviewed and approved the land uses and airport-related policies contained in the General Plan.

Approximately 105 acres of the planning area are within Airport Zone 6A. Airport Zone 6A is restricted to six dwelling units per acre (five dwelling units per acre next to Zone 4), and 150 persons per acre for non-residential uses. Ten percent of the area is required to be open space. Approximately seven acres of the planning area are within Airport Zone 4. Airport Zone 4 limits residential density to one house per 2.5 acres, and requires 15 percent open space. Certain higher-risk uses with concentrations of people, such as day cares and schools, are prohibited.

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3.0 Land Use

3.1 Land Use Plan Overview

The intent of the land use plan is to help accommodate the growing housing demand within the City and provide for community facilities and neighborhood commercial facilities needed in the area.

Ceres General Plan

The General Plan land use diagram designates the majority of the planning area for low density residential land uses (refer to General Plan Figure 1.2, Land Use Diagram). In addition, the General Plan diagram includes a nine-acre park adjacent to the existing elementary school, and a conceptual location for a community park, a community public safety facility, and an area designated for medium density residential within the planning area. Also, the diagram indicates a conceptual location for community commercial development at the intersection of Whitmore Avenue and Faith Home Road and for neighborhood commercial on the south side of Hatch Road, between Faith Home Road and Boothe Road. The General Plan indicates that precise locations for "conceptually designated" land uses will be determined through the area-wide planning process.

The Modesto City-County Airport is located within 1.5 miles to the northwest of the planning area. According to General Plan figure 1-4, most of the northwest quarter of the planning area is within Airport Zone 6A (Traffic Pattern Zone), and a small portion of the planning area is within Airport Zone 4 (Outer Safety Zone). General Plan policy 1.H.2. allows new development within the airport safety zones according to the constraints in General Plan Table 1-2., which sets forth specific development standards for each of the airport's seven influence zones. The land use designations in the Master Plan are consistent with those of the General Plan, which were approved by the airport land use commission.

The General Plan calls for a Class I bikeway along the south side of the TID Ceres Main Canal at Hatch Road, and Class II or III bikeways along Boothe Road, Whitmore Avenue, and east-west through the center of the planning area.

A Class I bikeway is a physically separated path with its own right-of-way, independent of a roadway. Class II bikeways provide for travel in a one-way striped lane on a street or highway, while Class III bikeways provide for road sharing with pedestrians and/or motor vehicles. Class III bike routes are marked only with signs.

Eastgate Planned Community Land Use Plan

The Master Plan land use plan calls for the planning and development of an extended new community, integrating the planning area with the existing City of Ceres through connections with local streets, integration of an existing elementary school and church, and development of neighborhood parks and neighborhood-serving commercial areas. The Master Plan was prepared with the intent of accommodating the various land uses provided for in the General Plan and providing pedestrian, bicycle and roadway linkages between these uses without encouraging through vehicle traffic within the existing and proposed neighborhoods. Figure 5 illustrates the Master Plan land use plan.

The land use categories planned within the community include residential, parks, commercial, and public facilities, as listed in Table 2. Minor adjustments to the amount and location of each land use can occur during approval of a development plan and/or subdivision maps, provided that such adjustments are consistent with the overall arrangement of land uses reflected in the approved Master Plan.

TABLE 2

Land Use Overview

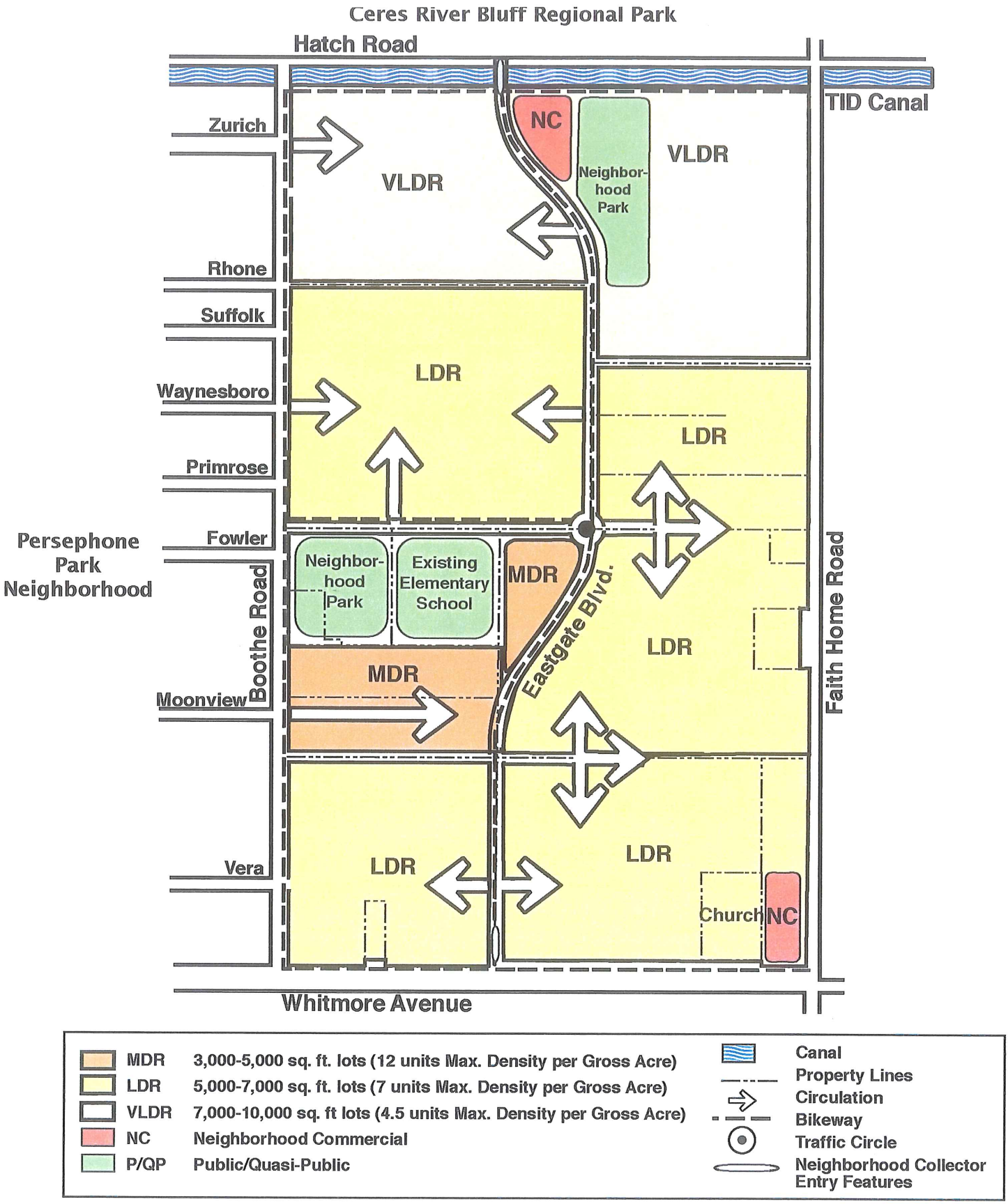
Land Use		Acres	Percentage
Residential	Very Low Density	85	23
	Low Density (includes existing five-acre church)	225	60
	Medium Density	27	7
Subtotal		**332**	**90**
Public/Quasi Public	Neighborhood Park	19	5
	Elementary School	9	2
Subtotal		**28**	**7**
Commercial	Neighborhood Commercial	**6**	**1.5**
TID Ceres Main Canal		**6**	**1.5**
	TOTAL	**377**	**100**

Note: Internal roadways are anticipated to be approximately 74 acres or 20 percent of the entire planning area.

Source: Garcia-Davis-Ringler and EMC Planning Group Inc.

The land use plan provides a nine-acre neighborhood park adjacent to the existing elementary school, and a 10-acre neighborhood park in the northeastern portion of the planning area.

The land use plan provides two approximately three-acre sites for neighborhood commercial development. These sites are located at the southeast corner of the



Source: Garcia-Davis-Ringler and EMC Planning Group Inc.

Figure 5
Land Use Plan

Eastgate Planned Community Revised Master Plan

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planning area at the intersection of Whitmore Avenue and Faith Home Road and adjacent to the TID Ceres Main Canal in the northern portion of the planning area across from the recently approved Ceres River Bluff Regional Park. These areas are intended to provide convenient access to commercial services for residents and users of the regional park, thereby reducing traffic generation.

The approval of development plans and/or subdivision maps is required for specific development projects (Ceres Zoning Ordinance section 18.20.080). Such development plans and subdivision maps must be consistent with the approved Master Plan. However, minor variations from the Master Plan may be approved by the Planning Director or Planning Commission in conjunction with the subsequent review of such plans or maps, provided any such changes are consistent with the intent of the Master Plan's overall land use program.

Residential

Housing will be the predominant use of land within the planning area, with three different residential land use sub-categories designated. These are structured to provide a range of lot sizes, housing types and flexibility in plan implementation to allow for buildout of the planning area based on the City's needs, and what the future market may bear, while at the same time providing an overall development framework. In addition, residential development may be integrated with the neighborhood commercial uses, as described under the neighborhood commercial section, below. Table 3 summarizes the potential planned densities and units. Table 4 shows probable build-out of the planning area, taking into account the tentative maps and development plans already approved for the planning area as of July 1, 2003, and preliminary lot arrangements for the remainder of the Phase 2 area. Based on the information in Table 4, the Master Plan is expected to yield 1,539 residential units at build-out, below both the average (1,675) and maximum (1,983) densities of the original Master Plan as approved in 2000.

The residential land use categories are based on those contained in the General Plan and are defined as follows:

- **Very Low Density Residential (VLDR).** This category allows only very low density residential uses on lots ranging from 7,000 to 10,000 square feet (sq.ft.). Areas designated for this land use are located in the northern portion of the planning area, along Hatch Road, Faith Home Road, and Boothe Road. The maximum allowable density for this land use designation is four and one-half dwelling units per gross acre. The average density for this designation is assumed to be four dwelling units per gross acre. Much of the VLDR land use is within Airport Zones 4 and 6A.

TABLE 3

Planned Residential Densities and Unit Counts

Land Use	Original Master Plan					July 1, 2003 Master Plan Amendment				
	Ac.	Max.	Units	Avg.	Units	Ac.	Max.	Units	Avg.	Units
VLDR	70	4.5	315	4.0	280	85	4.5	382	4.0	340
LDR	192	7.0	1,344	6.0	1,152	220	7.0	1,540	6.0	1,320
MDR	27	12.0	324	9.0	243	27	12.0	324	9.0	234
NC	6	25.0				6	25.0	150	15.0	90
Total	295		1,983		1,675	338		2,396		1,984

Note: Max = maximum density under Master Plan land use designation;
Avg. = average planned density under Master Plan land use designation.
The original Master Plan did not calculate a residential density for the neighborhood commercial area.

Source: Garcia-Davis-Ringler and EMC Planning Group Inc.

- **Low Density Residential (LDR).** This is the predominant residential land use category within the planning area. This category allows a maximum density of seven dwelling units per gross acre. The average density for this designation is assumed to be six dwelling units per gross acre. Housing types for this category are single-family detached houses on lots ranging from 5,000 to 7,000 square feet. In addition to standard single-family detached homes, zero lot line single family and attached single-family homes are allowed within this designation. A small portion of the LDR land use is within Airport Zone 6A. A tentative map has already been approved for this area, and the average density of that map is less than the maximum of six units per acre that is allowed in Airport Zone 6A.

- **Medium Density Residential (MDR).** This category provides opportunities for detached single family, attached single family, and multiple family residential units at medium densities. For detached single-family housing, lot sizes in this designation will range from 3,000 to 5,000 square feet. The density range for this land use designation is seven to 12 dwelling units per gross acre. The average density is assumed to be nine dwelling units per gross acre. Standard single-family detached homes, zero lot line single family, and attached single family homes are allowed within this designation. Areas designated for this land use are located south and east of the existing elementary school and adjacent neighborhood park.

TABLE 4

Projected Planning Area Build-out
(as of July 1, 2003)

Land Use	Approved Development			Remaining Planning Area			Total Projected Units
	Acres	Actual Density	Units	Acres	Average Density	Units	
VLDR	0			42 43	4.0 3.0	168 129	
LDR	220		931	0	–	0	
MDR	10		68	17	9.0	153	
NC	0			25.0	15.0	90	
Total	230		999	102		540	1,539

Note: 1,539 units is based on approved development plans, preliminary lot arrangements, and average planned density under Master Plan land use designation for the remaining areas. 1,539 units is 444 units under the maximum density approved in the original Master Plan. Under maximum Master Plan densities for areas without City approvals, the total units would be 1,705 units, or 278 units under the maximum density allowed in the original Master Plan.

Source: Garcia-Davis-Ringler and EMC Planning Group Inc.

Neighborhood Commercial

The land use plan includes two areas designated for neighborhood-serving commercial facilities. Approximately six acres are set aside for neighborhood commercial uses. The intent of this designation is to provide easily accessible facilities, thereby minimizing the amount of vehicle trips generated by development within the planning area. In addition, the neighborhood commercial area in the northern portion of the planning area would provide convenient services to users of Ceres River Bluff Regional Park.

This land use designation is consistent with the "neighborhood commercial" designation in the General Plan, and could include a small grocery/market, espresso bar, video shop, al fresco cafes, boutiques, bakeries, day care facilities, dry cleaners, book shops, etc. This designation would also allow for professional offices, such as medical and dental offices, provided the overall character of the area retains its neighborhood retail and service orientation. In conjunction with the commercial uses, residential development, particularly on the second floor or back of stores, is

permitted at densities consistent with the high density residential designation, which allows up to 25 units per acre. It is anticipated that residential development within the neighborhood commercial district would average no more than 15 units per acre. Because of residential density constraints in Airport Zone 6A, residential development of the northern neighborhood commercial area would be limited to six units per acre (18 units), and the additional density could be transferred to the southern neighborhood commercial site. The southern neighborhood commercial site could be developed with up to 72 residential units for a site density of up to 24 units per acre.

The combination of uses will provide an opportunity for residents to walk to these services with the intent of reducing short distance auto trips. Integration of residential uses on the same site would also offer additional development financing options, as well as increasing the proximate customer base. The maximum allowable commercial floor area ratio (FAR) for the neighborhood commercial land use is 0.5.

Parks

The General Plan contains standards for the development of park facilities: 1.4 acres of neighborhood parks and 2.6 acres of community park per 1,000 population. Based on development of the planning area at the densities projected in Table 4, and assuming an average household population of 3.0, the park acreage needed to meet the General Plan standard would be 7.0 acres of neighborhood park and 13.1 acres of community park.

Neighborhood Parks. The Master Plan provides a nine-acre and a 10-acre neighborhood park. The nine-acre property will not be credited to the project's park requirements as it predates the development of the Master Plan and is necessary to meet the open space requirements for the area west of Boothe Road.

The existing public property for an eventual nine-acre neighborhood park site is located adjacent to the existing elementary school, along the western boundary of the planning area. The neighborhood park will be designed by the City and may include both active and passive recreational uses (see the neighborhood park prototype, on page 5-3 of the General Plan). This park is being developed to serve the existing neighborhood west of the planning area, but will also be available for use of residents within the planning area. The park will not include field lighting.

The second neighborhood park site is located in the northeast portion of the planning area, and is 10 acres. This park would feature similar facilities as other neighborhood parks, such as a playground, and picnic and turf areas, and would include two soccer fields. These soccer fields would be provided for the use of residents within the planning area and for general city use, either separately or in conjunction with the Ceres River Bluff Regional Park. This neighborhood park is within Airport Zone 6A, and would provide most of the open space requirement for the airport zone. Trees and structures will be restricted to the edges of this park.

General Plan Policy 5.A.2. states that "Joint use of City parks as drainage detention basins will be permitted, with the park as the primary use." Both neighborhood parks will serve as detention facilities, as well as recreational facilities.

Community Park. The City currently collects park fees in conjunction with its comprehensive public facilities fee program. The City has recently approved a master plan for a community park on a 76-acre site adjacent to the planning area, so dedication of land for a community park within the planning area is not required by the City. The Ceres River Bluff Regional Park will include soccer and softball fields, basketball and volleyball courts, playground, picnic areas, a boat put-in site on a beach along the Tuolumne River, hiking trails, and natural vegetation restoration. The Ceres River Bluff Regional Park will fulfill the needs for a community park near the planning area. Development projects within the planning area would pay park fees, a portion of which is to meet the community park requirements of the General Plan.

School

The existing Samuel Vaughn Elementary School is located adjacent to, and south of, Helen Perry Road near the middle of the planning area. This school will serve elementary school-age children generated by development of the planning area and the adjacent neighborhood to the west of Boothe Road. The Ceres Unified School District plans to construct another elementary school off Whitmore Avenue south of the planning area by the middle of 2005. School-age children from the planning area will attend this school when completed.

Church

An existing church is located on a five-acre lot in the southeastern portion of the planning area along Whitmore Avenue near its intersection with Faith Home Road. This church is consistent with the low density residential land use designation for this area.

TID Ceres Main Canal

The existing TID Ceres Main Canal occupies a 90-foot wide right-of-way along Hatch Road on the northern edge of the planning area. The canal and its right-of-way occupies approximately 6.4 acres of the planning area.

3.2 Development Phasing

The importance of phasing stems from the General Plan, which contains specific growth management policies in an effort to avoid unmanaged single-family residential growth. General Plan Policy 1.B.6. was developed so the city could manage single-family residential growth through phasing provisions in new residential area wide plans (e.g. this Master Plan). Specifically, cumulative projected single-family housing growth within area wide plans should not exceed the following five year housing growth increments: 3,335 units from 2001 through 2005; 3,173 units from 2006 through 2010; and 3,787 units from 2011 through 2015. Unused housing units can be carried over from one year to the next but cannot be carried over from one Five Year Period to the next unless approved by the City Council. The City Council may also authorize the carry over of unused units to the

next Five Year Period where it can be clearly demonstrated that the inability to build the allocated units in the previous Five Year Period was the direct result of a public infrastructure limitation that was outside and beyond the control of developers to remedy or mitigate. Area wide plans should also include phasing provisions to avoid dramatic annual growth peaks. General Plan Policy 1.B.6.c also includes provisions whereby this growth can be exceeded.

According to the General Plan, housing units approved in adopted area plans (as of January 1, 1997) will be accounted for in calculating the five-year growth allocations, but will not be subject to the phasing provisions of the General Plan (page 1-13). This includes area wide plans that have been approved (Westpointe and Brown Master Plans) prior to January 1, 1997. The Brown Master Plan includes a phasing schedule. (Approximately 990 houses of the Westpointe and Brown Master Plans, combined, were accounted for in the first Five Year Period from 1996 through 2000. The Brown Master Plan phasing schedule also includes 200 units in the second Five Year Period from 2001 to 2005. This Master Plan is the first area wide plan whose phasing is subjected to the General Plan growth management policies.

This Master Plan is intended to be implemented, and construction completed, over seven to ten years. This phasing plan assumes an aggressive absorption of seven years. As such, development phasing is anticipated to begin in 2001 and the planning area would be built out in 2007 to 2010.

As projected in Table 4, this Master Plan will have a total of 1,539 units at full buildout. At a uniform development rate over seven years, this would amount to approximately 220 units per year or a total of 1,100 units from 2001 to 2005. The Growth Management Policy would allow up to 3,135 units for the Five Year Period in the years 2001 to 2005 (3,335 less 200 units in the Brown Master Plan). In the period from 2006 to 2010, the final 439 units would be constructed.

The Growth Management Guidelines will be implemented through building permits. Dramatic annual peaks are avoided by limiting the number of building permits for new homes to no more than 478 per year.

Based on the foregoing, this Master Plan includes a three-phase development approach. Table 5 summarizes the number of residential units in each phase. Figure 6 illustrates the phasing plan.

Phase I

The first phase of Master Plan development includes approximately 140 acres of low density residential, 27 acres of medium density residential, and three acres of neighborhood commercial. The existing school and church are encompassed in this phase. Tentative maps have been approved for all of the LDR areas within Phase I. A development plan for 10 acres of the MDR has also been approved. Approved development within Phase I accounts for 679 units. Based on the projected densities in Table 4, the remaining Phase I area is projected to yield approximately 153 residential units, for 832 total units in Phase I.

TABLE 5

Projected Residential Units by Phase

Land Use / Development	Phase I		Phase II		Phase III	
	App'd	Planned	App'd	Planned	App'd	Planned
VLDR						
Remaining Land				128		168
Existing House				1		
LDR						
Claremont Oaks	172					
Pinehurst South	195					
Pinehurst North	244					
Capistrano	–	–	191			
Pinehurst East	–	–	89			
Ortiz	–	–	38			
Existing Houses	–	–	2			
MDR						
Ledbetter	68	–				
Remaining Land	–	153				
NC						
Potential Units				90		
Totals	**679**	**153**	**321**	**218**	**0**	**168**
	832		**539**		**168**	

Source: Garcia-Davis-Ringler and EMC Planning Group Inc.

Phase II

The second phase of Master Plan development includes approximately 80 acres of low density residential, approximately 43 acres of very-low density residential, three acres of neighborhood commercial, and a 10-acre neighborhood park. Tentative maps for all 80 acres of LDR land uses have been approved and account for 318 units. Three existing houses within Phase II will remain. Based a preliminary lot arrangement and the projected densities in Table 4, the remaining Phase II area is projected to yield approximately 218 units for 539 total units. The Phase II area would include 128 new very low-density lots and up to 90 residential units within the neighborhood commercial areas.

Phase III

The third phase of the development includes approximately 42 acres of very low density residential. No development has been approved for Phase III. Based on a projection of four units per acre in Table 4, this area is projected to yield approximately 168 residential units.

The Master Plan complies with the growth management guidelines as provided in the General Plan. The Master Plan development densities and phasing adequately address the Five Year Period growth objectives, as well as the limitation of annual growth peaks.

3.3 Land Use and Development Standards

This section defines the character, image, and identity of the planning area through design and development standards. These standards have been formulated to ensure that the planning area will be an attractive, livable part of the Ceres community, which will maintain its value over time. Areas addressed include identification of non-conforming uses, setbacks and other lot design criteria, height, noise standards, and buffers between existing and proposed land uses as appropriate. This section includes standards for site design, landscaping, residential architecture, parking for residential uses, and parking and signage standards for commercial areas, to carry out the goals of the Master Plan.

General

1. Use and/or development standards not specifically addressed in this Master Plan or a subsequent development plan as required by the P-C zone shall be governed by the corresponding zones contained in the Ceres Zoning Ordinance.

Source: Garcia-Davis-Ringler and EMC Planning Group Inc.

Figure 6
Phasing Plan

Eastgate Planned Community Revised Master Plan

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2. Any residential development proposed within the Master Plan areas designated LDR or MDR that meets or exceeds all of the R-1 development standards in the Ceres Zoning Ordinance at the time of submittal will not be required to prepare a development plan, and may be processed with a tentative map.

3. Any tentative map submitted that meets or exceeds all of the R-1 development standards in the Ceres Zoning Ordinance at the time of submittal will not be required to comply with any of the setback or Recreational Vehicle parking standards contained in this Master Plan.

4. All projects in the Master Plan will be required to comply with the infrastructure requirements and architectural review.

5. Where not otherwise specified, the standards of Ceres Zoning Ordinance section 18.20.100 (P-C zone Property Development Standards) shall apply to development within the planning area.

6. The provisions contained in the Ceres Zoning Ordinance shall govern the continued use, expansion or re-establishment of non-conforming uses. The baseline for determining nonconformity shall be the uses being carried out within the planning area when the annexation and corresponding zoning became effective. Ongoing agricultural operations will be allowed as interim uses in the P-C, Planned Community Zone until these areas are developed.

7. All subdivision maps approved in the planning area shall contain a statement disclosing to future property owners that the property that they are purchasing is located in an area that includes on-going, legally established agricultural activities that may occasionally produce noise, odor, pests, etc., which may prove to be an inconvenience.

8. All new residents of the project shall sign a notice acknowledging the presence of ongoing agricultural operations in the immediate vicinity and the right of these farmers/property owners to continue these operations. Such agricultural operations include, but are not limited to: dust, noise, vehicle use, smell, burning, spraying of pesticides; all at various hours of the day, including early morning hours.

9. Compliance with the standards contained herein will be considered as creating a community design that is "unique and innovative." The Planning Commission may permit departures from these standards, when requested, but the Commission shall weigh each requested departure on its merits.

10. Phase I drainage will utilize existing basins at the nine-acre park site on the western edge of the planning area, and an existing drainage basin in the Persephone Park neighborhood. Phases II and III will ultimately drain to a regional basin at Ceres River Bluff Regional Park, and discharge to the Tuolumne River. Until that basin and discharge are developed, Phase II and III will drain to and percolate in a City-owned basin at the 10-acre neighborhood park. Interim drainage basins, which can be developed with

the planned uses for those sites when the basins are no longer needed, will be permitted within individual developments in Phase II and III until permanent drainage basins are constructed by the City at the neighborhood and/or regional parks.

Single-Family Residential

The following design standards will be applied to development within the very low, low, and medium density designated portions of the planning area as specified below. These site design standards relate to lot size, lot dimensions, setback requirements, lot coverage, building height requirements, and yard, landscaping and open-space requirements. The standards set forth herein for each land use designation shall supersede the requirements set forth in Section 18.20.100 of the planned community zone property development standards of the Ceres Zoning Ordinance. Future development plans and tentative maps shall be evaluated for consistency with this Master Plan.

Site Design Standards for Very Low Density Residential (Maximum 4.5 units per acre)

The following design guidelines should be applied to development within the very low density designated portions of the planning area.

1. The minimum single-family residential parcel within this designation shall be 7,000 square feet for interior lots and 7,500 square feet for corner lots.

2. The minimum lot width within this designation shall be 70 feet for interior lots and 75 feet for corner lots.

3. The minimum rear yard setback shall be 15 feet.

4. Garages are encouraged to be set farther back from the street than the houses. The minimum front yard setback for houses shall be 10 feet, and the minimum front yard setback for garages shall be 20 feet. The setback shall be measured from the property line or back of sidewalk, whichever is greater.

5. The minimum side yard setback for interior lots shall be five feet on one side and 12 feet on the opposite side. The minimum side yard for corner lots shall be 15 feet. Garages and access parking areas shall be a minimum of 20 feet from the property line or back of sidewalk, whichever is greater.

6. The maximum allowable lot coverage for all structures on interior lots shall be 3,200 square feet or 45 percent whichever is greater. For corner lots, the maximum allowable lot coverage for all structures shall be 3,500 square feet or 45 percent, whichever is greater.

7. Each residential unit shall have, at a minimum, a two-car garage. Placement and architectural style of garages shall be varied. Three-car garages are permitted on all lots, but the third space shall be staggered or have the

appearance of architecturally-staggered. Garages shall not be more than 50 percent of the lot width.

8. Driveway lengths for the distance between the sidewalk and garage door facing the street should be a minimum of 20 feet for roll-up door and 24 feet for a tilt-up door.

9. The maximum allowable building height shall be 28 feet, unless a greater height is approved by the Planning Commission.

10. The minimum roof pitch within this land use designation shall be 4:12.

11. Driveway access to new residential lots fronting on Boothe Road, Hatch Road, Whitmore Avenue, and Faith Home Road shall be prohibited.

12. Residential lots shall back-up to the TID canal.

13. An eight-foot high acoustically-effective barrier (e.g. sound wall or earthen berm or some combination of each) shall be required along the northern property lines of new single family residential development along the TID canal. The acoustically-effective barrier shall include landscaping along the north side.

14. The use of walls along internal roadways or to separate uses (with the exception of the TID canal and the neighborhood commercial areas) is discouraged. Solid fences at the rear of residential parcels may be utilized.

15. Fencing within front yard setbacks should be no higher than three and one-half feet if solid, and four feet if open.

16. Detached walkways and landscape strips shall be provided within all residential neighborhoods. The walkways should be detached from the street by a minimum of five feet, with a landscape strip of a minimum of five feet wide located between the walkway and the street, except at street corners. Drought resistant ground cover and/or grass lawns shall be planted. Maintenance of these areas will be provided by a landscape, lighting and maintenance district or by another method acceptable to the City.

17. Recreational vehicle parking may be allowed within the planning area pursuant to Section 18.20.100(V & W) of the Ceres Zoning Ordinance. Recreational vehicles include, but may not be limited to motor homes, mobile homes, campers, boats, jet skis, etc. However, the following restrictions shall be enforced:

    a. Parking in the front yard setback (including driveways) is prohibited.

    b. Parking in the 12-foot minimum side yard setback only is allowed. Screening shall be provided.

    c. Parking in the back yard is allowed for those lots with a rear entry (either a driveway from the front or an alley from the back).

d. Each development shall provide for enforcement of this standard in the development's CC&Rs.

18. Dedication of overflight easements and/or deed notices shall be required for those residential lots within Airport Zones 4 and 6A as identified in Figure 4.

19. Tentative maps or development plans that conform to standards contained in this Master Plan shall be deemed consistent with this Master Plan.

Site Design Standards for Low Density Residential (Maximum seven units per acre)

The following design guidelines should be applied to development within the low density designated portions of the planning area.

1. The minimum single-family residential parcel within the planning area shall be 5,000 square feet for interior lots and 6,000 square feet for corner lots.

2. The minimum lot width within these designations shall be 50 feet for interior lots and 60 feet for corner lots.

3. The minimum rear yard setback shall be 10 feet.

4. The minimum front yard setback for houses shall be 10 feet, and the minimum front yard setback for garages shall be 20 feet. The setback shall be measured from the property line or back of sidewalk, whichever is greater.

5. The minimum setback for interior side yard shall be five feet. The minimum exterior side yard for corner lots shall be 12 feet. Garages and access parking areas shall be a minimum of 20 feet from the property line or back of sidewalk, whichever is greater.

6. For corner lots, either the interior side yard or the rear yard shall have a minimum setback of 12 feet.

7. The maximum allowable lot coverage for all structures shall be 2,400 square feet or 45 percent, whichever is greater.

8. Each residential unit shall have, at a minimum, a two-car garage. Placement and architectural style of garages shall be varied.

   The third space of three-car garages shall be staggered or have the appearance of architecturally-staggered. Garages shall not be more than 50 percent of the lot width. They shall vary at least five feet from the front of the house.

9. Driveway lengths for the distance between the sidewalk and garage door facing the street should be a minimum of 20 feet for roll-up door and 24 feet for a tilt-up door.

10. The maximum allowable building height shall be 28 feet, unless a greater height is approved by the Planning Commission.

11. The minimum roof pitch within this land use designation shall be 4:12.

12. Residential lots shall back-up to Faith Home Road and Whitmore Avenue. Vehicular access to Faith Home Road from these lots shall be prohibited. In addition, direct driveway access is prohibited from Whitmore and the TID canal.

13. An eight-foot high acoustically-effective barrier (e.g. sound wall or earthen berm or some combination of each), with landscaping, shall be required along Faith Home Road and Whitmore Avenue for new single family residential developments.

14. The use of walls along internal roadways or to separate uses (with the exception of neighborhood commercial areas) is discouraged. Solid fences at the rear of residential parcels may be utilized.

15. Fencing within front yard setbacks should be no higher than three and one-half feet if solid and four feet if open.

16. Detached walkways and landscape strips shall be provided within all residential neighborhoods. The walkways should be detached from the street by a minimum of five feet, with a landscape strip of a minimum of five feet located between the walkway and the street, except at street corners. Drought resistant ground cover and/or grass lawns shall be planted. Maintenance of these areas will be provided by a landscape, lighting and maintenance district or by another method acceptable to the City.

17. Recreational vehicle parking may be allowed within the planning area. Recreational vehicles include, but may not be limited to motor homes, campers, boats, jet skis, etc. However, the following restrictions shall be enforced:

    a. Parking in the front yard setback (including driveways) is prohibited.

    b. Parking in the side yard setback is allowed on lots that have a minimum 12-foot side yard setback. Screening shall be provided.

    c. Parking in the back yard is allowed for those lots with a rear entry (either a driveway from the front or an alley from the back).

    d. Each development may provide an area for the storage of recreational vehicles pursuant to Section 18.20.100(W) of the Ceres Zoning Ordinance. This area may be provided by any of the following methods:

        1. By providing a secure, landscaped area for storage within the development. A recreational vehicle storage area may serve more than one development provided it is appropriately sized to accommodate the vehicles from each participating development. The amount of storage required will be 15 percent of the lots that do not provide a minimum 12-foot side yard on one side, or three car garage, or a rear entry location such as an alley, for the residential unit.

2. By making arrangements for recreational vehicle storage at commercial vehicle storage facilities located outside the planning area, provided that the duration of the arrangement is the same as the expected life of the dwelling and the right to use this vehicle storage is for the exclusive use of the owner and occupant of the dwelling.

3. By providing a minimum 12-foot side yard, three car garage, or rear entry location on every lot shown on the development plan.

e. Each development shall provide for enforcement of this standard in the development's CC&Rs.

18. Dedication of overflight easements and/or deed notices shall be required for those residential lots within Airport Zones 4 and 6A as identified in Figure 4.

19. Tentative maps or development plans that conform to standards contained in this Master Plan shall be deemed consistent with this Master Plan.

Site Design Standards for Single-Family Medium Density Residential (Maximum 12 units per gross acre)

The following design guidelines should be applied to development within the medium density designated portions of the planning area.

1. The minimum single-family residential parcel within the planning area shall be 3,000 square feet for interior lots and 4,000 square feet for corner lots.

2. The minimum lot width within these designations shall be 40 feet for interior lots and 50 feet for corner lots.

3. The minimum rear yard and front yard setback shall be 10 feet. The front yard setback shall be measured from the property line of the back of the sidewalk, whichever is greater.

4. The minimum setback for interior side yard shall be five feet. The minimum exterior side yard for corner lots shall be 10 feet. Garages and access parking areas shall be a minimum of 20 feet from the property line or back of sidewalk, whichever is greater.

5 The maximum allowable lot coverage for all structures shall be 50 percent.

6. A minimum of two, on-site parking spaces per residential lot are required. Driveway lengths for the distance between the sidewalk and garage door facing the street should be a minimum of 20 feet for a roll-up door and 24 feet for tilt-up door.

   Two-car garages will be allowed on corner lots. Two-car garages will be allowed on interior lots but are encouraged to be provided behind the house with access via a single-car driveway. Three-car garages will not be allowed. Garages shall not be more than 50 percent of the lot width.

7. The maximum allowable building height shall be 25 feet, unless a greater height is approved by the Planning Commission.

8. The minimum roof pitch within this land use designation shall be 4:12.

9. The use of walls along internal roadways or to separate uses (with the exception of the elementary school) is discouraged. Solid fences at the rear of residential parcels may be utilized.

10. Fencing within front yard setbacks should be no higher than three and one-half feet if solid and four feet if open.

11. Detached walkways and landscape strips shall be provided within all residential neighborhoods. The walkways should be detached from the street by a minimum of five feet, with a landscape strip of a minimum of five feet located between the walkway and the street, except at street corners. Drought resistant ground cover and/or grass lawns shall be planted. Maintenance of these areas will be provided by a landscape, lighting and maintenance district or by another method acceptable to the City.

12. Recreational vehicle parking may be allowed within the planning area. Recreational vehicles include, but may not be limited to motor homes, campers, boats, jet skis, etc. However, the following restrictions shall be enforced:

    a. Parking in the front yard setback (including driveways) is prohibited.

    b. Parking in the side yard setback is allowed on lots that have a minimum 12-foot side yard setback. Screening shall be provided. (Note: Although the minimum required side yard setback is five feet for interior lots and 10 feet for exterior lots, lots with a 12-foot side yard setback could be provided.)

    c. Parking in the back yard is allowed for those lots with a rear entry (either a driveway from the front or an alley from the back).

    d. Each development may provide an area for the storage of recreational vehicles pursuant to Section 18.20.100(W) of the Ceres Zoning Ordinance. This area may be provided by any of the following methods:

        1. By providing a secure, landscaped area for storage within the development. A recreational vehicle storage area may serve more than one development provided it is appropriately sized to accommodate the vehicles from each participating development. The amount of storage required will be 15 percent of the lots that do not provide a minimum 12-foot side yard on one side, or a three car garage, or a rear entry location such as an alley, for the residential unit.

        2. By making arrangements for recreational vehicle storage at commercial vehicle storage facilities located outside the planning area, provided that the duration of the arrangement is the same as the expected life of

the dwelling and the right to use this vehicle storage is for the exclusive use of the owner and occupant of the dwelling.

3. By providing a minimum 12-foot side yard, or rear entry location, on every lot shown on the development plan.

e. Each development shall provide for enforcement of this standard in the development's CC&Rs.

13. Tentative maps or development plans that conform to standards contained in this Master Plan shall be deemed consistent with this Master Plan.

Landscaping (Single-Family Residential)

The following landscaping standards shall apply to all single-family residential land use designations: very low, low, and medium density.

1. Street trees of 15 gallon size or greater, or an in lieu fee, shall be provided in accordance with the City's street tree standards at intervals of no less than one per interior lot, two per residential corner lot and an average of one tree every 30 feet. Two or three species of street tree should be utilized for an individual neighborhood in order to provide a cohesive character, while eliminating the potential for mono-culture diseases, as approved by the City.

2. Front yard landscaping and drip irrigation shall be provided by individual developers subject to review by City staff. A high level of landscaping is encouraged for all front yard areas.

3. Drought resistant and/or native plant materials should be encouraged and low flow or drip irrigation systems shall be utilized.

4. On-site landscaping shall be provided by the developer, consistent with the Ceres Water Efficient Landscaping Guidelines and Standards.

Residential Architecture (Single-Family Residential)

The following architectural standards shall apply to all single-family residential land use designations: very low, low, and medium density.

1. A variety of lot sizes and housing unit types are encouraged to be provided within each single-family residential neighborhood.

2. Residential units should not be located directly at grade. The use of a 12-inch lift-off of the residential home pad elevation above the top of curb in front of the unit should be incorporated within the residential design to provide a transition and emphasize a sense of arrival.

3. Colors of residential units should be subtle and compatible throughout the planning area.

4. The Planning Commission should review all development plans consistent with section 18.20.080 of the Ceres Zoning Ordinance, when required.

5. Prior to the issuance of any residential building permits within the planning area, the Planning Director will review the plans for general compliance with the following Architectural Guidelines:

   a. All windows in public view should be trimmed on all four sides with wood, stucco, raised trim, or other architectural feature.

   b. In homes with base trim, the trim should wrap and extend to all fences, or other logical architectural feature, to give the appearance of complete base trim in all areas of public view. As an alternative, planters and landscaping which would cover the base trim in areas of public view will be considered in lieu of the base trim.

   c. There is a goal of a minimum of 20 percent of one-story homes in each development.

   d. Long flat rooflines should be avoided if not consistent with the overall architecture of the home or development. The use of alternating hips, valleys and gables are promoted.

   e. Long flat walls should be avoided on public facing sides. Flat portions of walls should not extend over 20 feet. Permissible breaks include chimneys, bay windows, architectural popouts, or other architectural features.

   f. Usable porches are promoted.

   g. Garages should take up no more than 50 percent of the lot frontage.

   h. The third space of three car garages should be staggered at least three feet, or have the appearance of being architecturally staggered.

   i. On straight streets with over four homes in a row, front yard setbacks should be varied at least three feet, or have the appearance of varied, at a minimum rate of one varied setback for every three homes in line. Homes with varied fronts and/or garages will be considered in meeting this guideline.

   j. Side entry and angle garages are promoted, but not required.

   k. All two-story homes should have an architectural transition or other feature to distinguish between the first and second stories on public facing sides.

   l. Two identical floor plans should not be placed adjacent to each other. Flipping of floor plans is permitted to comply with this requirement.

Item 5 from above contains a list of architectural guidelines for the architecture and neighborhood identity in the Master Plan. The Planning Director will review all

submitted house plans and elevations for compliance with the overall intent of the guidelines. It is not intended that mandatory compliance with each and every standard and/or feature is required. Other architectural features may also be offered in addition to, or in lieu of, the listed guidelines contained herein. Approval of house plans and elevations is mandatory if each of the guidelines contained herein is followed, as determined by the Planning Director.

Upon the submittal of plans and elevations for homes in the planning area, the Planning Director will review the plans for compliance with these Architectural Guidelines, and normally respond to the developer within twenty-one (21) calendar days in writing with any requested comments or revisions to the plans. Exceptions will be allowed to the 21-day response for special situations. If no response is received from the Planning Director within twenty-one (21) calendar days, the plans shall be deemed in compliance with the Architectural Guidelines.

If the Planning Director requests modifications or revisions to the plans, the developer will have fifteen (15) calendar days from the date of the letter from the Planning Director to appeal the Planning Director's requested modifications or revisions to the Planning Commission, or else the developer will be deemed to have consented to the requested changes, or will submit alternative plans.

The Planning Commission shall evaluate any appeal of the Planning Director's determination for general compliance with the guidelines contained herein. Any appeal of a determination regarding the Architectural Guidelines will be considered exempt from CEQA under CEQA Guidelines sections 15061 (b)(3), 15268 (b)(1) and 15282 (e). As such, any appeal of the Planning Director's determination will be scheduled for the next available Planning Commission hearing. A Planning Commission hearing will not be considered available if it is less than ten (10) calendar days from the date of developer's appeal or other such time needed to post the hearing. The determination of the Planning Commission may be appealed to the City Council.

Any such appeal of the Planning Commission's determination will be scheduled for the next available City Council hearing. A City Council hearing will not be considered available if it is less than ten (10) calendar days from the date of developer's appeal or other such time needed to post the hearing.. The determination of the City Council will be final.

Residential Airport Zone Restrictions

Approximately one-quarter of the planning area is within an airport safety zone of the Modesto City-County Airport. The following are the established standards that apply to residential uses within Airport Zones 4 and/or 6A.

1. Residential density within Airport Zone 4 will be no greater than one dwelling unit per 2.5 acres

2. Total open space area within the portion of the planning area within Airport Zone 4 will be no less than 15 percent (approximately one acre). Lots partly or wholly within Airport Zone 4 will have an avigation easement placed on them, restricting the height and coverage of buildings.

3. Places of assembly, such as churches, schools, and day cares will not be allowed in Airport Zone 4.

4. Lots partly or wholly within Airport Zone 6A will have deed notices recorded to alert future buyers of the possibility of nuisance and/or noise from aircraft overflights. The planned VLDR density is within the range allowed in Airport Zone 6A.

5. Total open space area within the portion of the planning area within Airport Zone 6A will be no less than ten percent (approximately 10.5 acres).

The preliminary lot arrangement for the portions of the planning area within Airport Zone 4 was reviewed and approved by Stanislaus County Airport Land Use Commission staff based on a transfer of density from other portions of Airport Zone 4. Therefore, the densities for Airport Zone 4 are to apply in the aggregate.

Multiple-Family Residential (Medium Density Residential Zones)

The following guidelines apply to the areas designated as medium density residential that are proposed for multi-family development.

Site Design for Multi-Family Developments

1. Developers of the properties classified for medium residential are encouraged to apply for density bonus under the provisions of the City's Density Bonus Ordinance.

2. The minimum front yard setback shall be 20 feet. The setback shall be measured from the property line or back of the sidewalk, whichever is greater.

3. The minimum side yard and back yard setbacks shall be 10 feet.

4. Height limits shall be three story or 35 feet (whichever is less).

5. Lot coverage shall be 60 percent.

6. Adequate buffer from and transition to adjacent single family homes should be provided. Landscaping, berming or a fence as approved by the Planning Director or Planning Commission shall be provided.

7. Screening and landscaping should be used for refuse collection at large multi-family developments.

8. Common open space (recreational and non-recreational) shall consist of a minimum of 10 percent of lot size and shall be landscaped.

9. Site plans shall include reservation of space for transit service for when it becomes available. Sufficient space shall be reserved to plan for transit stops

that provide shelter for pedestrians, convenient passenger loading zones and secure bike storage.

Building Architecture (Multi-Family Residential)

1. Interesting architectural features—such as varied front setbacks within the same structure, articulated roof forms, balconies, recessed and projected walls or elements in the walls, patios and decorative fences—shall be incorporated into building design.

2. Building entries should be oriented toward streets or landscaped courts, not toward parking lots. Parking in the rear of the buildings and dedication of a greater portion of the lot to private backyards should be encouraged.

3. Fire sprinklers and a centralized security system should be required for safety.

4. Building colors should be subtle with accents of bolder color; emphasis should be placed on compatibility of adjacent structures.

5. Placement of equipment on roof tops should be discouraged in favor of ground-mounted equipment. Any roof-mounted equipment on large-structure multi-family developments should be screened from view of adjacent properties and residential streets.

Parking (Multi-Family Residential)

1. Two parking spaces shall be provided per each multi-family unit with one of the two spaces covered.

2. Recreational vehicle parking spaces shall be provided equal to 10 percent of the dwelling units (e.g. 110 dwelling units equals 11 recreational vehicle parking spaces). These parking spaces shall not be located in one area, but spread throughout the development. They shall not be visible from the street.

3. Parking shall be provided in several areas, as opposed to one large parking lot.

4. Parking facilities should be located behind buildings or in the interior of a block, whenever possible.

5. Parking facilities should not dominate the frontage of streets or interrupt pedestrian routes.

6. Surface parking facilities should not occupy more than 25 percent of the frontage of a pedestrian-oriented street.

7. Shared parking between adjacent land uses should be encouraged.

8. Parking facilities should be screened with landscaping, including the use of street trees planted every eight parking spaces.

9. Street lighting should be provided at every six parking stalls, avoiding conflicts with trees.

Landscaping (Multi-Family Residential)

1. On-site landscaping shall be provided by the developer, consistent with the Ceres Water Efficient Landscaping Guidelines and Standards.

2. Parking facilities should be screened with landscaping, including the use of street trees planted every eight parking spaces.

3. Landscaping is required in all common buffer and open space areas.

4. Streetscapes should maintain a character similar to the single-family residential areas with detached walkways, and a planting strip containing street trees planted no greater than 30 feet on center, with a base planting of drought-tolerant ground covers and/or grass lawns. Two or three species of street tree should be utilized in order to provide a cohesive character while eliminating the potential for monoculture diseases. Homeowner associations of the adjacent project should be responsible for irrigating neighborhood street trees, after a period of initial establishment provided by the individual developer.

5. Low-flow and drip irrigation systems which minimize the use of water is required.

Neighborhood Commercial

1. A common commercial theme for buildings and signs should be provided for each of the commercial areas.

2. Location of some commercial buildings closer to the street and location of parking to the sides and rear of the buildings to screen parked cars from the street should be encouraged.

3. Buildings with an inward orientation served by a main centralized parking area, with a scattering of small parking areas should be encouraged.

4. An integrated on-site circulation system shall be provided in each center.

5. An eight-foot high acoustically-effective barrier (e.g. sound wall or earthen berm or some combination of each) and five-foot landscaping screen shall be provided along the northern property line of the Neighborhood Commercial area located adjacent to the TID Ceres Main Canal. This wall shall be designed to blend in with the residential area adjacent to the west.

6. An eight-foot high acoustically-effective barrier (e.g. sound wall or earthen berm or some combination of each) and five-foot wide landscaping screen or wall and landscaping designed per City standards shall be provided between the northerly Neighborhood Commercial area and the single family

residential area to the east and the southerly Neighborhood Commercial area and adjacent residential area.

7. Safe and secure bicycle parking shall be provided. One bicycle space for every ten automobile spaces will be provided.

Neighborhood Commercial Airport Zone Restrictions

1. Neighborhood Commercial development within Airport Zone 6A shall be limited to no more than 150 persons per acre in accordance with California Airport Land Use Planning Handbook Exhibit C. Based on the methodologies in the handbook, buildings would be limited to approximately 6,000 square feet per acre, or 18,000 square feet total.

2. Neighborhood Commercial development within Airport Zone 6A shall use full cut-off shielded lighting to reduce the potential for glare in the airport approach path.

3. Residential uses shall be limited to 18 units.

Parks

The following guidelines shall apply to the areas designated for parks.

1. The neighborhood parks and drainage basins shall be owned and maintained by the City.

2. Active uses such as play fields, tennis and basketball courts should be located away from nearby residential units or should be surrounded by berming and landscaping to avoid land use conflicts such as noise, light, and glare.

3. School facilities should be separated from the adjacent neighborhood park by active play fields.

4. Drought tolerant plant materials should be used along with low-flow and drip irrigation systems to minimize the use of water.

5. Site elements and materials should be selected to be sturdy and of simple construction to withstand abuse and minimize maintenance.

6. Open lawn areas should be sited for ease of mowing, and groundcover/shrub planting areas sited and designed for ease of access and maintenance.

7. Secondary use for both parks will be storm drain detention facilities. These facilities will be designed so as not to affect the recreational value of the parks.

8. Trees and structures within the 10-acre neighborhood park will be limited to the areas within 25 feet of the edges of the park.

4.0 Circulation

4.1 Introduction

A traffic study was prepared by KD Anderson, Transportation Engineers for development of the planning area pursuant to the Master Plan land use plan (Figure 3). This study was utilized as the basis of the traffic analysis included in the Master Plan environmental impact report. The design standards contained within this section serve as mitigation for traffic impacts. The traffic study is included in Appendix A of this Master Plan.

Existing Street System

Hatch Road, located along the planning area's northern boundary, is a major east-west route serving Ceres and the southern Modesto area. In the vicinity of the planning area, Hatch Road is currently a two-lane rural road with graded shoulders that widens to a four-lane section as it approaches the Mitchell Road intersection to the west. The General Plan indicates that Hatch Road will eventually be improved to a six-lane expressway standard. Access to Hatch Road is limited. As Hatch Road lies immediately north of the TID Ceres Main Canal, access from the south is restricted to a few streets. North of the planning area, access to Hatch Road is permitted to existing agricultural uses, Ceres River Bluff Regional Park, and a golf course.

Whitmore Avenue, located along the planning area's southern boundary, is also a major east-west route. Whitmore Avenue is designated as an arterial street in the General Plan Circulation Element, and the road has been widened to a five-lane section in the area from Highway 99 to Mitchell Road. Whitmore Avenue transitions from a five-lane section to a two-lane road in the area east of Della Drive. While partial widening has accompanied adjacent development in the area west of the planning area, Whitmore Avenue is a two-lane conventional road along the planning area frontage. Access to Whitmore Avenue occurs at public street intersections, existing agricultural uses, a few rural residences and a church located near the Faith Home Road intersection.

Mitchell Road is the main north-south route through Ceres and this designated arterial street links Highway 99 on the south end of Ceres with the City of Modesto to the north. Mitchell Road is located approximately one-half mile west of the planning area and is currently a five-lane urban street.

Boothe Road, located along the western boundary of the planning area, is a primary collector street serving the developing residential area east of Mitchell Road and west of the planning area. The road has been constructed to its ultimate width on the west side, including curb, gutter and sidewalk.

Faith Home Road, located along the eastern boundary of the planning area, is a conventional two-lane rural road extending from an intersection with Hatch Road south to the community of Keyes. The General Plan Circulation Element indicates that Faith Home Road will eventually be developed as a six-lane expressway and will cross the Tuolumne River to connect with Garner Road - Claus Road in Modesto.

Fowler Road is an east-west primary collector street located midway between Hatch Road and Whitmore Avenue. Fowler Road links Mitchell Road with existing residential areas to the east and extends to an intersection with Boothe Road at the western limits of the planning area.

Helen Perry Road is an existing secondary collector street extending westerly from Boothe Road into the planning area. Helen Perry Road currently provides access to Samuel Vaughn Elementary School, and traffic control measures have been installed to incorporate Helen Perry Road into the school's circulation plan. These measures include diagonal parking along the south side of Helen Perry Road near the school. This parking will be removed when Helen Perry Road is connected to Eastgate Boulevard.

Moonview Drive, Vera Way, Primrose Lane, Waynesboro Drive, Suffolk Drive and Rhone Drive are local streets that extend west from Boothe Road into existing residential neighborhoods. None of these two-lane residential streets is extended to any collector or arterial street, limiting their function to local access only.

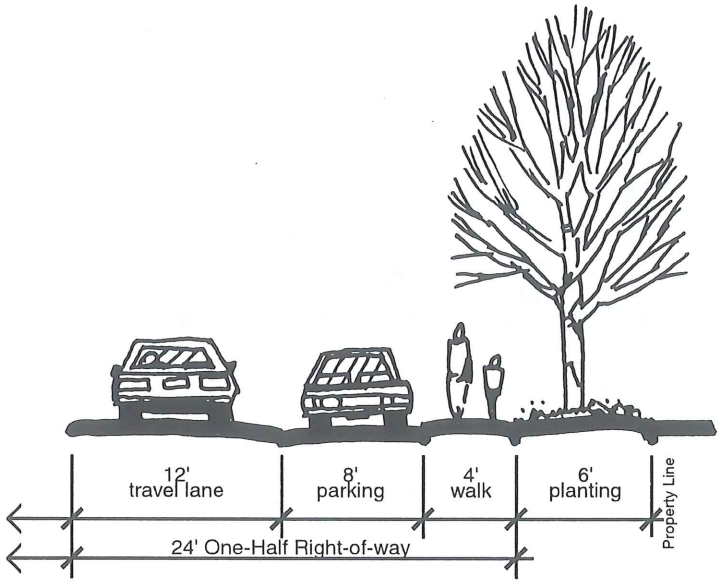
The General Plan identifies a system of on-street and off-street bicycle facilities to serve the community. Separated bikeways (Class I) are planned along Hatch Road and along the Mitchell Road corridor in the area of the TID Ceres Main Canal. A Class II bicycle lane is planned along Whitmore Avenue and a Class III bicycle route is planned along Boothe Road. None of these facilities exist today.

4.2 External Circulation

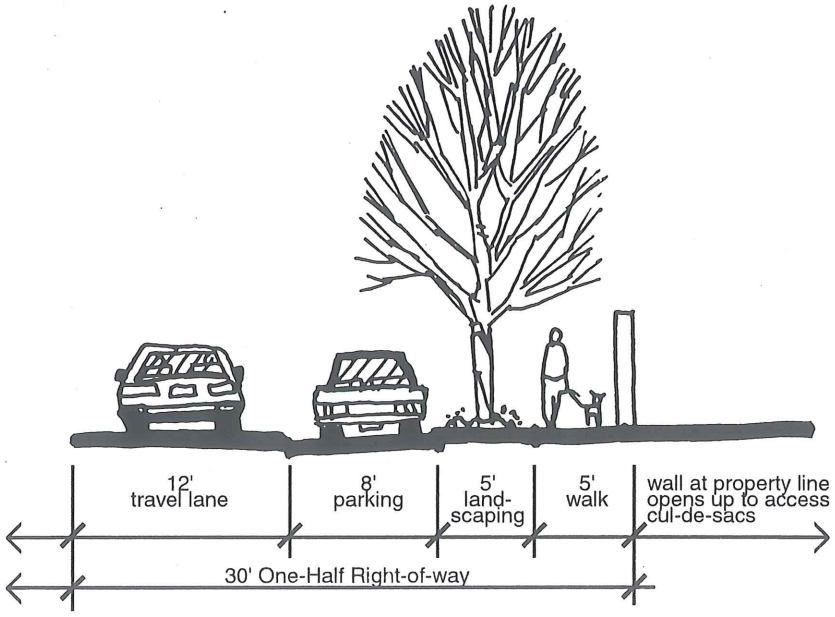
Developers fronting on Hatch Road, Boothe Road, Faith Home Road, and Whitmore Avenue will be responsible for dedication of right-of-way as necessary, curb, gutter, sidewalk, sound attenuation feature, landscaping, street lights, bike route, and 20 feet of pavement. In the event that any of these facilities are contained in the existing City Facilities Fee Program, the developer shall be entitled to fee offsets for said facilities.

Hatch Road. Developers fronting on Hatch Road will be responsible for the following improvements south of the TID Ceres Main Canal: an eight-foot sound attenuation feature with landscaping, and a Class I bike path (14-foot wide bike and pedestrian path with a four-foot high chain link fence adjacent to the canal). Curb, gutter, streetlights, and pavement improvements, north of the TID Ceres Main Canal, are the responsibility of the city; these improvements are in the City's Public Facilities Fee Program. The developer(s) will be required to pay their share of the fee.

Boothe Road. Developers fronting on Boothe Road will be responsible for curb, gutter, sidewalk, signing for a Class III bike route, streetlights and pavement. A cross section of the eastern section of Boothe Road is presented below. Alongside this cross-section is an alternative cross-section for the eastern half of Boothe Road. This alternative illustrates the location of a wall along Boothe Road at the property line with the potential to have a pedestrian walkway or pass-through at openings in the wall at cul-de-sacs locations.

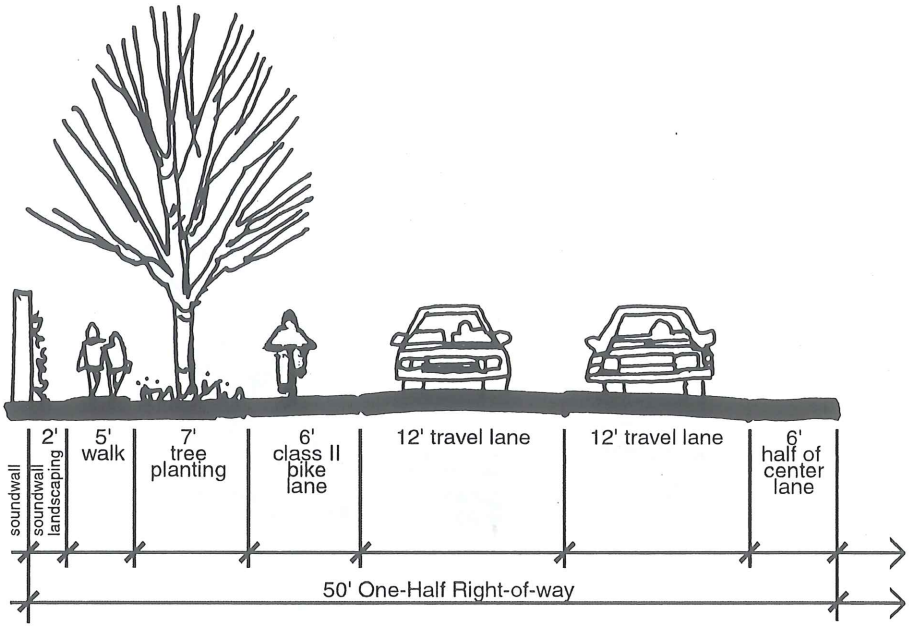


Boothe Road
Eastern One-Half Street Section



Boothe Road
Eastern One-Half Street Section Alternative

Whitmore Avenue. Developers fronting on Whitmore Avenue will be responsible for an eight-foot sound attenuation feature with landscaping, curb, gutter, sidewalk, Class II bike lane, emergency parking lane, streetlights and pavement. A cross section of the northern section of Whitmore Avenue is presented below.



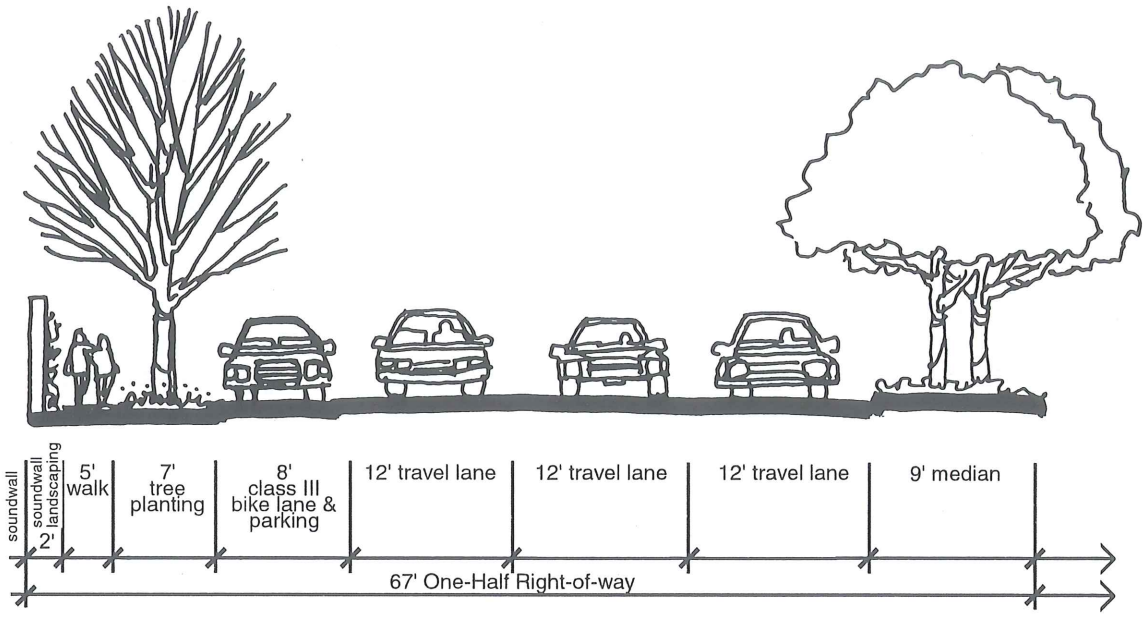
Whitmore Avenue
Northern One-Half Street Section

Faith Home Road. Developers fronting on Faith Home Road will be responsible for roadway dedication, an eight-foot sound attenuation feature with landscaping, curb, gutter, sidewalk, parking lane and Class III bike route signs, streetlights and pavement. A cross section of the western section of Faith Home Road is presented below. The right-of-way will increase to 158 feet at intersections.

Development Standards. The following standards shall be applied to external or perimeter street improvements.

Roadway Improvements

1. Development fronting on Hatch Road will be responsible for an eight-foot high sound attenuation feature with landscaping and a Class I bike path (14-foot wide bike and pedestrian path), both south of the TID Ceres Main Canal. Improvements north of the canal, the responsibility of the City, are provided for in the City's Public Facilities Fee Program.



Faith Home Road
Western One-Half Street Section

2. Development fronting on Whitmore Avenue will be responsible for an eight-foot high sound attenuation feature with landscaping, a walkway, landscaping, curb, gutter, streetlights, Class II bike lane, and pavement improvements as identified in this Master Plan. Widening of Whitmore Avenue to four lanes is within the City's Public Facilities Fee Program.

3. Development fronting on Boothe Road will be responsible for curb, gutter, sidewalk, streetlights, Class III bike route signs, and pavement improvements as identified in this Master Plan.

4. Development fronting on Faith Home Road will be responsible for dedication of right-of-way, sound attenuation feature, curb, gutter, sidewalk, parking lane and Class III bike route signs, streetlights, landscaping, and 20 feet of pavement. Any facilities in addition to those listed above, such as additional paving, are contained in the existing City Facilities Fee Program, and the developer shall be entitled to fee reimbursements for said facilities.

Intersection Improvements

5. The Hatch Road/Eastgate Boulevard intersection shall be signalized and improved as follows:

   - Northbound approach: two lanes (left turn and right turn), with reservation* for a second left turn lane.

   - Westbound approach: four lanes (three through lanes and a left turn lane), with reservation* for a second left turn lane.

- Eastbound approach: four lanes (three through lanes and a right turn lane).
- Canal crossing.

* Reservation is to accommodate widening necessary for city's year 2015 General Plan buildout growth. Refer to Traffic Impact Analysis (KD Anderson 1996) for additional information.

Signalization, and improvements to the northern boundary of the TID Ceres Main Canal will be the responsibility of the Master Plan developers. Hatch Road improvements are accommodated for within the City's Public Facilities Fee Program (see Standard #1 above.) Signalization and construction of the Eastgate Boulevard access onto Hatch Road will be provided at the beginning of Phase II.

6. The Whitmore Avenue/Eastgate Boulevard intersection shall be signalized and improved as follows:

- Southbound approach: two lanes (left turn and right turn), with reservation* for a second left turn lane.
- Westbound approach: three lanes (two through lanes and a right turn lane).
- Eastbound approach: three lanes (two through lanes and a left turn lane).
- Whitmore Avenue widening will be needed for about 300 feet east of the intersection in order to "shadow" the eastbound left turn lane.

* Reservation is to accommodate widening necessary for city's year 2015 General Plan buildout growth. Refer to Traffic Impact Analysis (KD Anderson 1996) for additional information.

Signalization and improvements will be the responsibility of the Master Plan developers. Signalization and construction of the Eastgate Boulevard access onto Whitmore Avenue will be provided when 50 percent of Phase I is complete.

7. Right-of-way shall be reserved to accommodate a future urban interchange at the Hatch Road/Faith Home Road intersection. This right-of-way would come from the neighboring parcels.

8. The Whitmore Avenue/Boothe Road intersection shall be widened for an eastbound left turn lane. This safety project will accompany Phase I development. Right-of-way on the north side of Whitmore Avenue will be provided for approximately 300 feet east of the intersection in order to "shadow" the eastbound left turn lane.

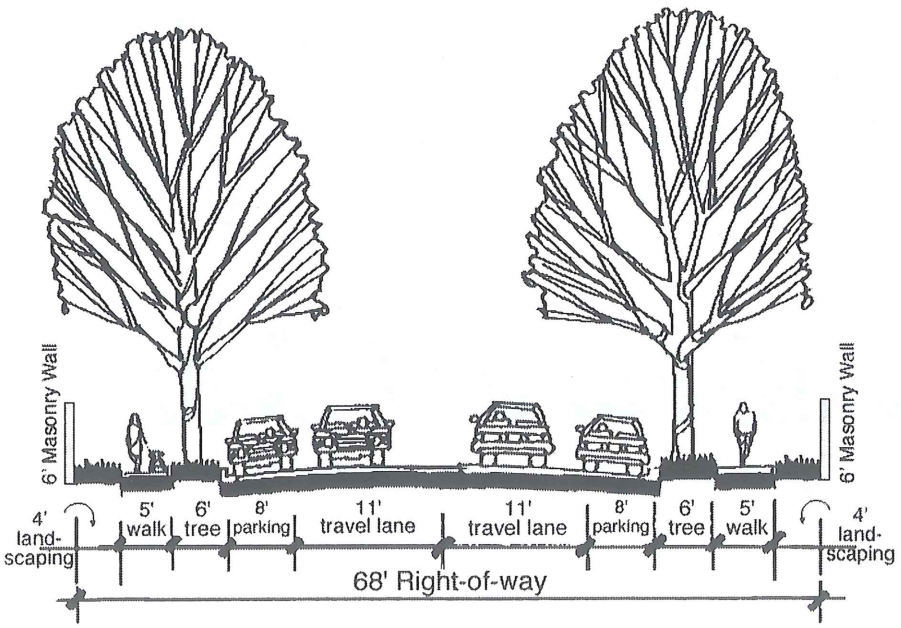
9. The Hatch Road/Boothe Road intersection shall be signalized and improved. A westbound left turn lane should accompany signalization. This improvement is included in the City's Public Facilities Fee Program, and the

Master Plan developers will contribute their fair share towards this improvement by paying fees. Signalization is expected to be needed when Phase I is complete.

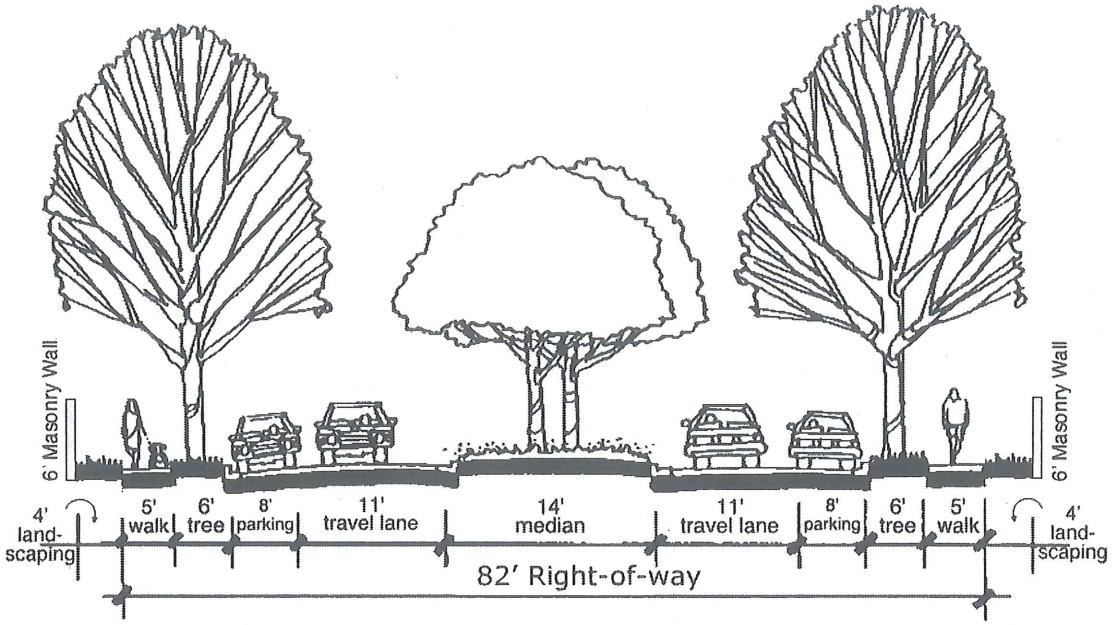
4.3 Internal Circulation

The internal circulation system for the planning area is proposed as a hierarchy of interconnected streets. The intent is to provide vehicular access, as well as ensure safe and enhanced pedestrian and bicycle access throughout the community. The plan is also proposed as an inter-linking of the major components of the community: the elementary school, the neighborhood parks, and the neighborhood commercial areas. The internal circulation system is proposed to consist of two neighborhood collectors, a traffic circle where the two collectors intersect, and local roadways and bikeways.

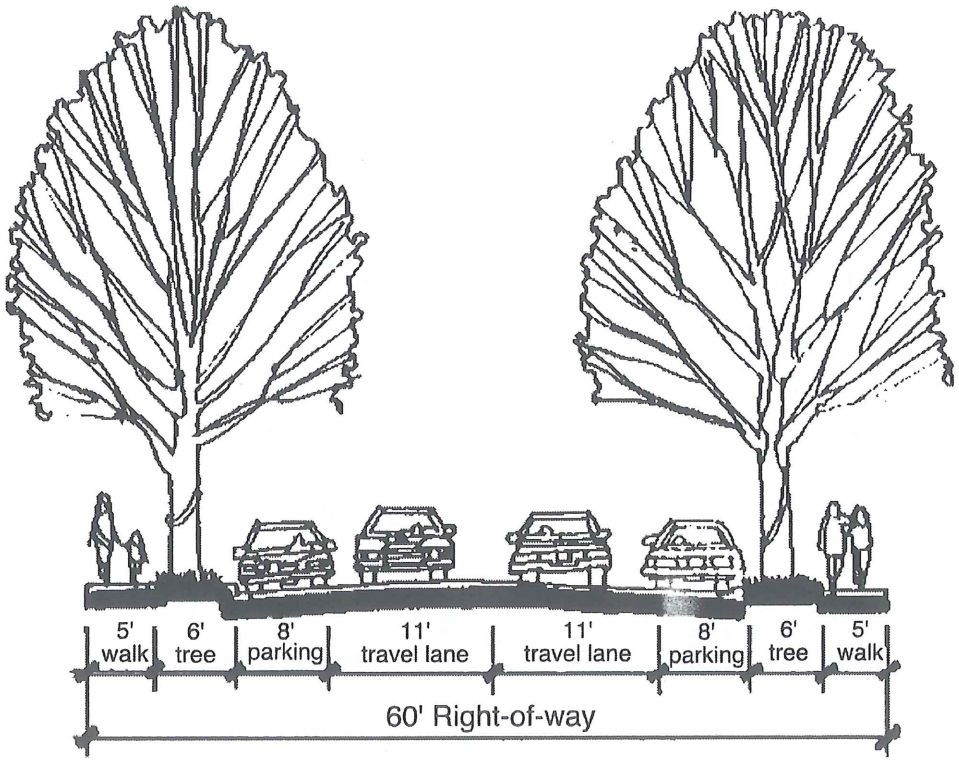
Neighborhood Collectors/Traffic Circle. Eastgate Boulevard, running north-south through the center of the planning area will be constructed as a primary neighborhood collector. This street will include a median entry feature within the first 200 feet of roadway at the north and south entrances to the planning area. This portion of the roadway will have a 74-foot right-of-way with two travel lanes, a landscaped median, parking, a planting strip, and sidewalks. The balance of the roadway will have the same configuration, but without the median (68-foot right-of-way). This collector will be designated as a Class III bike route through use of signing along the roadway. Eastgate Boulevard will provide a bridge across the TID Ceres Main Canal, and will intersect Hatch Road directly opposite the entrance to Ceres River Bluff Regional Park. Cross-sections of Eastgate Boulevard with and without the landscaped median are illustrated below.



Eastgate Boulevard Without Median



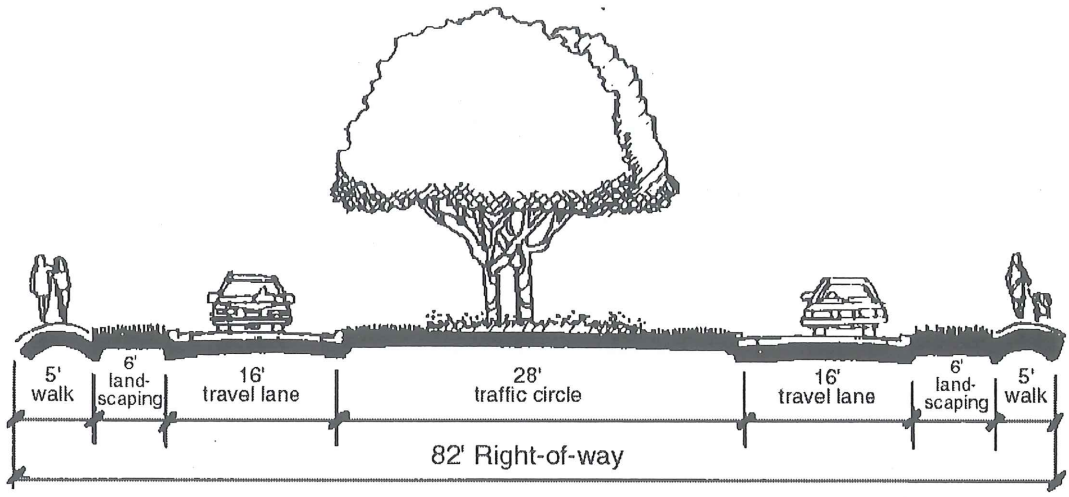
Eastgate Boulevard With Median
(Entry at Whitmore Avenue)



Helen Perry Road

Helen Perry Road, an existing collector within the planning area, will be extended to intersect with, and terminate at, Eastgate Boulevard. It will have a 60-foot right-of-way. Helen Perry Road will be designated as a Class III bike route through use of signs along the roadways.

At the intersection of Helen Perry Road and Eastgate Boulevard a traffic circle will be installed. The traffic circle will have an 82-foot right-of-way and will not include parking. A cross section of the traffic circle is illustrated below. East of Eastgate Boulevard, Helen Perry Road will be a local roadway.



Neighborhood Collector With Traffic Circle

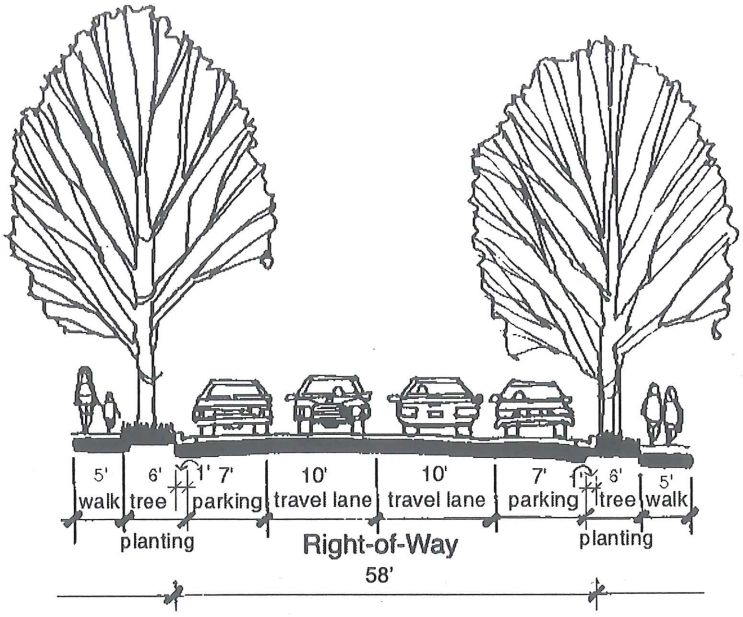
Traffic Circle at Eastgate Boulevard and Helen Perry Road

Local Streets. The Master Plan land use plan (Figure 4) illustrates some of the local streets within the planning area. This identification is intended to illustrate the framework of the circulation pattern within the community. The possible locations of other local streets are indicated by arrows on the land use plan. The exact locations of these streets will depend on the lot patterns included in development proposals.

The local streets will have a 58-foot right-of-way including two travel lanes, parking, landscape strips and sidewalks. A cross section of the local streets is illustrated below. The property line location will be either at the rear of the sidewalk or at the curb. If the property line is at the curb, then a 11-foot easement would be obtained on each side of the street. In either case, the built street would have the same cross section.

Development Standards. The following standards shall be applied to internal roadway improvements within the planning area.

1. Master plan area developers shall be responsible for the dedication, design, financing, and construction of all internal neighborhood collectors and local streets including medians, traffic circles, landscaping, streetlights, bikeways, curbs, gutters, and sidewalks as identified in the Master Plan. Final design shall be subject to City approval.



Local Roadway

Access on Eastgate Boulevard will be provided at either Hatch Road or Whitmore Avenue after 50 percent of Phase I is occupied (approximately 425 units). Access at the opposite end will be provided at the beginning of Phase II (approximately 850 units, cumulative). The developer will be responsible for constructing Eastgate Boulevard, including its northern approach with Hatch Road and its southern approach with Whitmore Avenue. Refer to development standards for external circulation for intersection improvements at Eastgate Boulevard's intersections with Hatch Road and Whitmore Avenue.

2. Interconnected streets should be encouraged and use of cul-de-sacs should be minimized. Where cul-de-sacs are used, pedestrian walkways should be promoted to accommodate pedestrians and bicyclists.

3. Direct access to Faith Home Road, Hatch Road, Whitmore Avenue and the TID Ceres Main Canal is prohibited except for commercial areas at Whitmore Avenue.

4. Class III bike routes shall be provided along Helen Perry Road and Eastgate Boulevard within the planning area. Bike route signs shall be installed at planning area developer expense per City standards.

5. Street design shall comply with the cross-sections described in this Master Plan subject to review of the City Planning Department.

6. A maintenance district shall be established for maintenance of street lighting, landscaped medians, traffic circle, and sound attenuation features. The maintenance district will be created prior to or concurrent with recordation of the first final map.

5.0 Infrastructure and Public Services

The following analysis was originally provided by Garcia-Davis-Ringler Engineers and has been updated by EMC Planning Group Inc. The Public Services Review is included in Appendix B.

5.1 Water Supply and Distribution System

General

The City will be the purveyor of water for domestic and commercial water use. The City's sole source of water supply is currently groundwater. An analysis was made of the water supply and distribution system required to mitigate any impacts on the existing system.

Existing Facilities

There is an existing 10-inch main in Helen Perry Road from Boothe Road to the easterly boundary of Samuel Vaughn Elementary School. There are existing six-inch and eight-inch lines in Boothe Road from Whitmore Avenue to Hatch Road and an eight-inch line in Whitmore Avenue that ends at Lunar Drive. There is also an existing water line in Hatch Road west of Boothe Road. The proposed distribution system will connect to these existing lines. Existing and proposed water supply lines are presented in Figure 7.

Design Parameters

For the purpose of this Master Plan, the City's future water system is assumed to rely on groundwater supply. Although the City continues to participate in regional efforts to investigate the use of surface water supplies, the ability to acquire surface water is uncertain, and development of a surface water supply system would be a long-term effort that would take many years.

The impacts to the Ceres' water supply and distribution system from development of the Master Plan land uses were analyzed by assuming a residential peak hour water usage factor of one gallon per minute (gpm) per unit of the new development potential. The residential peak hour water usage includes the demands for the industrial and commercial land uses.

Peaking factors were provided by City staff. A maximum day to peak day demand ratio of 2.00 was assumed; peak hour demand is assumed to be 3.4 times the annual average day demand.

The quantity of supply was based on meeting peak hour demands and meeting maximum day plus fire flow. The water supply system will be based on the larger flow of these two conditions.

The number of additional new wells was determined by estimating the maximum demands and available well capacity. The typical capacity of each well is between 750 gpm to 1,000 gpm. A conservative capacity of each well was assumed to be 750 gpm to calculate the number of wells required to accommodate future growth. The existing well capacity reserve is to be maintained by constructing additional wells to meet the maximum demands generated by future growth.

Proposed Facilities

Water Distribution

Phase I. The existing 10-inch line in Helen Perry Road will be extended to the proposed 10-inch main proposed in Eastgate Boulevard. A 10-inch main is being built in Eastgate Boulevard from Whitmore Avenue to the most northerly end of Phase I. The existing six-inch line in Boothe Road from Vera Way and Whitmore Avenue has been upsized with an eight-inch minimum water main.

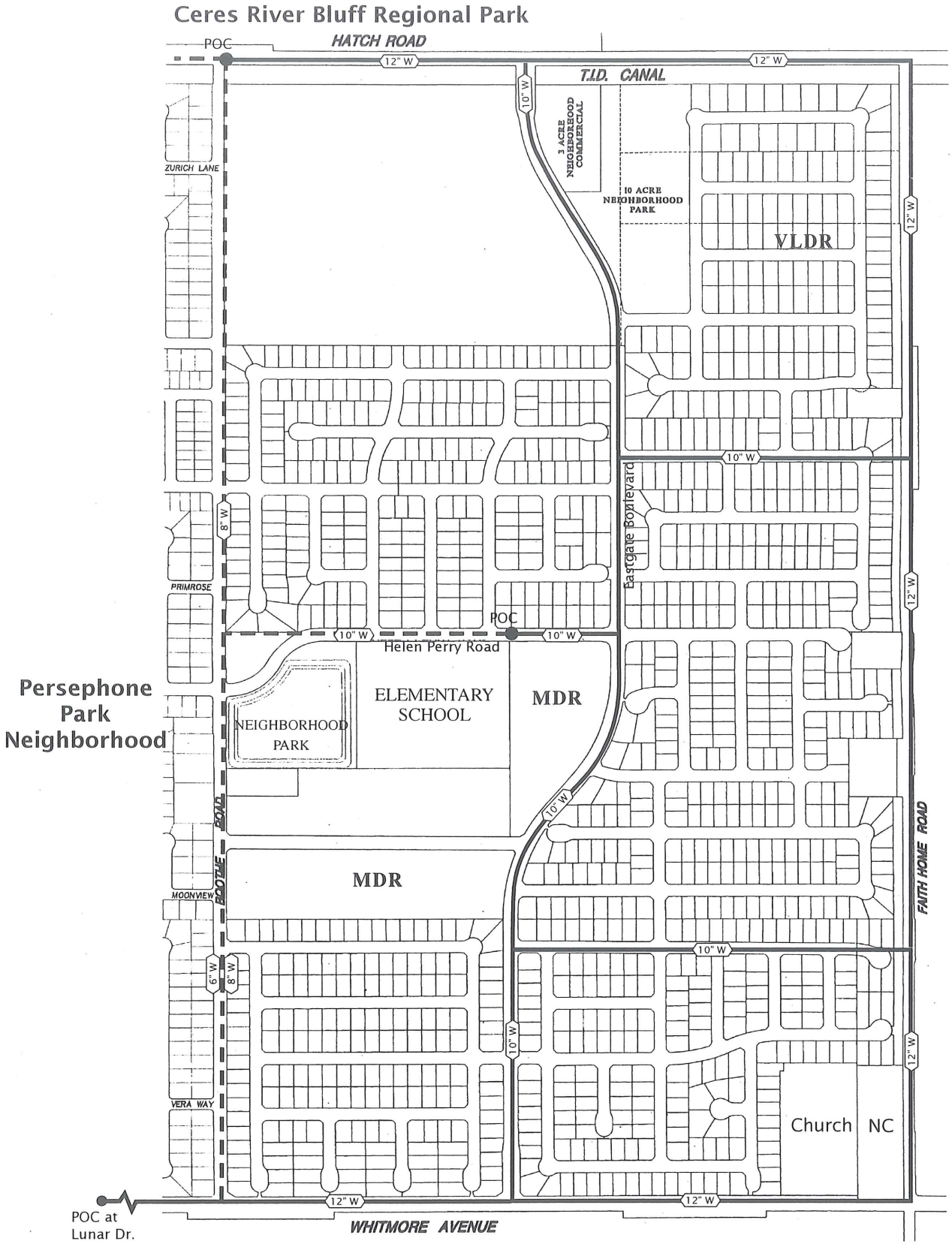
A 12-inch main will be constructed adjacent to Phase I in Whitmore Avenue and Faith Home Road. The City may construct the Faith Home Road line independent of the proposed phasing. A 10-inch main is required at the northerly end of Phase I to connect the line in Faith Home Road to the line in the main north/south collector.

Phase II. The 12-inch main will be constructed adjacent to Phase II in Faith Home Road. The City may construct the Faith Home Road line independent of the proposed phasing. A 10-inch line would be built to connect between Eastgate Boulevard and Faith Home Road.

Phase III. The 12-inch main in Faith Home Road will be extended to Hatch Road and a 12-inch main constructed in Hatch Road to Boothe Road. A 10-inch main is proposed in Eastgate Boulevard from the northerly end of Phase I to Hatch Road.

Water Supply

The largest flow for the supply was based on the maximum day plus fire flow condition. The maximum flow at planning area buildout was estimated to be approximately 2,625 gpm including a 1,500 gpm fire flow. This would require 3.5 wells at a capacity of 750 gpm each. Therefore, the proposed project could be required to construct four wells. The proposed project could be given credit for the additional well capacity of the fourth well.



Source: Garcia-Davis-Ringler and EMC Planning Group Inc.

Figure 7

Water Facilities

Eastgate Planned Community Revised Master Plan

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If single family residential development was the only development in the study area, the fire flow could be reduced to 1,000 gpm and three wells would be adequate to meet the water demand. The fourth well would be required only when the multi-family or commercial is developed.

According to the City, the existing City well in the area has excessive nitrates. Any proposed wells/water supply serving the project must be proven reliable and meet safe drinking water standards before final map approval. There is currently capacity in the City water system to service an additional 550 residential units prior to construction of a new well.

Phase I. Two additional wells may be required to serve Phase I development. The wells will be located and constructed based on how development occurs. The first well is not expected to be needed until construction of about 550 residential units in Phase I.

Phase II and Phase III. Two additional wells will be required during Phase II and/or Phase III.

5.2 Wastewater Treatment and Collection System

Existing Facilities

The City of Ceres' collection system presently has 12 lift stations and one lift station at the treatment plant headworks. The collection system is a gravity sewer system with the trunk lines comprised mostly of vitrified clay pipe and some reinforced concrete pipe.

The City of Ceres wastewater treatment plant is located near the Morgan Road/ Service Road intersection. The facility consists of aerated ponds followed by percolation land disposal. The disposal area is approximately 111 acres. The plant has a wet weather capacity of approximately three mgd. Wastewater is pumped to the Ceres' wastewater treatment plant. The City has purchased wastewater treatment capacity (initially 1.0 mgd, with options to increase to up to 6.0 mgd as needed) at the Turlock wastewater treatment plant. The City expects to complete construction of a line to the Turlock wastewater treatment plant in early 2004. After this line is constructed, 1.0 mgd will be delivered to Turlock for final treatment and disposal. This will free up sufficient capacity at the City of Ceres wastewater treatment plant to allow for approximately 10 years' growth.

There is an existing 12-inch sewer main in Whitmore Avenue at Boothe Road. The line flows westerly in Whitmore Avenue to a lift station at Mitchell Road. The lift station is a duplex station with alternating pumps. The lift station discharges into a pair of 12-inch mains that flow southerly to Don Pedro Avenue.

Existing and proposed wastewater facilities are presented in Figure 8.

Design Parameters

Wastewater flow estimates were obtained by assuming a wastewater coefficient of 93 gallons per capita per day for the residential land use designations. The coefficient was estimated from flow monitoring in Ceres' existing sewer system.

Future population projections were estimated based on the lot sizes for the residential land uses. The wastewater flow estimates generated from the new development were calculated based on this information and applying the wastewater coefficient to estimate the quantity of wastewater generated by future development.

The proposed trunk lines were divided into pipe segments. Based on the location of the pipe segments within the trunk line, the segments were assigned a tributary area. The average and peak wastewater flows from the tributary area were totaled for each pipe segment. Peak wastewater flows were used in determining pipe size. Peaking factors were determined from sanitary sewer studies and are shown in Table 6.

The pipe diameter required was calculated using a velocity of two feet per second. Based on the pipe diameter required, a pipe size was selected.

TABLE 6

Sanitary Sewer Peaking Factors

Population	500	1,000	3,000	5,000	10,000	20,000	50,000
Peaking Factors	6.00	4.40	3.20	3.00	2.80	2.40	2.20

Source: Garcia-Davis-Ringler Engineers

Proposed Facilities

Sewage Collection System

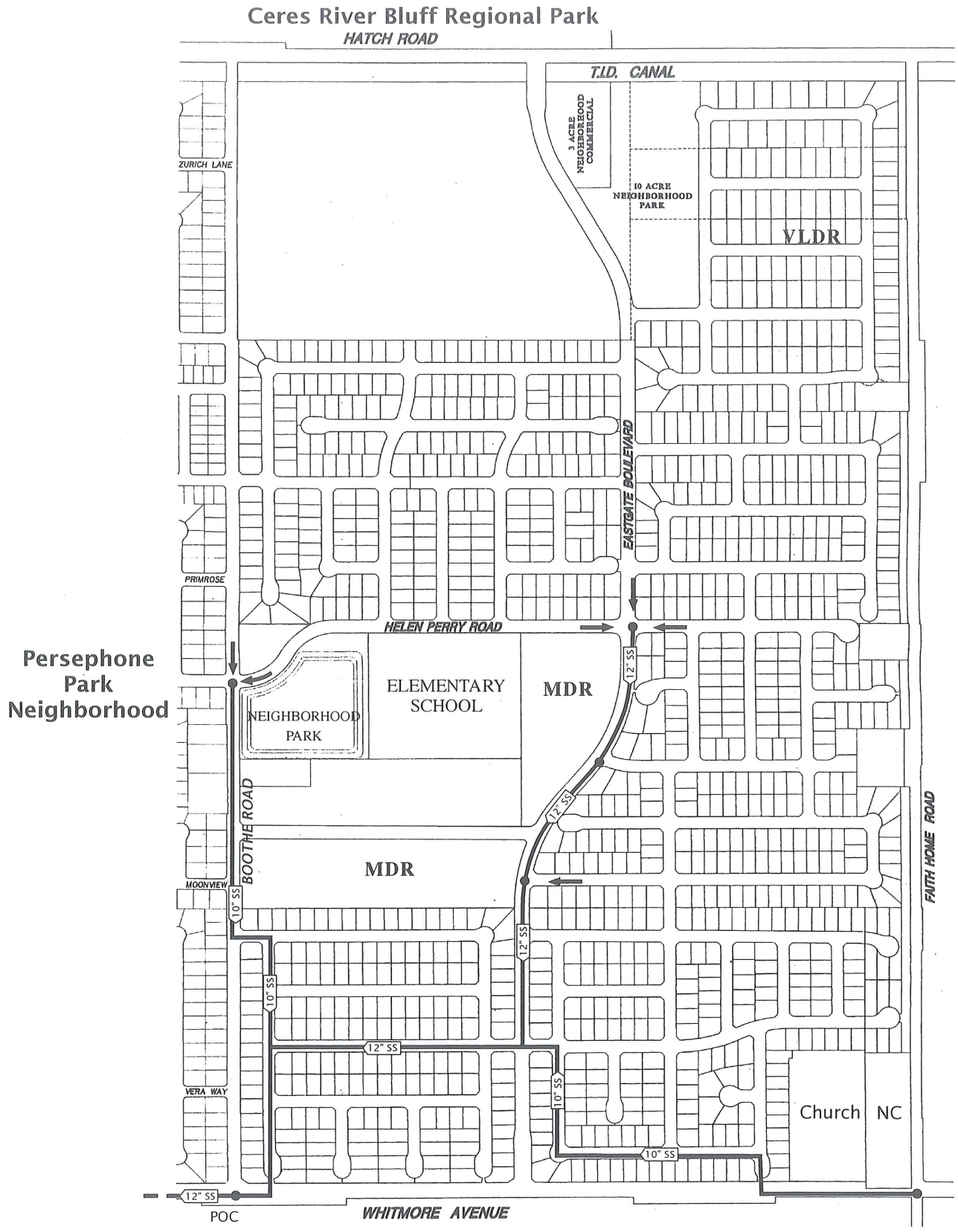
Phase I. Internal sewer trunk lines have been built or are under construction to serve Phase I development. These lines are sized as listed below:

1. A 10 to 12-inch main parallel to Boothe Road from the existing 12-inch main at the Whitmore Avenue/Boothe Road intersection to Helen Perry Road.

2. A 12-inch line parallel to Whitmore Avenue connecting the line parallel to Boothe Road with the line in Eastgate Boulevard.

3. A 10-inch line parallel to Whitmore Avenue from Eastgate Boulevard to Faith Home Road.

4. A 12-inch line in Eastgate Boulevard from the first cross street north of Whitmore Avenue to Helen Perry Road.



Source: Garcia-Davis-Ringler and EMC Planning Group Inc.

Figure 8

Sanitary Sewer Facilities

Eastgate Planned Community Revised Master Plan

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Phase II and Phase III. With the additional parallel line already constructed in Mitchell Road, no additional trunk lines are required for Phase II or Phase III development. A new external sewer trunk line may be constructed in Whitmore Avenue and Faith Home Road as part of the Capital Improvement Program on a time schedule determined by the City, but development of Phase II and Phase III is not dependent on these lines.

Sewage Treatment Facilities

Due to a shortage of treatment capacity at the Ceres wastewater treatment plant, the City has purchased additional treatment capacity at the City of Turlock wastewater treatment facility. The City will initially have 1.0 mgd at the Turlock facility, with the potential to purchase up to 6.0 mgd as demand increases. A pipeline connecting to the Turlock plant is under construction, and is expected to be ready for use by early 2004.

5.3 Storm Drainage

General

Storm water from developed areas of Ceres is collected in drains in the streets and conveyed to storm water detention basins in pipes. The storm water runoff typically enters the basins before it is conveyed to its ultimate disposal point in the Tuolumne River, either directly or through TID facilities. Some storm drainage flows through TID facilities to the San Joaquin River.

Because the area is primarily residential, all runoff will be disposed of in the City maintained system constructed by development. This includes the small commercial areas and the storm drainage from Whitmore Avenue, Faith Home Road, and Booth Road.

A Storm Drainage Benefit District has been formed to pay for the storm drain improvements needed for development on the east side of the City. The Eastgate Planned Community will be part of this Storm Drain Benefit District and pay its fair share of the costs.

Existing Facilities

Existing facilities consist of an 1800 gallons per minute (gpm) pumping station serving the existing Persephone Park detention basin. Based on information provided in the Ceres' Storm Drainage Master Plan this pump has capacity to handle a portion of the runoff from the planning area. The Persephone Park detention facility and pumping station were designed and a pipe was stubbed out in Boothe Road to serve an area east of Boothe Road. The pump is of adequate size but the Persephone Park neighborhood detention basin is not. The additional basin capacity

has been provided within a nine-acre park site adjacent to the Samuel Vaughn Elementary School where a basin to serve Phase I has been constructed.

Existing and proposed facilities are presented in Figure 9.

Design Parameters

Design parameters will be as outlined in the Ceres Storm Drainage Master Plan. Generally storm water is collected and conveyed through successively larger pipes to a designated detention facility. The detention facilities, designed to detain a 50-year storm, will hold excess runoff during the storm and when the storm is over, and TID facilities have adequate capacity, the detention basins are emptied by pumps into the TID facilities and/or the Tuolumne River.

Proposed Facilities

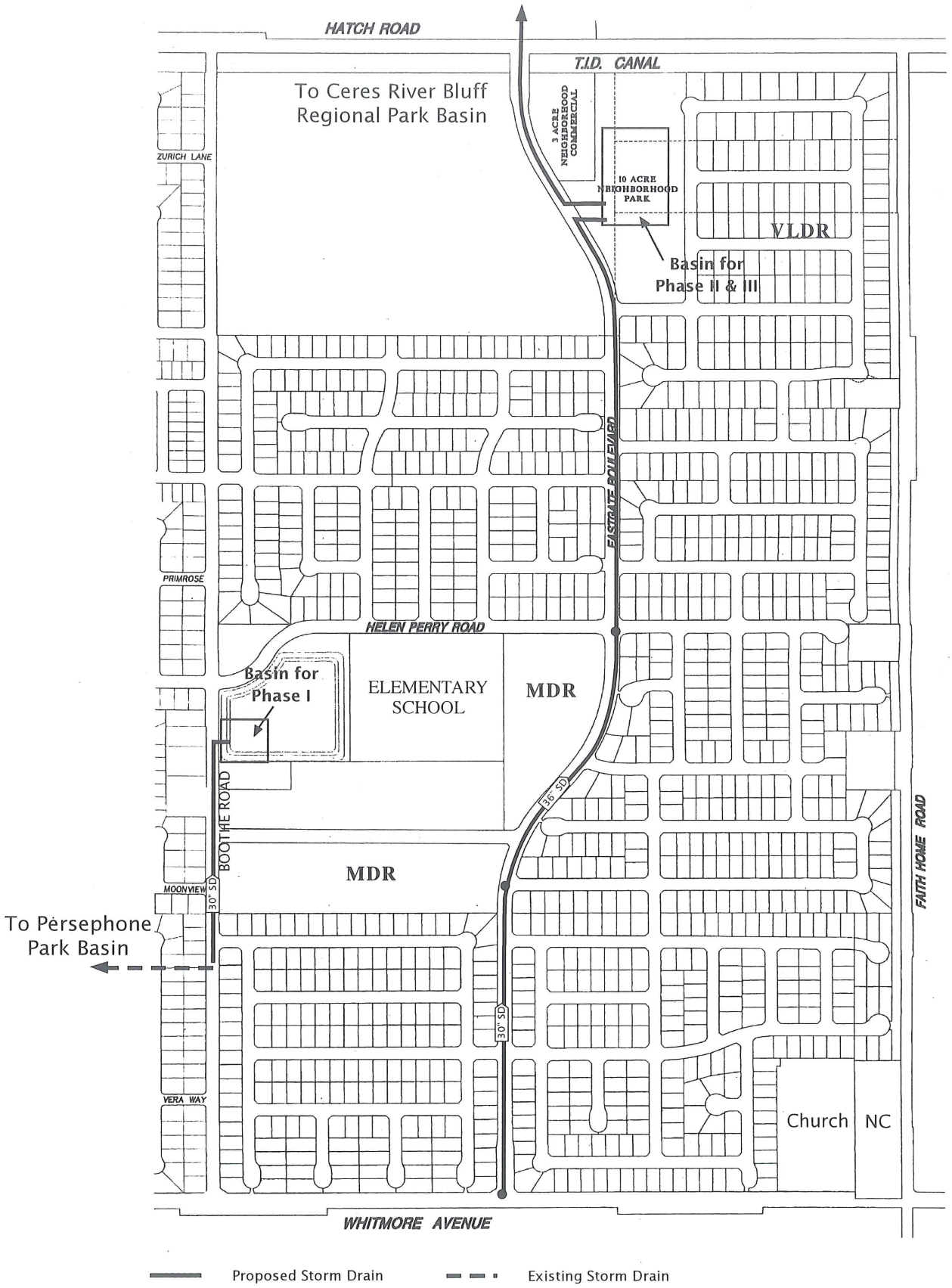
Detention Facilities

Phase I. Runoff from Phase I will be disposed of through the existing system that serves the Persephone Park area. The main components of the storm water collection system are a new detention basin located on the park site adjacent to the Samuel Vaughn Elementary School and a new pipeline located in Boothe Road that connects to the existing storm drain line from Persephone Park. Storm runoff from Phase I will be conveyed to the new basin and pipeline from smaller storm drains that will serve the individual developments making up Phase I. Final pipe sizes will be set during design.

Preliminary engineering calculations indicate that the total detention required for Phase I development is approximately 11 acre-feet. The existing detention basin in Persephone Park may be able to provide a portion of the storm water storage capacity required for the proposed development. A manually operated valve will be installed on the proposed detention basin discharge line to control the rate of discharge from the basin adjacent to Samuel Vaughn Elementary School into Persephone Park.

Phase II and Phase III. Storm water detention for the balance of the planning area will be provided by a new facility in the northern portion of the planning area. Preliminary calculations indicate that this facility will need to detain approximately seven acre-feet of storm runoff.

Interim basins will be used for Phase II and Phase III until a City-owned basin in the northern portion of the planning area is developed. Storm water from Phase II and Phase III will initially percolate in the basins. When the City completes the storm drainage basins at Ceres River Bluff Regional Park, the storm basin in the northern potion of the planning area will be connected into these basins, and the City will have the capability of pumping storm water into the Tuolumne River. This will allow the City to clear the basins more quickly in the event of successive large storms.



Source: Garcia-Davis-Ringler and
EMC Planning Group Inc.

0 800 feet

Figure 9
Storm Drain Facilities

Eastgate Planned Community Revised Master Plan

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Collection

Phase I. A 30-inch storm drain has been constructed in Boothe Road from the existing storm drain line from Persephone Park to Helen Perry Road. Storm runoff from Phase I will be conveyed to this pipeline from smaller storm drains that will serve the individual developments making up Phase I. Final pipe sizes will be set during design.

Phase II and Phase III. A 30- to 36-inch pipeline located in Eastgate Boulevard will connect to the northern detention basin. Storm runoff from approximately 190 acres will be conveyed to this pipeline from smaller storm drains that will serve the individual developments making up Phase II and Phase III. The pipeline has been over-sized to convey the approximately nine cubic feet per second from the area to the south of Whitmore Avenue when that area is developed.

Disposal

Phase I. After passing through the basins, storm water from Phase I development will generally be disposed of in the Ceres Main Canal through existing pumps. Storm water disposal will be through the existing 1800 gpm pump station that serves the Persephone Park neighborhood detention basin.

Phase II and Phase III. Interim percolation basins will be used for Phase II and Phase III until a City-owned basin in the northern portion of the planning area is developed. Storm water from Phase II and Phase III will initially percolate in the interim basins as well as the permanent basin. When the City completes the storm drainage basins at Ceres River Bluff Regional Park, the storm basin in the northern potion of the planning area will be connected into these basins, and the City will have the capability of pumping storm water into the Tuolumne River. This will allow the City to clear the basins more quickly in the event of successive large storms.

Temporary Facilities

A temporary detention basin will be required if the Master Plan storm drainage facilities are not available when a development is ready to start construction. The developer shall be responsible for all costs involved in constructing the temporary basins. The basins will conform with current City of Ceres standards for detention basins and will include a perimeter landscaping requirement. The basins will be capable of containing the runoff from a 50-year frequency, 24-hour storm with the highest design water surface elevation not exceeding the lowest tributary flow line elevation. The basins shall be capable of draining in a 48-hour period through percolation. If the basin can not drain in a 48-hour period, the size of the basin shall be increased by 50 percent.

When the Master Plan facilities are available, the temporary basins will be abandoned and the property reclaimed by the developer. The developer shall be responsible for all costs involved in connecting to the Master Plan facilities and

abandoning the basins. Eventually a line will extend from the neighborhood park basin to the regional basin at Ceres River Bluff Regional Park.

5.4 Other Public Services

This section addresses the availability of electrical, gas, telephone and cable television facilities to serve the development planned within the planning area. A services and fiscal impacts analysis will be performed (separately) which will ultimately be incorporated into the Master Plan.

Gas

Gas will be provided to the planning area by Pacific Gas and Electric Company. There are existing facilities within Whitmore Avenue and Boothe Road that are adequate to serve development of the planning area. The only concern expressed by PG&E would be if construction were to begin on the area away from existing facilities.

Telephone

Telephone service will be provided by SBC. There is an existing feeder line on Whitmore Avenue. This line would be reinforced by SBC to serve development within the planning area.

Electrical

Electrical service will be provided by the Turlock Irrigation District. Overhead lines exist on Whitmore Avenue, Hatch Road, Boothe Road and portion of Faith Home Road. These lines could be used to serve development within the planning area. Some of these facilities may need to be relocated to facilitate construction of the streets. Existing high voltage electrical lines (along Whitmore Avenue for example) will remain overhead. All other utilities within the planning area will be required to be placed underground.

Cable Television

Cable television services will be provided by the City's franchised cable service provider. The main trunk line is located along Boothe Road. This line is adequate to serve development within the planning area.

Schools

The Ceres Unified School District provides school services to the planning area. The Samuel Vaughn Elementary School is located along Helen Perry Road within the planning area and will serve development within the planning area and the area west of Boothe Road. The Ceres Unified School District plans to construct another

elementary school off Whitmore Avenue south of the planning area by the middle of 2005. School-age children from the planning area will attend this school when completed. Mae Hensley Junior High is located on Moffet Road and will accommodate middle school students. Ceres High School is located on Central near Whitmore and will accommodate high school students from the planning area. The District is constructing a new high school at the southwest corner of Central Avenue and Service Road, and students from the planning area may attend that high school.

Street Lighting

Street lighting will be installed by the developers and maintained by a funding mechanism approved by the City of Ceres Public Works Department.

Parks

Ceres currently has 10 parks totaling 140 acres. The Master Plan includes two neighborhood parks totaling 19 acres. Parks are discussed in Section 3.0 Land Use.

Police and Fire

Since annexation, the City of Ceres Department of Public Safety, Police Division, provides law enforcement and fire protection services to the planning area.

The City currently operates three fire stations: Station No. 1 (main station) located at 2225 North Avenue; Station No. 2 located at 830 Pecos Avenue, and Station No. 3 located at 420 East Service Road. The planning area is about two miles from Station No. 1, the nearest station. In addition, the General Plan calls for a public safety facility, which is anticipated to be located near the intersection of Fowler Avenue and Mitchell Road approximately one-half mile west of the planning area.

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6.0 Capital Improvement Program

Table 7 contains the Capital Improvement Program for the development of the Master Plan. Estimated costs are set forth for development of infrastructure improvements for each phase of development. It is important to note that these costs are estimates and, by their inclusion in this Master Plan, are not intended to specifically obligate development in the planning area to bear the entire cost for each and every one of these facilities. Similarly, inclusion of discussion of public facilities fees as a possible funding source is not intended to obligate the City for construction of these improvements.

Along with the submittal of the first development plan within the planning area, a more refined funding program shall be submitted. It is generally expected that funding will be pay-as-you go financing, although certain facilities which serve larger areas will be reimbursable.

As an example, the first development may be required to construct a sewer line in Mitchell Road capable of serving 1,200 single-family units. As such, future developments which benefit from these facilities will be required to reimburse the original developer for fees needed to construct these facilities. Generally speaking, the following are area wide facilities and the costs of these facilities should be shared by all development in the planning area: the Hatch Road canal crossing and signalization, the Eastgate Boulevard and Whitmore Avenue signalization, the main storm drain line through the planning area, the main storm drainage basin and the four wells needed to serve the planning area. Other facilities may be area wide, and cost shifting of fees between specific developments may be permitted as long as equity is maintained.

Again, the actual fee distributions and responsibilities will be set forth at approval of a development plan, unless the planning area developers elect to execute a development agreement which will include all fees and how they shall be paid for a larger development area.

In addition, the cost of preparation of this Master Plan, the Master Plan environmental impact report, and processing will be reimbursed and considered a part of the overall fee program.

TABLE 7

Capital Improvement Program

Improvement	Responsible Party	Est. Cost (2003 Dollars)	Possible Funding Sources	When Provided	Maintenance Responsibility
Phase I Requirements					
10-inch water line in Helen Perry Road, 10-inch water main in the main north/south collector from Helen Perry Road to the most northerly end of Phase I, Boothe Road eight inch water main upsizing.	Developer	$301,760	Public Facility Fee and Developer	Beginning of Phase I	City of Ceres
12-inch sewer main line in Mitchell Road from the lift station at Whitmore Avenue to Don Pedro Avenue, lift station discharge modifications, 10-inch sewer main in Boothe Road from the existing 12-inch main at the Whitmore Avenue/Boothe Road intersection to Helen Perry Road.	Developer	$449,650	Public Facility Fee and Developer	Beginning of Phase I	City of Ceres
30-inch storm drain in Boothe Road from the existing storm drain line from Persephone Park to Helen Perry Road.	Developer	$144,900	Public Facility Fee and Developer	Beginning of Phase I	City of Ceres
Widen Whitmore Avenue to accommodate an eastbound left turn lane at Boothe Road.	Developer	$57,500	Public Facility Fee and Developer	Beginning of Phase I	City of Ceres
Signalize and improve the Hatch Road/Boothe Road Intersection. (Without construction of north/south collector, signal warrants will be met at the end of Phase I.)	City	$172,500	Public Facility Fee and Developer	End of Phase I or when warrants are met	City of Ceres
12-inch water main adjacent to Phase I in Whitmore Avenue and Faith Home Road, 10-inch water main at the northerly end of Phase I to connect the line in Faith Home Road to the line in the main north/south collector, 10-inch water main in the main north/south collector from Whitmore Avenue to Helen Perry Road, 2 new wells.	Developer	$898,380	Public Facility Fee and Developer	As development occurs in Phase I	City of Ceres

Improvement	Responsible Party	Est. Cost (2003 Dollars)	Possible Funding Sources	When Provided	Maintenance Responsibility
15-inch sewer line in Whitmore Avenue from the existing 12-inch sewer line at the Whitmore Avenue/Boothe Road intersection the north/south collector street, 10-inch sewer line in Whitmore Avenue from the north/south collector street to Faith Home Road, 12-inch sewer line in the north/south collector street from Whitmore Avenue to the first east/west collector street, 10-inch sewer line in the north/south collector street from the first east/west collector street to Helen Perry Road.	Developer	$286,060	Public Facility Fee and Developer	As development occurs in Phase I	City of Ceres
Sewage Treatment Plant Expansion.	City	Pro-Rata Share	Public Facility Fee	Ongoing During Phase I	City of Ceres
30-inch storm drain in the north-south collector that connects Whitmore Avenue and Hatch Road from Whitmore Avenue to the Southerly boundary of Phase II.	Developer	$105,225	Public Facility Fee and Developer	As development of north/south collector street occurs in PhaseI	City of Ceres
Improve Hatch Road to a four lane section from Mitchell Road to Boothe Road.	City of Ceres	$115,000	Public Facility Fee Program	40 Percent of Eastgate	City of Ceres
Signalize and Construct the Project Access onto Whitmore Avenue including the southern portion of the north-south collector. A Benefit Assessment District will be prepared to reimburse the fronting developer.	Developer	$230,000	Developer	At 50 percent of Phase I (approx. 600 units)	City of Ceres
Phase II Requirements					
12-inch water main adjacent to Phase II in Faith Home Road, 10-inch water main at the northerly end of Phase II to connect the line in Faith Home Road to the line in the main north/south collector, 1 new well.	Developer	$389,045	Public Facility Fee and Developer	As develop. occurs in Phase II	City of Ceres
36-inch and 42-inch storm drain in the north-south collector from the Southerly boundary of Phase II to the proposed park site detention basin, 48-inch storm drain in the park from the street to the detention basin site, detention basin.	Developer	$758,425	Public Facility Fee and Developer	Beginning of Phase II	City of Ceres
Signalize and Construct the Project Access onto Hatch Road, to include the canal crossing and northern portion of north-south collector. A Benefit Assessment District will be prepared to reimburse the fronting developer.	Developer	$402,500	Developer	Beginning of Phase II	City of Ceres

Improvement	Responsible Party	Est. Cost (2003 Dollars)	Possible Funding Sources	When Provided	Maintenance Responsibility
Phase III Requirements					
12-inch water main in Faith Home Road will be extended to Hatch Road, 12-inch main in Hatch Road to Boothe Road, 10-inch main in the main north/south collector from the northerly end of Phase I to Hatch Road.	Developer	$302,450	Public Facility Fee and Developer	Beginning of Phase III	City of Ceres
As Adjoining Development Occurs					
Construct local street system as proposed	Developer	$2,495,500	Developer	As adjoining development occurs	City of Ceres
Whitmore Avenue Widening to Four Lanes: Dedicate Right-of-Way and Complete Frontage Requirements. [1]	Developer	$517,500	Public Facility Fee and Developer	As adjoining development occurs	City of Ceres
Routine Road Improvements: Dedicate Right of Way and Complete Frontage Improvements.	Developer	$299,000	Developer	As adjoining development occurs	City of Ceres
Faith Home Road Expressway: Dedicate Right of Way and construct sound attenuation feature, landscaping, 20 feet of pavement, and storm water drainage.	Developer	---	Developer	As adjoining development occurs	City of Ceres
As Warranted By Traffic Volume					
Hatch Road Widening to Six Lanes. [2]	City of Ceres	unknown	Public Facility Fee	As warranted by traffic volume	City of Ceres

1. Developer responsible for Curb, Gutter, Sidewalk, 19 1/2 feet of pavement along arterial streets, and storm water drainage.
2. Adjoining Developer Not Responsible for frontage improvements north of TID Canal.

Source: Garcia-Davis-Ringler/KD Anderson/EMC Planning Group Inc.

7.0 Persons Contacted, Bibliography, and Report Preparation

7.1 Persons Contacted

The following persons were contacted during preparation of the Master Plan.

Paul Chapman, Chapman Development Company

Raul Esquivel, Marcus Cable

Max Garcia, Garcia-Davis-Ringler Engineers

Randy Garcia, Pacific Gas and Electric Company

Len Guillette, City of Ceres Engineering Services Supervisor

Randy Hatch, City of Ceres, Planning Director

Joe Hollstein, City of Ceres, City Engineer

Susan Montgomery, Pacific Bell

Paul Rodriguez, Turlock Irrigation District

7.2 Bibliography

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City of Ceres. *Ceres General Plan. Policy Document*. Ceres, California, Adopted February 24, 1997.

City of Ceres. *Final General Plan Environmental Impact Report*. Ceres, California, Certified November 12, 1996.

7.3 Report Preparation

Law Offices of Russell A. Newman

David O. Romano, P.E., AICP

EMC Planning Group Inc.

Michael J. Groves, AICP, Senior Principal

Teri Wissler Adam, Principal

Elaine Hansen, Principal Planner

Richard James, AICP, Senior Planner

Joseph Karnes, Planning Associate

Tom Jangaard, Associate Planner

Valerie Stack, Administrative Assistant

E. J. Kim, Desktop Publishing Specialist

Garcia-Davis-Ringler

Max M. Garcia, PLS, Principal

Gary S. Davis, RCE, Principal

Richard L. Ringler, RCE, Principal

K D Anderson, Transportation Engineers

Kenneth D. Anderson, P.E., Principal

Appendix A

Traffic Report

TRAFFIC IMPACT ANALYSIS
EASTGATE PLANNED COMMUNITY MASTER PLAN
Ceres, CA

TABLE OF CONTENTS

October 28, 1996

KDA

INTRODUCTION

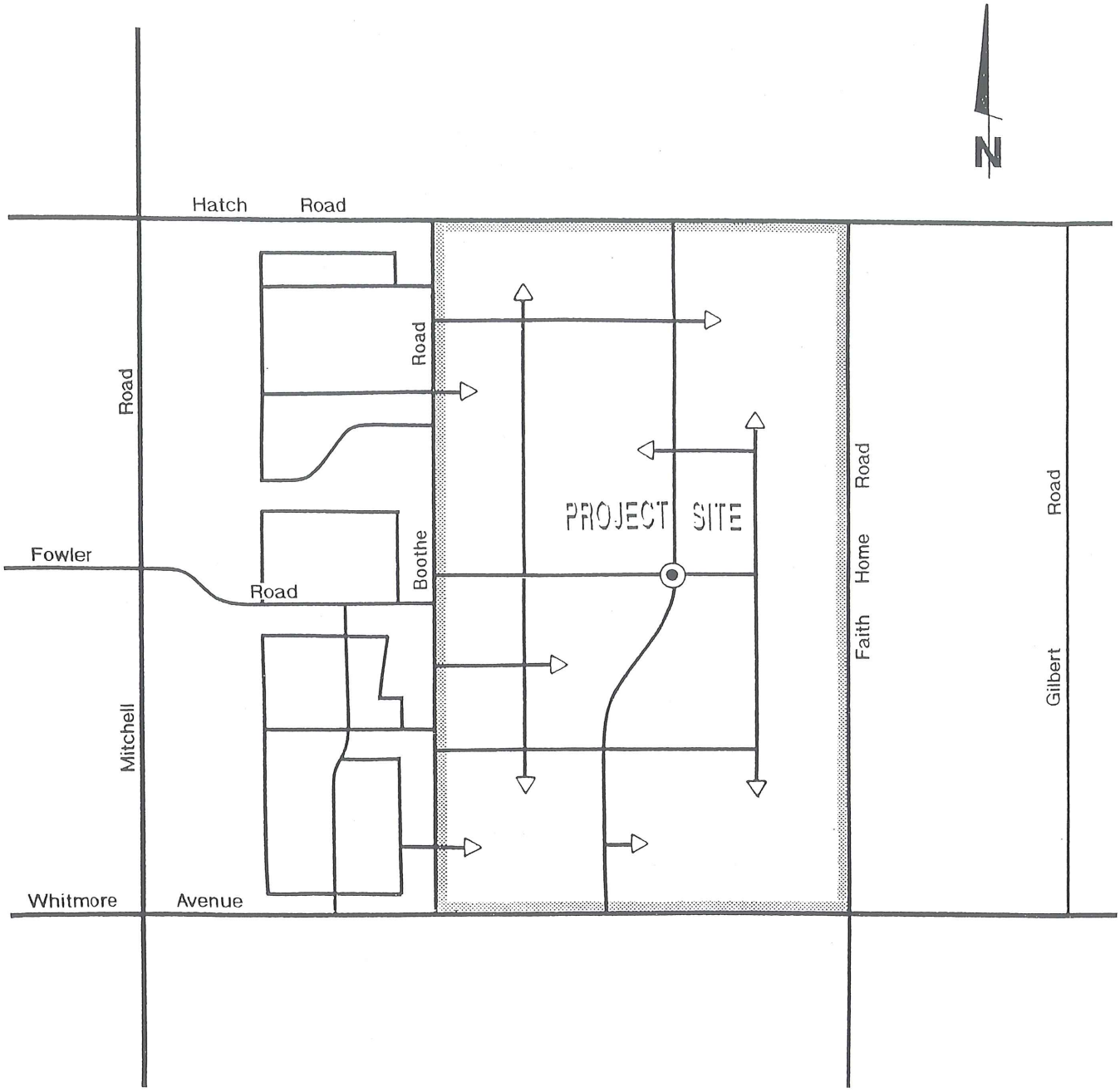
This report summarizes kdANDERSON Transportation Engineers' analysis of the potential traffic impacts associated with development of the Eastgate Planned Community Master Plan in Ceres, California. As currently proposed, the project involves development of approximately 378 acres of residential, neighborhood commercial, park and school uses on property which is located between Hatch Road and Whitmore Avenue immediately east of Boothe Road in eastern Ceres. The project site is located regionally in Figure 1.

The purpose of this analysis is to present an assessment of potential project specific and cumulative traffic impacts. The analysis includes an evaluation of existing circulation conditions in the area based on current peak hour traffic volumes. The characteristics of the proposed project have also been determined, including estimated trip generation and the directional distribution and assignment of the project traffic. By superimposing project trips onto traffic volumes occurring on the adjacent street system, the impacts of project traffic on the operating conditions of streets and intersections in the area have been identified.

This report also considers the impacts of the project within the context of cumulative traffic conditions occurring under build out of the City of Ceres General Plan in the year 2015. Working with future traffic forecasts created for the General Plan DEIR, Daily and PM Peak Hour traffic volumes were developed and assessed. Where options exist to create a circulation system which may differ from that included in the General Plan Circulation Element, the ramifications of these options have also been addressed.

Eight existing study area intersections and associated roadway segments were identified for investigation during the study scoping process. These intersections include:

- Hatch Road / Mitchell Road
- Hatch Road / Boothe Road
- Hatch Road / Faith Home Road
- Fowler Road / Mitchell Road
- Fowler Road / Boothe Road
- Whitmore Avenue / Mitchell Road
- Whitmore Avenue / Boothe Road
- Whitmore Avenue / Faith Home Road



KD Anderson
Transportation Engineers

VICINITY MAP

figure

EXISTING SETTING

Existing Street System

Regional access to the Eastgate Planned Community Master Plan is provided by several major roads. Hatch Road and Whitmore Avenue connect the project with the commercial areas of Ceres and with Highway 99. Mitchell Road links the east Ceres area with Highway 99 and crosses the Tuolumne River into the City of Modesto. Locally, Boothe Road and Fowler Road provide connections to the arterial street system through existing adjacent neighborhoods. The text which follows describes these facilities.

Hatch Road is a major east-west route serving Ceres and the southern Modesto area. In the vicinity of the project, Hatch Road is currently a two lane rural road which widens to a four lane section as it approaches the Mitchell Road intersection. The General Plan indicates that Hatch Road will eventually be improved to a six lane expressway standard.

Adjacent to the project, Hatch Road is a conventional two lane rural road with graded shoulders. Access to Hatch Road is limited. As Hatch Road lies immediately north of the TID Ceres Main Canal, access from the south is restricted to a few collector streets. North of the project, access to Hatch Road is permitted to existing agricultural uses and a golf course.

The most recent City of Ceres traffic counts suggest that Hatch Road carries about 23,815 Vehicles Per Day (VPD) (1995) west of Mitchell Road and 10,566 VPD in the immediate vicinity of the project.

Whitmore Avenue is also a major east-west route. Whitmore Avenue is designated as an Arterial street in the General Plan Circulation Element, and the road has been widened to a five lane section in the area from Highway 99 to Mitchell Road. Whitmore Avenue transitions from a five lane section to a two lane road in the area east of Della Drive. While partial widening has accompanied adjacent development in the area west of the proposed project, Whitmore Avenue is a two lane conventional road along the project frontage. In the vicinity of the project, access to Whitmore Avenue occurs at public street intersections, existing agricultural uses, a few rural residences and a church located near the Faith Home Road intersection.

The most recent available traffic counts indicate that Whitmore Avenue carries about 5,311 VPD (1995) in the vicinity of the proposed project.

Mitchell Road is the main north-south route through Ceres and this designated Arterial street links Highway 99 on the south end of Ceres with the City of Modesto to the north. Currently, Mitchell Road is five lane urban street in the vicinity of the project. The most recent available traffic counts suggest that Mitchell Road carries 37,823 VPD (1995) north of Hatch Road, about 26,696 VPD between Hatch Road and Whitmore Avenue and about 23,912 VPD in the area south of Whitmore Avenue.

Boothe Road is a Primary Collector Street serving the developing residential area east of Mitchell Road. The road has been constructed to its ultimate width on the west side, including curb, gutter and sidewalk. Direct residential frontage exists at several locations, and trucks are prohibited on Boothe Road. Currently, Boothe Road carries about 2,201 VPD (1995) north of Whitmore Avenue and 1,921 vehicles per day south of Hatch Road.

Faith Home Road is a conventional two lane rural road extending from an intersection with Hatch Road south to the community of Keyes. The City of Ceres General Plan Circulation Element indicates that Faith Home Road will eventually be developed as a six lane expressway which will cross the Tuolumne River to connect with Garner Road - Claus Road in Modesto.

Fowler Road is an east-west Primary Collector Street located midway between Hatch Road and Whitmore Avenue. Fowler Road links Mitchell Road with existing residential areas to the east and extends to an intersection with Boothe Road at the western limits of the proposed project. This two lane road currently carries about 3,276 VPD (1995) east of Mitchell Road and 2,686 VPD west of Boothe Road.

Helen Perry Road is an existing Secondary Collector Street extending easterly from Boothe Road into the Master Plan area. Helen Perry Road currently provides access to Samuel Vaughn Elementary School, and traffic control measures have been installed to incorporate Helen Perry Road into the school's circulation plan. These measures include diagonal parking along the south side of Helen Perry Road near the school.

Moonview Drive, Vera Way, Primrose Lane, Waynesboro Drive, Suffolk Drive and **Rhone Drive** are local streets which extend west from Boothe Road into existing residential neighborhoods. None of these two lane residential streets is extended to any collector or arterial street, limiting their function to local access only.

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Non - Automotive Circulation.

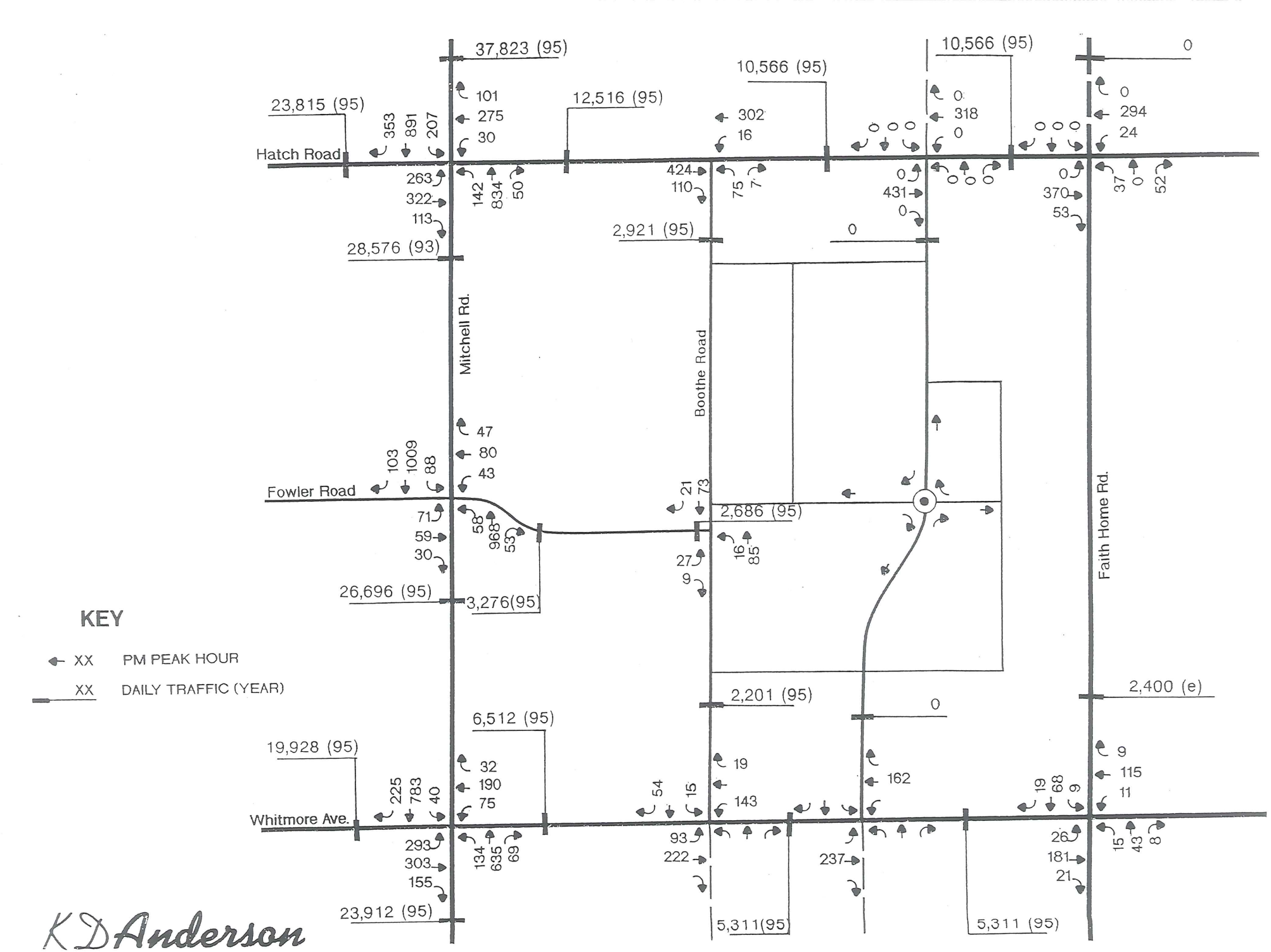
Transit. The General Plan Background Report notes that the City of Ceres is served by several transit organizations including Ceres Dial-A-Ride, Modesto Intracity Transit and Modesto Dial-A-Ride, and Stanislaus County Transit. Ceres Dial-A-Ride offers a demand-responsive service weekdays from 6:00 am to 8:00 pm. There is no service on weekends. The fare is $.75 for a ride within the service area which is bounded by the Tuolumne River, Boothe Road, Whitmore Avenue, Faith Home Road, Redwood Road, Central Avenue, Grayson Road, Crows Landing Road, Whitmore Avenue and Herndon Road. Passengers can transfer from the Ceres Dial-A-Ride to Modesto Area Express (MAX), the Modesto/Turlock bus service, or the Modesto Dial-A-Ride.

Bicycles. The General Plan identifies a system of on-street and off-street bicycle facilities to serve the community. Separated bikeways (Class I) are proposed along Hatch Road and along the Mitchell Road corridor in the area of the TID Ceres Main Canal. Class II bicycle lanes are proposed along Boothe Road, Whitmore Avenue and Fowler Road. None of these facilities exist today.

Pedestrian and bicycle activity occurs today along existing local and collector streets as a part of normal residential activity and as part of student travel to and from the Samuel Vaughn Elementary school.

Existing Traffic Volumes

To quantify existing traffic conditions, a base of current peak hour traffic volume information was assembled. Recent (May 1996) traffic counts at intersections on Mitchell Road were available from the City of Ceres, and the consultant made new PM peak hour traffic counts in August 1996 at the remaining study area intersections. The PM peak hour was selected as being representative of "Worst Case" background traffic conditions, based on review of daily traffic counts in the City of Ceres and based on the highest hour of project trip generation (i.e., 1.01 PM peak hour trips per dwelling versus 0.74 AM peak hour trips per dwelling). These new peak hour counts, along with representative daily traffic counts are presented in Figure 2.



KEY

← XX PM PEAK HOUR

XX DAILY TRAFFIC (YEAR)

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EXISTING TRAFFIC VOLUMES

Level of Service Calculation

To quantitatively evaluate traffic conditions and to provide a basis for comparison of operating conditions with and without project generated traffic, Levels of Service were determined at study area intersections and on individual roadway segments.

"Level of Service" (LOS) is a quantitative measure of traffic operating conditions whereby a letter grade "A" through "F" is assigned to an intersection. LOS "A" through "F" represents progressively worsening traffic conditions. The characteristics associated with the various LOS for intersections are presented in Table 1.

The Ceres General Plan establishes LOS "D" as the standard for major roadways (i.e., expressways, arterials and primary collectors), with LOS "C" identified as the standard for secondary collector and local streets. Levels of Service were calculated for roadway segments and for different intersection control types using the respective methods in the following sources.

- **Future Signalized intersections.** Planning method in Transportation Research Board Circular 212, Interim Materials on Highway Capacity, 1980.

- **Unsignalized intersections.** 1994 Highway Capacity Manual (HCM) Update, Special Report 209

- **All-way stop intersections.** 1994 Highway Capacity Manual (HCM) Update, Special Report 209.

- **Roadway Segments.** General Plan Background Report, Peak Hour Capacities.

In addition, another measure of performance not directly related to formal Level of Service have been employed:

- **Local and Secondary Collector Street Segments.** Daily traffic volume thresholds as defined in the City of Ceres "Hierarchy of Streets and Street Standards".

Signalized Intersections. The procedure for calculating the Level of Service at signalized intersections is recognized as the "critical movement" method. Generally, the procedure is to compare the sum of the highest lane-volume in each signal phase to an estimate of intersection capacity. The resulting volume-to-capacity ratio is then compared to adopted Level of Service thresholds.

TABLE 1
LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE	SIGNALIZED INTERSECTION	UNSIGNALIZED INTERSECTION	ROADWAY (DAILY)
"A"	Uncongested operations, all queues clear in a single-signal cycle. V/C ≤ 0.60	Little or no delay. 0 to 4 second average delay	Completely free flow.
"B"	Uncongested operations, all queues clear in a single cycle. V/C = 0.61-0.70	Short traffic delays. 5 to 9 second average delay	Free flow, presence of other vehicles noticeable.
"C"	Light congestion, occasional backups on critical approaches. V/C = 0.71-0.80	Average traffic delays. 10 to 19 seconds average delay	Ability to maneuver and select operating speed affected.
"D"	Significant congestions of critical approaches but intersection functional. Cars required to wait through more than one cycle during short peaks. No long queues formed. V/C = 0.81-0.90	Long traffic delays. 20 to 29 seconds average delay	Unstable flow, speeds and ability to maneuver restricted.
"E"	Severe congestion with some long standing queues on critical approaches. Blockage of intersection may occur if traffic signal does not provide for protected turning movements. Traffic queue may block nearby intersection(s) upstream of critical approach(es). V/C = 0.91-1.00	Very long traffic delays, failure, extreme congestion. More than 30 seconds average delay	At or near capacity, flow quite unstable.
"F"	Total breakdown, stop-and-go operation. V/C > 1.00	Intersection blocked by external causes.	Forced flow, breakdown.

Sources: 1994 Highway Capacity Manual, Transportation Research Board (TRB) Special Report 209; V/C (volume to capacity) ratios ranges from TRB Circular 212.

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Unsignalized Intersections. The procedure for calculating the Level of Service at unsignalized intersections (but not at all-way stop intersections) is based on the relative availability of gaps in traffic and the delay experienced for each movement which must yield the right-of-way. The number of gaps is related to delay and is a function of the volume and speed of conflicting traffic, type of control (stop or yield), and qualitative intersection geometrics. Like signalized intersections where overall traffic operation is described by one Level of Service grade, a Level of Service is calculated for the intersection but can also be calculated for each movement yielding the right-of-way to others. Levels of Service at unsignalized intersections controlled by side street stops, are indicative of the magnitude of the delay incurred by motorists turning at the intersection. Because these calculations ignore the condition of through traffic flow (which is assumed to flow freely) a supplemental traffic signal warrant analysis is performed to determine the significance of unsignalized conditions. The signal warrant criteria employed for this study are those presented in the Caltrans Traffic Manual.

All-Way Stop Intersections. Current procedures for calculating the Levels of Service at all-way stop controlled intersections are described in Special Report 209 and Transportation Research Board Circular No. 373. These procedures identify an average delay for each approach, which yields Level of Service for each approach. A combined / weighted overall average delay can then be determined for the intersection.

Street Segments. The General Plan Background Report indicates general roadway segment capacities and LOS volume/capacity ranges for major streets. City of Ceres Hierarchy of Streets and Street Standards suggest approximate daily traffic volume thresholds which are theoretically associated with satisfactory traffic operations on local and secondary collector streets. These thresholds are presented in Table 2.

TABLE 2
CITY OF CERES STREET SEGMENT STANDARDS

Street Classification	Standard Configuration	Peak Hour Capacity (in VPH)	Daily Traffic Volume Range	
Local Residential	2 lanes	n/a	0	500
Secondary Collector	2 lanes	n/a	500	4,000
Primary Collector	2 lanes with left turn lanes	1,250 VPH	3,000	10,000
Arterial	4 lanes	3,000 VPH	10,000	35,000
Expressway	4 lanes	3,800 VPH	25,000	72,000
Freeway	4 lanes to 6 lanes	7,200 to 10,800 VPH	30,000	108,000

Current Peak Hour Traffic Conditions

PM peak hour Levels of Service were calculated at existing study intersections (Refer to Appendix for calculation worksheets) under "Existing" conditions. Current LOS at the study intersections are presented on Table 3.

TABLE 3
EXISTING INTERSECTION LEVELS OF SERVICE

INTERSECTION	CONTROL	EXISTING PM PEAK	
		Volume / Capacity or Average Delay	LOS
1. Mitchell Road / Hatch Road	Signal	0.63	B
2. Mitchell Road / Fowler Road	Signal	0.63	B
3. Mitchell Road / Whitmore Avenue	Signal	0.76	C
4. Boothe Road / Hatch Road	NB Stop		
Westbound left		4.0 sec	A
Northbound right		13.9 sec	C
Northbound left		13.9 sec	C
5. Boothe Road / Fowler Road	EB Stop		
Northbound left		2.4 sec	A
Eastbound right		4.3 sec	A
Eastbound left		4.3 sec	A
6. Boothe Road / Whitmore Avenue	SB Stop		
Eastbound left		2.7 sec	A
Southbound right		4.4 sec	A
Southbound left		4.4 sec	A
7. Faith Home Road / Hatch Road	NB Stop		
Westbound Left		3.3 sec	A
Northbound right		7.3 sec	B
Northbound left		7.3 sec	B
8. Faith Home Road / Whitmore Avenue	4 way Stop	3.0 sec	A

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As shown, traffic conditions in the study area vary. To the west at the signalized intersections along Mitchell Road, peak hour intersection operations vary from LOS"B" to LOS "C". As suggested in the General Plan Background Report, traffic volumes on Mitchell Road vary throughout the year due to the seasonal activity of canneries in the south Modesto area. Thus, it is likely that the Levels of Service suggested by the May 1996 traffic counts used for this investigation are better than the LOS occurring later in the summer.

Because traffic volumes are lower, motorists at the intersections east of Mitchell Road experience little delay, and the Levels of Service for each turning movement are very good (i.e., LOS "A"). At these locations, current traffic volumes are below warrants for signalization.

Daily Traffic Volumes.

The ability of current roads to meet City daily traffic volume thresholds and provide adequate Level of Service has been reviewed based on current daily and peak hour traffic volumes on individual segments of study area streets. These volumes and the applicable daily traffic volume threshold identified for each street are presented in Table 4.

As indicated, all study area streets currently carry traffic volumes which are indicative of satisfactory traffic conditions.

TABLE 4
EXISTING CONDITIONS ON ROADWAY SEGMENTS

ROAD LOCATION	CLASS	LANES	DAILY TRAFFIC	
			EXISTING VOLUME	LOS
Mitchell Road				
North of Hatch Road	Arterial	4	37,823	D
North of Whitmore Avenue		4	26,696	B
North of Roeding Avenue		4	23,912	B
Hatch Road				
West of Mitchell Road	Arterial	4	23,815	A
East of Mitchell Road		2	12,516	B
East of Boothe Road		2	10,566	A
Whitmore Avenue				
West of Mitchell Road	Arterial	4	19,928	A
East of Moore Road		2	6,512	A
East of Boothe Road		2	5,311	A
Fowler Road	Primary			
East of Mitchell Road	Collector	2	3,276	A
Boothe Road	Primary			
South of Hatch Road	Collector	2	2,921	A
North of Whitmore Avenue		2	2,201	A
Faith Home Road				
North of Redwood	Arterial	2	2,890	A

PROJECT IMPACTS

Project Description

The impacts of developing Eastgate Planned Community are discussed in this report section. A copy of the proposed master plan is presented in Figure 3. As shown, the Eastgate Planned Community Master Plan lies in the area bounded on the north by Hatch Road, on the south by Whitmore Avenue, on the west by Boothe Road and on the east by Faith Home Road.

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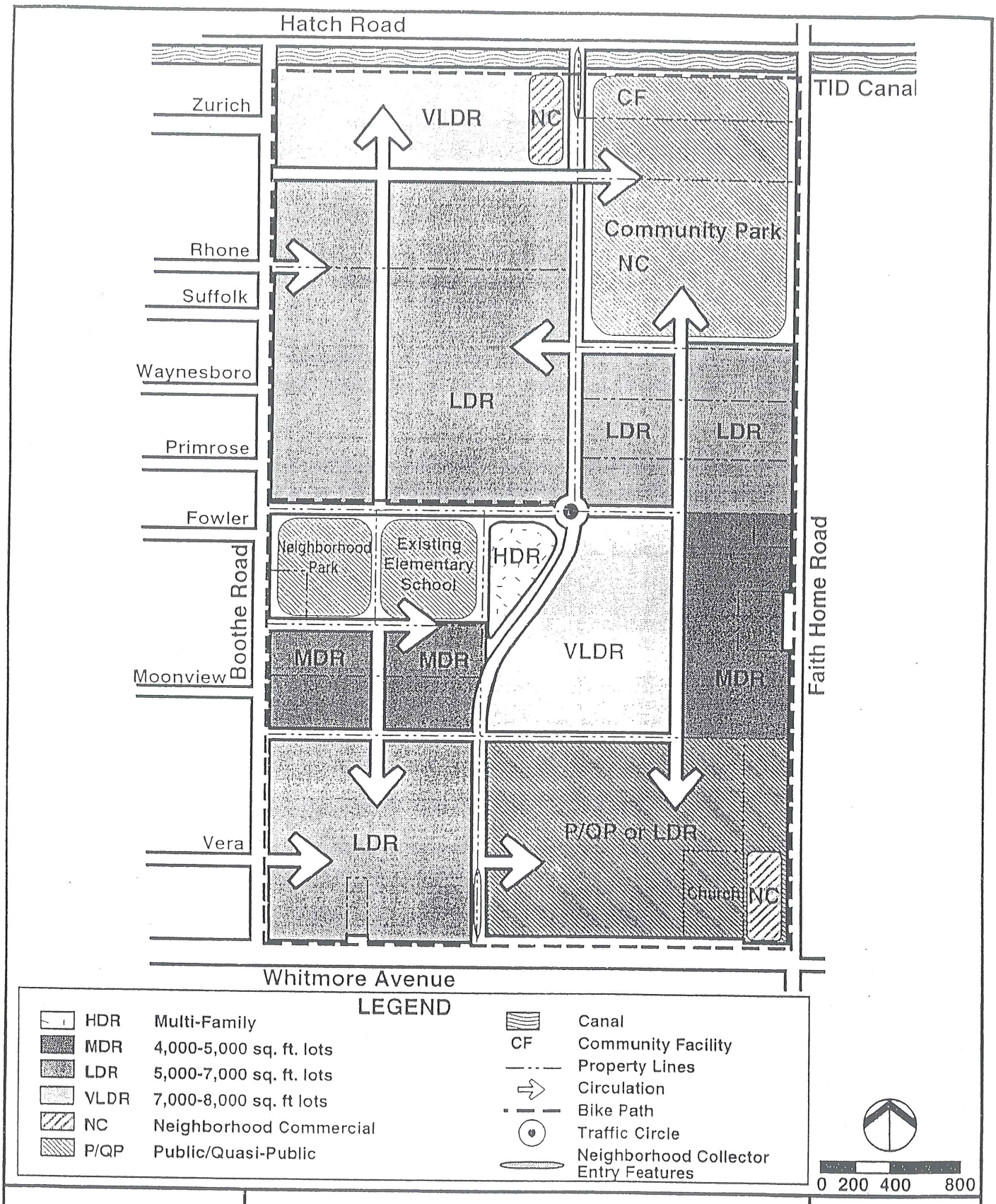

EMC Planning Group Inc.

A Land Use Planning and Design Firm

Eastgate Planned Community Master Plan

Land Use Plan

Figure 3

The project proposal envisions development of a residential community with ancillary commercial uses, schools and parks. In the southeast corner of the site, 41.7 acres carries a dual designation of LDR / High School, as this is one of the sites being considered for a future high school.

Access to Eastgate Planned Community has been designed to reflect long range planning goals with respect for adjacent residential neighborhoods. Primary access into Eastgate will be via a new north-south Primary Collector street. This street is roughly midway between Boothe Road and Faith Home Road and connects the site to both Hatch Road and Whitmore Avenue. Local streets will link the site with Boothe Road to the west, but none of these streets has been positioned so as to promote through traffic into existing neighborhoods.

Faith Home Road will eventually provide important regional access to Eastgate Planned Community. Development of the Faith Home Road Expressway and Tuolumne River crossing will provide another northerly route into Modesto. To maintain expressway standards, no direct access is proposed to Faith Home Road.

Trip Generation

To quantify the amount of vehicular traffic generated by the proposed project, daily and PM Peak Hour trip generation rates presented in the Fifth Edition of the ITE publication Trip Generation were employed (refer to Table 5).

TABLE 5 TRIP GENERATION RATES

LAND USE	QUANTITY	DAILY TRIP RATE	PM PEAK HOUR TRIP RATE		
			% IN	% OUT	RATE
Neighborhood / Community Park (411)	acre	2.23/ acre	50%	50%	.22/acre
High School (530)	student	1.38 / student	29%	71%	0.08 / student
Neighborhood Commercial (820)	ksf	104.8 / ksf	50%	50%	9.6 / ksf
Multiple Family Residential (220)	du's	6.47 / du	68%	32%	0.63 / du
Single Family Residential (210)	du's	9.55 / du	64%	36%	1.01 / du

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Table 6 presents estimated site trip generation under the current development proposal. As indicated, two development scenarios are possible, based on "dual designation" of the High School site. Assuming that the High School is not constructed on the site, Eastgate Planned Community is expected to generate the annexation is expected to generate 23,199 daily trips, with 1,696 generated during the PM peak hour.

TABLE 6
TRIPS GENERATED BY Eastgate Planned Community

LAND USE	QUANTITY	DAILY	PM PEAK HOUR		
			IN	OUT	TOTAL
Single Family Residential	1,751 du's	16,722	700	394	1,094
Multiple Family Residential	112 du's	725	48	23	71
Park	55 acres	112	5	6	11
Neighborhood Commercial	70 ksf				
Total		7,334	336	336	672
<Pass-By-50%>		<3,667>	<168>	<168>	<336>
Net		3,667	168	168	336
TOTAL					
Total		24,893	1,089	759	1,848
<Pass By>		<3,667>	<168>	<168>	<336>
Net		21,226	921	591	1,512
High School	2,000 students	2,760	46	114	160
Single Family Residential	<271 du's>	-2,779	-175	-98	-273
Net Difference		-19	-129	16	-113
TOTAL					
Total		24,874	960	775	1,735
<Pass By>		<3,667>	<168>	<168>	<336>
Net		21,207	792	607	1,399

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If the High School site is developed, this use would replace about 271 single family residences. As indicated in Table 6, the number of daily trips generated by the High School would be similar to the number resulting from single family residential development, and the overall site trip generation forecast would not be substantially different. As the High School would generate less PM peak hour traffic, development of this use would reduce the site's peak hour trip generation forecast to approximately 1,583 PM peak hour trips.

As site development without the high school generates the higher number of trips, this scenario has been employed to address the impacts of the Eastgate Planned Community Master Plan. Development of a high school at this location was evaluated in a previous EIR for that specific project[1]. While a complete evaluation of the scenario with a high school is not included in this evaluation, specific locations where development of the high school may have additional or differing impacts have been noted.

As indicated in Table 6, the proposed Neighborhood Commercial sites are expected to generate 5,640 daily trips. A significant number of the trips generated by retail commercial uses are, however, typically drawn from the stream of traffic passing the site. These "Pass-By" trips represent motorists who stop to shop as part of a trip they would otherwise make between primary origin and destination. The ITE suggests that 50% of the trips generated by shopping centers of this size during the weekday PM peak hour are "Pass-By" trips.

The identification of Pass By trips does not reduce the volume of traffic expected to enter or exit the proposed project, as 100% of the project trips will be assigned to project driveways. Pass By trips do not, however, increase the volume of traffic on the streets providing regional access to the site.

Trip Distribution and Assignment

The distribution of project trips will reflect the distribution of regional employment, shopping and social opportunities in the Ceres / Modesto area. A significant share of the trips generated by ancillary uses, such as the neighborhood commercial and parks, will remain internal to the project or will be made to or from immediately adjacent existing neighborhoods.

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[1] "DEIR for New Ceres High School Site Acquisition and Development Project", Michael Paoli and Associates, May 1995.

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The distribution and assignment of project trips will vary in the future as regional circulation improvements are implemented and other background growth occurs in Ceres and in adjacent communities. The trip distribution assumptions employed in this analysis are indicated in Table 7. The resulting project trip assignment is illustrated in Figure 4.

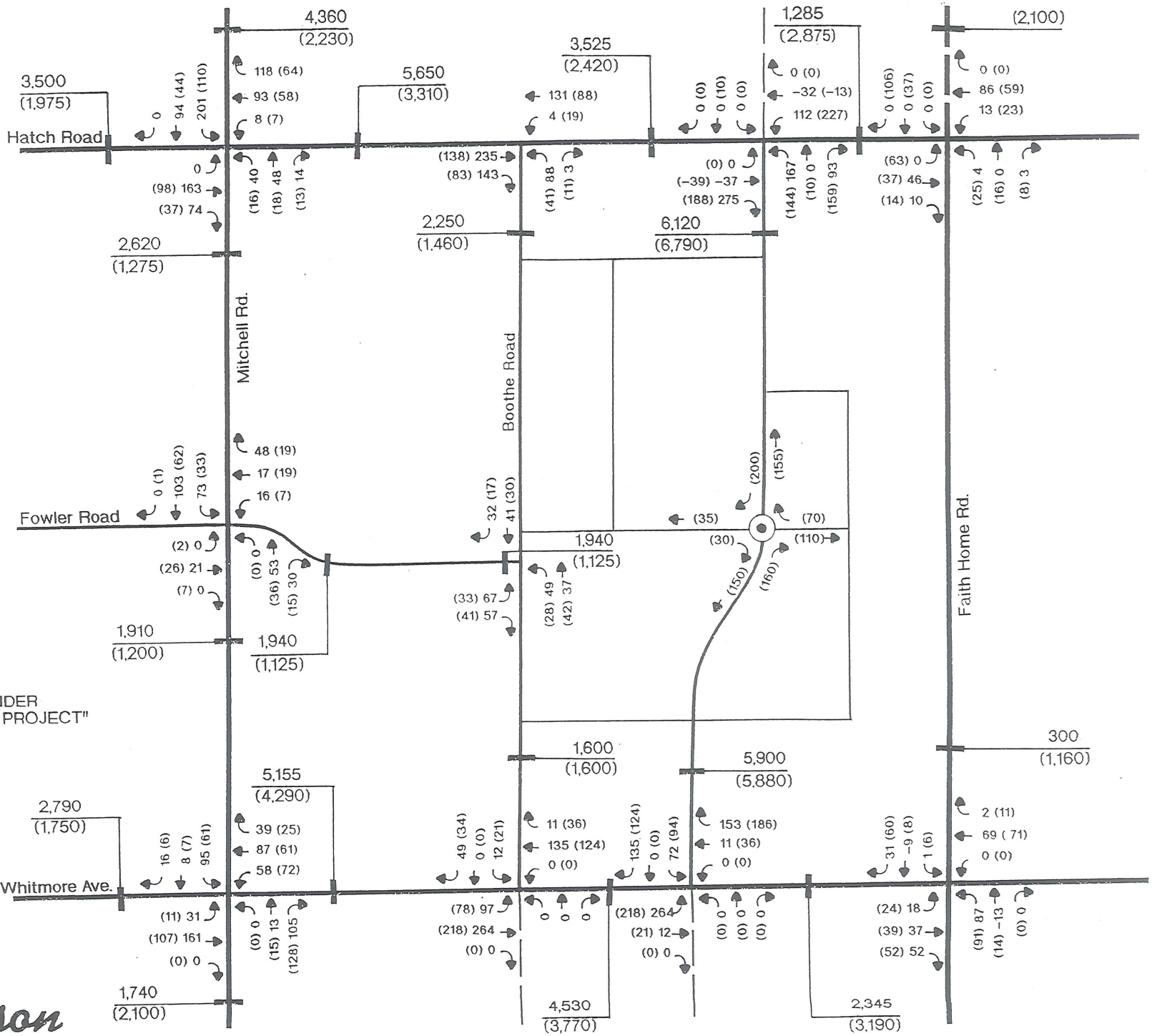
TABLE 7
DIRECTIONAL RESIDENTIAL TRIP DISTRIBUTION

Direction	Percentage of Project's Residential Trips	
	Under Existing Plus Project Conditions	Under General Plan's Year 2015 Conditions
North via Mitchell Road	25%	13%
North via Faith Home Road	0%	12%
East via Hatch Road and Whitmore Avenue	8%	14%
South via Mitchell Road	10%	12%
South via Faith Home Road	4%	9%
West via Hatch Road	20%	12%
West via Whitmore Avenue and Fowler Road	18%	13%

Project Traffic Impacts

Using the trip generation and distribution assumptions described above, project generated trips were superimposed onto existing background traffic volumes, as indicated in Figure 5. Resulting Levels-of-Service were calculated for study intersections and street segments under these conditions. The results of these calculations are shown in Tables 8 and 9.

Intersections. The addition of project trips would increase the volume of traffic at the intersections along Mitchell Road west of the project. As indicated in Table 8, during the PM peak hour, the Level of Service at the Hatch Road and Whitmore Avenue intersections will deteriorate to LOS "D". However, forecast conditions will not regularly exceed the City's LOS "D" standard for arterial and primary collector streets. Thus, the project's impact to these intersections is not significant.



KEY

XX PM PEAK HOUR UNDER "EXISTING PLUS PROJECT" CONDITIONS

(XX) UNDER YEAR 2015

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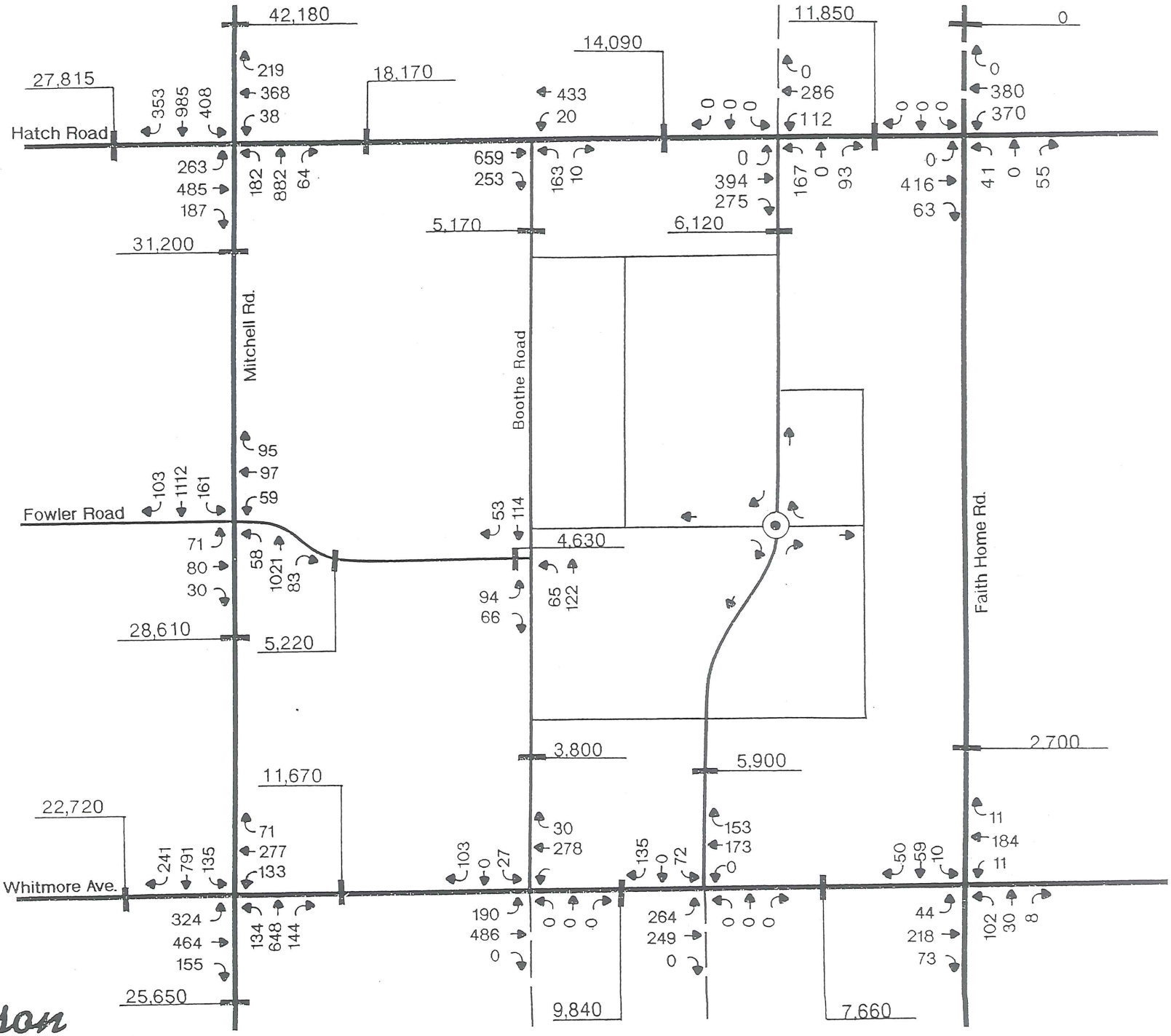
EASTGATE TRAFFIC ONLY



KEY

← XX PM PEAK HOUR

XX DAILY TRAFFIC

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EXISTING PLUS EASTGATE TRAFFIC VOLUMES

figure 5

Development of Eastgate Planned Community will increase the volume of traffic through the Hatch Road / Boothe Road intersection. During the PM peak hour, very long delays will be experienced by motorists waiting to turn left onto Hatch Road, and these delays are characteristic of LOS "F" conditions for these motorists. This impact can be mitigated, however, by installing a traffic signal at this intersection, and with signalization the project's impact to this location would be reduced to less than significant level.

As Eastgate Planned Community is developed, the volume of traffic through the new access intersection onto Hatch Road will increase. As a result, the delays experienced during peak hours by motorists waiting to turn left onto Hatch Road will increase, and a traffic signal will eventually be warranted at this location. With signalization, the projects impact at this intersection will not be significant.

The volume of traffic through other unsignalized intersections will also increase. However, the resulting traffic volumes will not meet warrants for signalization and peak hour Levels of Service will not exceed City standards. Development of the project will, however, contribute to the need for left turn lanes on Whitmore Avenue at the Boothe Road and project access intersections. With the addition of these turn lanes, the project's impact at unsignalized intersections is not significant.

Roadway Segments. As shown in Table 9, development of the Eastgate Planned Community Master Plan will result in additional automobile traffic on the collector and arterial streets serving the site. When the project is completed, daily traffic volumes at various locations on adjacent arterial streets will increase by about 4,000 to 5,600 ADT.

While the resulting traffic volume on most streets will remain within the City's LOS "D" standard, this standard will be exceeded at two locations. The development of the project will result in a significant traffic increase on Mitchell Road north of Hatch Road, and the Level of Service on this road will deteriorate from LOS "D" to LOS "E-F". This impact is significant. Traffic conditions on this important regional route are considered in the General Plan, with widening to six lanes and development of the Faith Home Road expressway / Tuolumne River crossing proposed to alleviate this problem. These improvement projects are included in the City's existing fee program.

The other location where roadway volumes will exceed City standard is the two lane segment of Hatch Road between Mitchell Road and Boothe Road. When Eastgate is completed, the Level of Service on this two lane roadway will deteriorate from LOS B" to LOS "F". This impact is significant but can be mitigated by widening Hatch Road to a four lane section in this area. This improvement is consistent with the City General Plan,

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TABLE 8 - EXISTING PLUS PROJECT INTERSECTION LEVELS OF SERVICE

INTERSECTION	CONTROL	EXISTING PM PEAK HOUR		EXISTING PLUS PROJECT	
		V/C or Ave Delay	LOS	V/C or Ave Delay	LOS
1. Mitchell Road / Hatch Road	Signal	0.63	B	0.80	D
2. Mitchell Road / Fowler Road	Signal	0.63	B	0.74	C
3. Mitchell Road / Whitmore Avenue	Signal	0.76	C	0.83	D
4. Boothe Road / Hatch Road	NB Stop				
Westbound left		4.0 sec	A	6.3 sec	B
Northbound right	SIGNAL	13.9 sec	C	324.4 sec	F
Northbound left	WARRANTED	13.9 sec	C	324.4 sec	F
5. Boothe Road / Fowler Road	EB Stop				
Northbound left		2.4 sec	A	2.7 sec	A
Eastbound left		4.3 sec	A	6.1 sec	B
Eastbound right		4.3 sec	A	6.1 sec	B
6. Boothe Road / Whitmore Road	SB Stop				
Eastbound left		2.7 sec	A	3.7 sec	A
Southbound left		4.4 sec	A	9.2 sec	B
Southbound right		4.4 sec	A	9.2 sec	B
7. Faith Home Road / Hatch Road	NB Stop				
Westbound left		3.3 sec	A	3.8 sec	A
Northbound left		7.3 sec	B	10.1 sec	C
Northbound right		7.3 sec	B	10.1 sec	C
8. Faith Home Road / Whitmore Avenue	4 Way Stop	3.0 sec	A	5.6 sec	B
9. Hatch Road / Project Access	NB Stop	n/a	-		
Westbound left				5.4 sec	B
Northbound left	SIGNAL			4.8 sec	A
Northbound right	WARRANTED			36.2 sec	E
10. Whitmore Avenue / Project Access	SB Stop	n/a	-		
Eastbound left				4.1 sec	A
Southbound right				3.7 sec	A
Southbound left				19.4 sec	C

TABLE 9

EXISTING AND EXISTING PLUS PROJECT ROADWAY TRAFFIC VOLUMES

ROAD LOCATION	AVERAGE DAILY TRAFFIC					City Design Threshold
	Existing		Existing Plus Project			
	Volume	LOS	Eastgate Only	Exist + Eastgate	LOS	
Mitchell Road						
North of Hatch Road	37,823	D	4,360	42,180	E-F	n/a
North of Fowler Road	28,576	B	2,620	31,200	C	
North of Whitmore Avenue	26,696	B	1,910	28,610	C	
North of Roeding Avenue	23,912	B	1,740	25,650	B	
Hatch Road						n/a
West of Mitchell Road	23,815	A	3,500	27,815	B	
East of Mitchell Road	12,516	B	5,650	18,170	F	
East of Boothe Road	10,566	A	3,525	14,090	C	
East of Project Access	10,566	A	1,285	11,850	B	
Whitmore Avenue						n/a
West of Mitchell Road	19,928	A	2,790	22,720	B	
East of Moore Road	6,512	A	5,155	11,670	C	
East of Boothe Road	5,311	A	4,530	9,840	B	
East of Project Access	5,311	A	2,345	7,660	A	
Fowler Road						3,000 - 10,000
East of Mitchell Road	3,276	A	1,940	5,220	A	3,000 - 10,000
West of Boothe Road	2,686	A	1,940	4,630	A	
Boothe Road						3,000 - 10,000
South of Hatch Road	2,921	A	2,250	5,170	A	3,000 - 10,000
North of Whitmore Avenue	2,201	A	1,600	3,800	A	
Faith Home Road						n/a
North of Whitmore Avenue	2,400 (e)	A	300	2,700	A	
North of Redwood	2,890	A	1,100	3,990	A	
Project Access						3,000 - 10,000
South of Hatch Road	0	-	6,120	6,120	A	3,000 - 10,000
North of Whitmore Avenue	0	-	5,900	5,900	A	

which suggests that Hatch Road will eventually need to be widened to six lanes from Mitchell Road to the Faith Home Road expressway. Widening of Hatch Road is also included in the City's fee program.

While development of Eastgate Planned Community will not result in roadway segment Levels of Service in excess of City standard on adjacent Primary Collector Streets, resulting traffic volume increases will be noticeable to existing residents living along Boothe Road and Fowler Road. While the resulting traffic volume increase would be judged to be insignificant based on City standards, adjacent residents may perceive increased traffic noise and driveway access delays. Development of the project may also result in a minor increase in traffic on the local streets providing access to the existing residential neighborhoods west of Boothe Road. However, as these local streets do not provide a direct connection to Hatch Road, Mitchell Road or Whitmore Avenue, any increase in traffic would likely result from local trips made between residences or made by existing residents to the parks or neighborhood commercial uses included in the Eastgate Planned Community Master Plan.

The operation of the existing Samuel Vaughn Elementary School already results in short periods of peak traffic volume during the periods when children are traveling to and from the school. Development of Eastgate Planned Community will result in additional traffic on Boothe Road in the area of the school during peak periods and on Helen Perry Road adjacent to the school site. Development of Eastgate will also result in additional pedestrian, bicycle and automobile traffic into the school itself.

Internal Circulation / Roadway Standards

The circulation system proposed within the Eastgate Planned Community Master Plan area is composed of collector and local streets. The proposed street sections all provide two travel lanes, with parking and direct residential frontage prohibited on major routes.

The proposed street sections will be adequate throughout most of Eastgate Planned Community, as forecast traffic volumes fall well below the City's standard of 4,000 VPD on secondary collector streets and 10,000 ADT on Primary Collector streets.

Limited widening will be required, however, to accommodate additional lanes on the approaches to the Hatch Road and Whitmore Avenue intersections and to improve circulation in the vicinity of the proposed Neighborhood commercial site. As will be discussed in the cumulative analysis, at a minimum, separate left turn and right turn lanes

should be developed on the project's approaches to these arterial streets. At the Hatch Road intersection, two southbound lanes should be created to allow efficient access to the commercial center.

Future Considerations. Consideration should also be given to reserving the right of way to expand these major intersections in the future to accommodate traffic volumes in excess of our projections. For example, at the Hatch Road intersection, it would be prudent to reserve right of way for dual northbound left turn lanes and for westbound left turn lanes into the project. Such a reservation would be appropriate in view of the large traffic volume on Hatch Road. At the Whitmore Avenue intersection, the development of the High School site may affect planning for ultimate improvements. For example, if the High School is developed with access to the new north-south collector street, it would be prudent to reserve right of way for the improvements needed to handle "special event" traffic.

Boothe Road Improvements. Development of the project will result in completing the east half of Boothe Road to Primary Collector standards.

Ramifications of High School

Development of a High School within the Master Plan area will change forecast traffic conditions. On a daily basis, the overall traffic volume generated by the Master Plan would be relatively unchanged. During the PM peak hour, the volume of traffic generated by the Master Plan would be less if the High School was constructed. Thus, during these time periods, the impacts of a scenario assuming High School development would be slightly less than those suggested in this report.

Development of the High School would result in traffic impacts during other time periods. During the AM peak hour, the High School is forecast to generate 820 trips, with much of this traffic concentrated in the peak twenty minutes immediately prior to school opening. Conversely, development of the 271 residences anticipated on the High School site would only generate 200 AM peak hour trips.

As noted earlier, the traffic impacts of the High School were presented in a 1995 DEIR. The extent to which any of these impacts increase or alter the project impacts described previously is discussed in the text which follows.

Access. The High School DEIR traffic study suggested that the High School be developed with primary access directly to Whitmore Avenue. Satisfactory traffic operations were forecast for this access intersection. Since the cumulative traffic volume basis assumed for Whitmore Avenue in that report (24,000 ADT) does not differ substantially from that presented herein (27,500 ADT), this conclusion remains valid.

Stadium Access. The High School DEIR indicated that the new north-south neighborhood collector street west of the High School site was not needed to support the day to day operation of the High School. However, the report acknowledged that the 3,500 seat football stadium would generate considerable traffic but indicated that the significance of short term traffic impacts of the stadium could not be determined conclusively until a final high school site plan showing the exact location and capacity of these facilities is available. The report suggested that this street should be considered before the stadium is added to the High School.

Review of the traffic forecast for traffic exiting a single stadium parking lot (i.e., 1,400 vehicles) suggests that if only one access is available, this location will operate "at capacity" until the parking area is emptied. Assuming maximum approach geometry (i.e., two southbound left turn lanes and a southbound right turn lane), it would take about 20 minutes to clear the site under future cumulative conditions. While this may be acceptable, the queue length in the exit may become excessive. We concur that additional analysis of stadium traffic will be required before it is possible to say with certainty that a connection to the adjacent collector street is not required.

Impacts to adjacent neighborhoods. Since many Eastgate Planned Community residences will have school aged children, some High School traffic will use collector and local streets within the project whether a direct connection is provided or not. If a connection is made, some "cut-through" traffic may occur as students drive through the site to Hatch Road. Based on the background traffic volume expected on the internal collector street system (i.e., 6,000 ADT), we would not expect that the High School's regular contribution would have a significant impact on Level of Service. It is likely, however, that student drivers leaving the school will exhibit excessive speed and noise. Again, further analysis will be needed once a site plan has been created for the High School.

CUMULATIVE YEAR 2015 / GENERAL PLAN BUILD-OUT CONDITIONS

The relative impacts of the Eastgate Planned Community Master Plan have also been assessed within the context of future traffic conditions occurring in the year 2015. The basis for this analysis is future daily traffic volume forecasts for major roads included in the Ceres General Plan DEIR, plus supporting intersection data generated through the traffic modeling process.

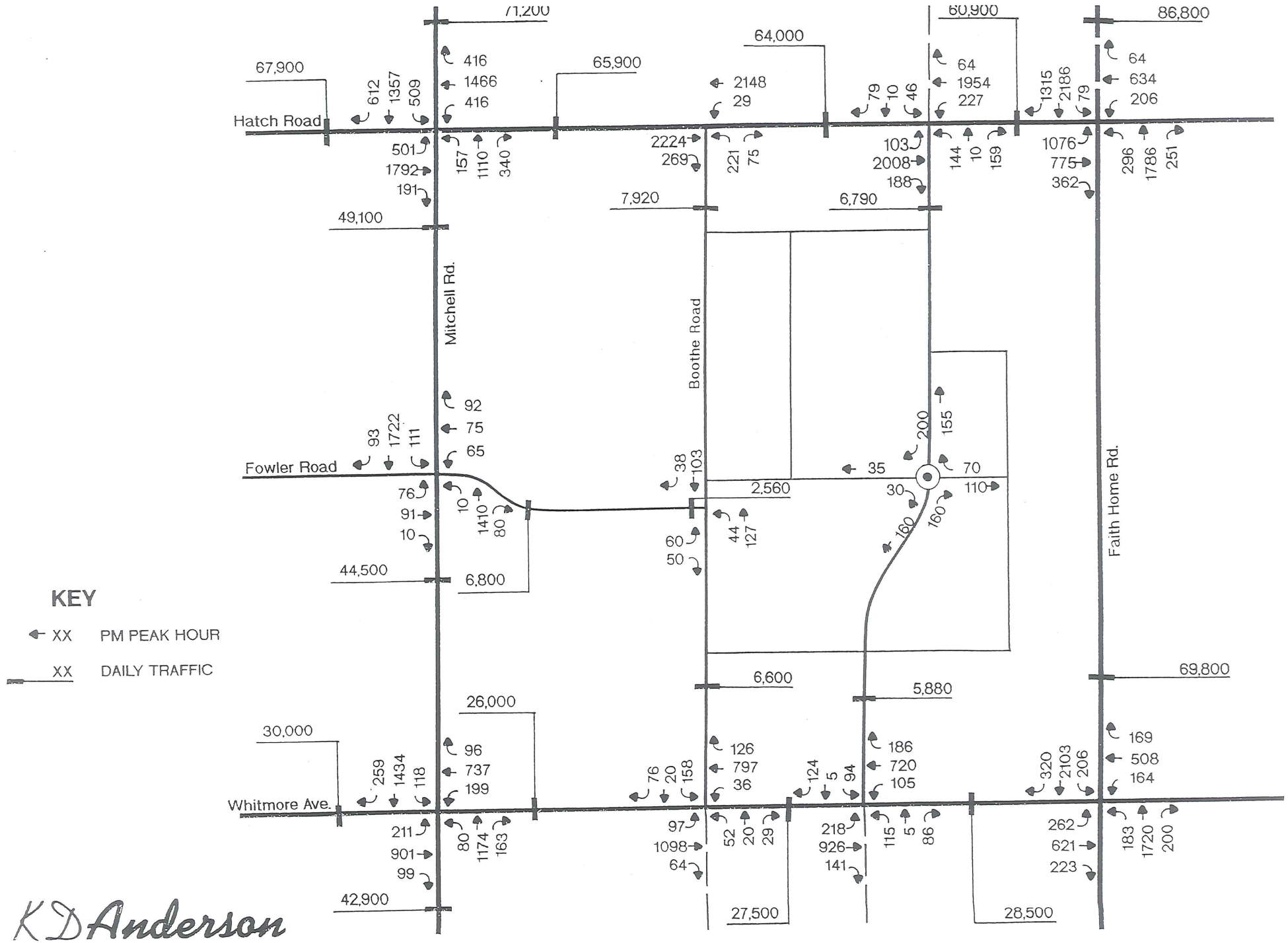
Methodology

Future study area traffic conditions were evaluated on both a PM Peak Hour and a Daily Basis. City of Ceres year 2015 traffic model forecasts were used as the basis for developing future traffic volume forecasts, as described in the text which follows.

Daily Traffic Volume Forecasts. Year 2015 traffic volumes are included in the General Plan DEIR. Directional daily intersection volumes were obtained from the consultant responsible for the GPU Circulation Element. As Eastgate Planned Community is consistent with the General Plan, development of the project is included in these traffic volume forecasts.

Peak Hour Intersection Traffic. To develop PM peak hour traffic it was necessary to factor forecast daily volumes to account for peak hour percentage and directionality. Traffic count data summarized in the GPU Background Report indicates that the PM peak hour currently contains about 7.5% of the total daily traffic. Review of current PM peak hour traffic counts also indicated that a 55%/45% directional split exists on the adjacent arterial street system in the vicinity of the project. These percentages were applied to the forecast daily turning movements to produce background peak hour traffic volumes.

Once background peak hour base conditions were established, manual adjustments were made as needed to account for the location of the new Eastgate Planned Community access. Resulting peak hour and daily traffic volumes are presented in Figure 6.



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CUMULATIVE (YEAR 2015) TRAFFIC VOLUMES

figure 6

Background Circulation System Improvements

The General Plan DEIR suggests several roadway improvements which will be required over the life of the General Plan. In the vicinity of Eastgate Planned Community, these improvements include:

- Hatch Road between SR 99 and Faith Home Road: The General Plan includes proposals to widen Hatch Road to six lanes, the maximum width within the available right-of-way.

- Whitmore Avenue between Blaker Road and Faith Home Road: West of Mitchell Road, this east-west arterial is built to its ultimate width within the available right-of-way. The road is to be widened to four lanes east of Mitchell Road to Faith Home Road.

- Mitchell Road between the Tuolumne River and Grayson Road: The General Plan includes proposals to widen Mitchell Road to six lanes plus median through its length. The proposed widening is the maximum that is practical given constraints on the right-of-way.

- Faith Home Expressway; Create / widen to six lane expressway from SR 99 to a connection with Claus Road in Modesto, including a new crossing of the Tuolumne River. The Faith Home Road Expressway north of the Tuolumne River is within the City of Modesto Sphere of Influence and is therefore the responsibility of the City of Modesto.

Forecast Traffic Volumes on Study Area Roadways

Future (Year 2015) daily traffic volume forecasts are summarized in Table 10. As indicated, even with implementation of the roadway improvements described above, several area roadway segments are not expected to meet the City's LOS "D" standard. This conclusion was noted previously in the GPU DEIR.

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TABLE 10
YEAR 2015 CONDITIONS ON ROADWAY SEGMENTS

ROAD LOCATION	CLASS	LANES	DAILY TRAFFIC	
			Year 2015 Volume	LOS or Design Threshold
Mitchell Road				
North of Hatch Road	Expressway	6	71,200	D
North of Fowler Road	Arterial	6	49,100	F
North of Whitmore Avenue	Arterial	6	44,500	F
North of Roeding Avenue	Arterial	6	42,900	E
Hatch Road				
West of Mitchell Road	Arterial	4	67,900	F
East of Mitchell Road		4	65,900	E
East of Boothe Road		4	64,000	E
East of Eastgate Access		4	60,900	E
Whitmore Avenue				
West of Mitchell Road	Arterial	4	30,000	F
East of Moore Road		4	26,000	D
East of Boothe Road		4	27,500	D
East of Eastgate Access		4	28,500	E
Fowler Road				
East of Mitchell Road	Primary	2	6,800	A
West of Boothe Road	Collector	2	2,560	A
Boothe Road				
South of Hatch Road	Primary	2	7,920	A
North of Whitmore Avenue	Collector	2	6,600	A
Faith Home Road				
North of Hatch Road	Expressway	6	86,800	E
North of Whitmore Avenue	Expressway	6	69,800	E

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Future Intersection Levels of Service

To evaluate future peak hour traffic Conditions, intersection Levels of Service were calculated, as presented in Table 11. In each case, the maximum at grade intersection improvements theoretically possible have been assumed (i.e., dual left turn lanes and free right turn lanes) in addition to the through lane widenings described above. Assumed geometric improvements are presented in Figure 7

As indicated in Table 11, peak hour Levels of Service are forecast to be poor at major intersections, while satisfactory conditions can be provided at minor street intersections. On Hatch Road, the Mitchell Road and Faith Home Expressway intersections are forecast to operate at LOS "F", even if maximum conventional at-grade improvements are installed. This is consistent with the conclusions developed in the analysis of roadway segments, which suggested that these streets would be operating "at capacity".

To meet the City's LOS "D" standard at these locations, it would be necessary to install "unconventional" at-grade improvements (i.e., eight through lanes and/or triple left turns) or to install a grade separated interchange. At Hatch Road / Mitchell Road, this level of improvement is not likely to be feasible, due to right of way limitations. At the Hatch Road / Faith Home Expressway intersection, right-of-way may be available for "unconventional" improvements.

Unsatisfactory conditions are also forecast for the Whitmore Avenue / Mitchell Avenue intersection. Additional improvements beyond those suggested in the General Plan are probably not feasible due to right-of-way limitations.

All other intersections can be made to operate with a Level of Service meeting City standards. While the volume of traffic on Hatch Road itself will be large, because side street volumes will be relatively minor, the Boothe Road and Eastgate Access intersections will operate satisfactorily. The intersections on Whitmore Avenue will also operate with satisfactory Levels of Service.

The ultimate design of the project's access onto Hatch Road and Whitmore Avenue should be predicated on providing a good Level of Service in the future. As indicated in the illustration of assumed geometrics, right turn lanes should be developed on streets approaching the site. The proposed Neighborhood Collector street section assumes two lanes, and this configuration is adequate for the forecast traffic demand.

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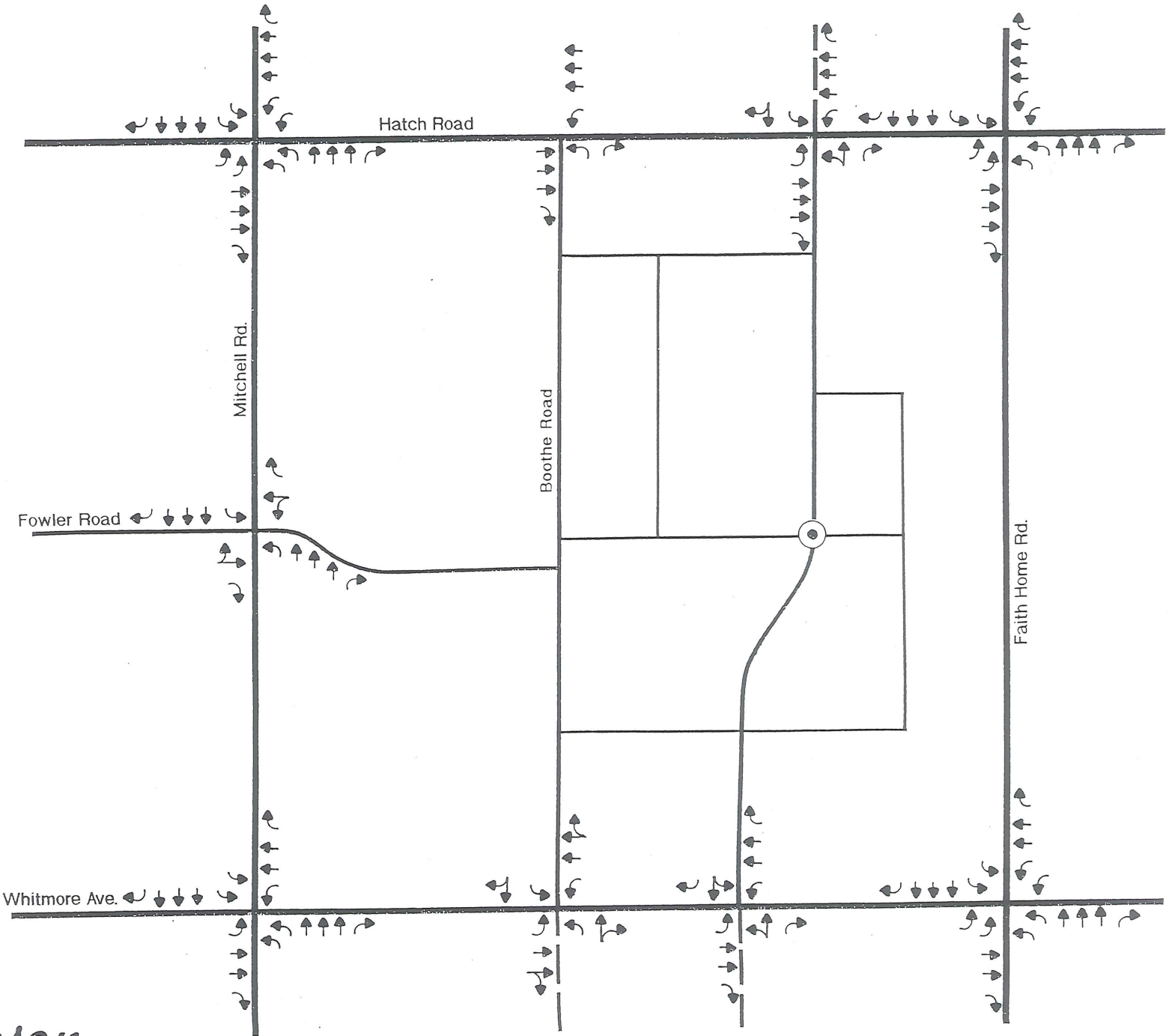

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YEAR 2015 ASSUMED GEOMETRICS

figure 7

Because the volume of traffic on Hatch Road is so large, provisions should be made to provide right of way for additional improvements. In the event that study assumptions regarding peak hour percentage or directionality are incorrect, provisions for dual left turn lanes entering and exiting the site may eventually prove to be beneficial.

TABLE 11
YEAR 2015 INTERSECTION LEVELS OF SERVICE

INTERSECTION	CONTROL	EXISTING PM PEAK	
		Volume / Capacity or Average Delay	LOS
1. Mitchell Road / Hatch Road	Signal	1.04	F
2. Mitchell Road / Fowler Road	Signal	0.69	B
3. Mitchell Road / Whitmore Avenue	Signal	0.91	E
4. Boothe Road / Hatch Road	Signal	0.79	C
5. Boothe Road / Fowler Road	EB Stop		
Northbound left		2.4 sec	A
Eastbound right		4.3 sec	A
Eastbound left		4.3 sec	A
6. Boothe Road / Whitmore Avenue	Signal	0.67	B
7. Hatch Road / Eastgate Access	Signal	0.77	C
8. Faith Home Road / Hatch Road	Signal	1.18	F
9. Whitmore Avenue / Eastgate Access	Signal	0.58	A
8. Faith Home Road / Whitmore Avenue	Signal	0.86	D

Alternative Access to Faith Home Road

The proposed site plan does not propose direct access to Faith Home Road. This planning decision is generally consistent with the direction contained in the General Plan, which suggests policies restricting access to Faith Home Road. While these policies do indicate

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that access to the expressway should be limited, the General Plan does allow for right turns only access at collector street intersections.

The ramifications of prohibiting Faith Home Road access, as well as the impact of creating access to Faith Home Road have been evaluated. As poor traffic conditions have been forecast at the Hatch Road / Faith Home Road intersection, the first issue to be considered is whether additional access would significantly improve traffic operations at this critical intersection.

Review of forecasted traffic volumes indicates that the diversion of traffic to a secondary Faith Home Road access would not improve Level of Service at the Hatch Road / Faith Home Road intersection. During the PM peak hour about 145 inbound project trips are expected to cross the Tuolumne River via Faith Home Road. Most of this traffic will turn onto Hatch Road, and as an exclusive right turn lane is expected, this traffic flow does not affect intersection operations. If this traffic were to continue through the intersection and increase southbound through traffic, the operation of the intersection would be negatively affected, and LOS would deteriorate slightly.

The extent to which development of right turn only access to Faith Home Road would affect the overall capacity and Level of Service on the Faith Home Road expressway has also been considered. The General Plan Background Report indicates that this segment will operate at LOS "E" even if an expressway standard is implemented. Thus, while allowing access may not substantially reduce capacity, any degradation could have an impact at these traffic levels.

MITIGATIONS

The text which follows describes mitigation measures which would need to be considered in response to the traffic impacts described earlier.

Existing Plus Eastgate Planned Community Conditions

For the most part, the street system immediately adjacent to the project operates satisfactorily under existing conditions. As Eastgate Community is developed, however, it will be necessary to implement specific capacity / safety improvements, whether other area development proceeds or not. These improvements and associated impacts include:

Impact 1. Site development will increase the volume of traffic on Hatch Road. When Eastgate Planned Community is completed, traffic conditions on this segment of Hatch Road will exceed the City's LOS "D" standard.

Mitigation: **Improve Hatch Road to a four lane section from Mitchell Road to Boothe Road.** Assuming that Eastgate Planned Community develops uniformly (multiple access), LOS "D" could be exceeded when approximately 70% of the Master Plan is occupied. This percentage would be lower if site development proceeds with exclusive access to Hatch Road. This improvement is included in the City of Ceres Capital Improvement Mitigation Fee Program, and Eastgate Planned Community will contribute its fair share towards this improvement by paying fees.

Impact 2. Development in the Eastgate Planned Community Master Plan would eventually result in traffic volumes which meet warrants for signalization at this location.

Mitigation: **Signalize and Improve the Hatch Road / Boothe Road intersection.** Traffic signals would appear to be warranted when about 70% of Eastgate Planned Community is developed. A westbound left turn lane should accompany signalization. This improvement is included in the fee program, and Eastgate Planned Community will pay its fair share towards the cost of this improvement through these fees.

Fronting developers are responsible for curb, gutter, sidewalk, street lights and 19 feet of pavement along adjoining roadways. Thus, a portion of the roadway improvements needed to implement signalization will be the project's responsibility on Hatch Road, while other work may be credited against city fees.

Impact 3. Development of Eastgate Planned Community will eventually result in traffic volumes which meet traffic signal warrants at the project's access onto Hatch Road.

Mitigation: **Signalize and Improve the Project Access onto Hatch Road.** At a minimum, a westbound left turn should accompany signalization. Assuming that site development occurs with multiple access, approximately 90% of the site could be occupied before traffic signal warrants are met. This traffic signal is not currently in the fee program, although precedent exists for adding

KD7

traffic signals to the fee program as new public street intersections are created. A portion of the required roadway widening will be the responsibility of the fronting developer, while the balance may be credited against City fees.

Impact 4. Eastgate Planned Community development will increase traffic through the Whitmore Avenue / Boothe Road intersection, creating potential conflicts due to the lack of a eastbound left turn lane.

Mitigation: Whitmore Avenue should be widened to accommodate an eastbound left turn lane.

Impact 5. Development of Eastgate Planned Community will increase traffic on Boothe Road and Fowler Road and may result in minor traffic volume increases on other local streets to the east.

Mitigation. Develop local street system as proposed and link Eastgate Planned Community occupancy to development of multiple access locations. The master plan includes off-set intersections to limit access from Eastgate Planned Community to adjacent residential neighborhoods, and the site should be developed as proposed. If Eastgate Planned Community is developed with incremental access (i.e, without developing all access points concurrently), traffic volumes on Boothe Road and Fowler Road should be monitored, and additional access to adjacent arterial streets provided when needed to reduce traffic volumes to City standard.

Impact 6. Development of Eastgate Planned Community will increase the volume of traffic on streets adjacent to Samuel Vaughn Elementary School. Completion of the area circulation system will require elimination of diagonal parking on Helen Perry Road. Development of Eastgate Planned Community will increase the number of children walking and riding bicycles to school on area streets.

Mitigation. As Eastgate Planned Community is developed, planned sidewalks and bicycle facilities should be installed to insure that new neighborhoods are linked with Samuel Vaughn Elementary School. The developer should assist the Ceres Unified School District in creating a "Safe Route to School program which denotes the locations of designated street crossings, crossing controls, etc.

Cumulative Mitigations

Development within Eastgate Planned Community should contribute its fair share to the cost of mitigation measures for regional circulation and/or cumulative impacts.

Impact 7: Eastgate Planned Community will contribute to future traffic volumes in excess of current capacity on major streets such as Hatch Road, Whitmore Avenue, Mitchell Avenue and Faith Home Road. Without improvement, these roads, as well as other major roads in the community will operate at LOS "F" in the year 2015.

Mitigation: **Eastgate Planned Community will contribute its fair share towards the cost of future cumulative mitigation through the City of Ceres existing Capital Improvement Fee Program.** The fee program includes long term improvement projects described in the General Plan, such as widening Hatch Road to six lanes, widening Whitmore Avenue to four lanes and constructing the Faith Home Road expressway.

While completion of improvement projects presented included in the fee program will improve forecast traffic conditions, the General Plan DEIR indicates that several locations will continue to experience Levels of Service in excess of the City's LOS "D" standard. These locations include:

- Hatch Road between SR 99 and Faith Home Road (LOS F)
- Whitmore Avenue between Blaker Road and Faith Home Road (LOS E/F)
- Mitchell Road between SR 99 and Hatch Road (LOS E/F)
- Faith Home Road between Whitmore Avenue and Hatch Road (LOS E)
- SR 99 throughout the city (LOS D/E/F)

Mitigation: **Dedicate Right-of-Way and Complete Frontage Improvements.** Eastgate Planned Community developers will be required to dedicate right of way for future roadways and to construct frontage improvements. These improvements include curb, gutter, sidewalk, street lights and 19' of pavement.

Impact 8. Traffic generated by development of Eastgate Planned Community will contribute to the need for expanded geometrics at the project's access.

Mitigation: Design the project to accommodate proposed intersection geometrics, with right of way reservation to accommodate future expansion at the Hatch Road and Whitmore Avenue access. The following intersection geometry should be accommodated:

Whitmore Avenue / Eastgate Access

Southbound Approach: 2 lanes (left turn and right turn), with provisions for a second left turn lane.
Westbound Approach: 3 lanes (two through lanes and a right turn lane).
Eastbound Approach: 3 lanes (two though lanes and one left turn lane).

Hatch Road / Eastgate Access

Northbound Approach: 2 lanes (left turn lane and right turn lane), with reservation for a second left turn lane.
Westbound Approach: 4 lanes (three through lanes and a left turn lane), with reservation for a second left turn lane).
Eastbound Approach: 4 lanes(three through lanes and a right turn lane).

Impact 9 Development of Eastgate Planned Community will contribute traffic to future traffic volumes through adjacent major intersections which will operate at Levels of Service in excess of City standard, even if maximum conventional at grade intersection improvements are installed.

These locations include the Hatch Road / Mitchell Avenue, Hatch Road / Faith Home Road and Whitmore Avenue / Mitchell Avenue intersection. While "unconventional" or grade separated improvements do not appear feasible along Mitchell Road, an urban interchange could be constructed at the Faith Home Road / Hatch Road intersection.

Mitigation: **The Eastgate Planned Community Master Plan should include a right-of-way reservation for a future urban interchange at the Hatch Road / Faith Home Road intersection.** The subject right of way would come from property indicated as a future community park.

APPENDICES

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Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-2083
Ph: (904) 392-0378

Streets: (N-S) BOOTH ROAD (E-W) HATCH ROAD
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... KDA
Date of Analysis..... 8/26/96
Other Information.....EXISTING PM PEAK HOUR
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 <	0	0 >	1	0	0 >	0 <	0	0	0	0
Stop/Yield			N			N						
Volumes		424	110	16	302		75		7			
PHF		.95	.95	.95	.95		.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	504	
Potential Capacity: (pcph)	769	
Movement Capacity: (pcph)	769	
Prob. of Queue-Free State:	0.99	
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	562	
Potential Capacity: (pcph)	925	
Movement Capacity: (pcph)	925	
Prob. of Queue-Free State:	0.98	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.97	
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	839	
Potential Capacity: (pcph)	346	
Major LT, Minor TH Impedance Factor:	0.97	
Adjusted Impedance Factor:	0.97	
Capacity Adjustment Factor due to Impeding Movements	0.97	
Movement Capacity: (pcph)	337	

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	87	337 >					
				354	13.9	1.2	C	13.9
NB	R	8	769 >					
WB	L	19	925		4.0	0.0	A	0.2

Intersection Delay = 1.3 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-2083
Ph: (904) 392-0378

Streets: (N-S) FIATH HOME ROAD (E-W) HATCH ROAD
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... KDA
Date of Analysis..... 8/26/96
Other Information.....EXISTING PM PEAK HOUR
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 <	0	0 >	1	0	0 >	0	< 0	0	0	0
Stop/Yield			N			N						
Volumes		320	53	24	294		37		52			
PHF		.95	.95	.95	.95		.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	365	
Potential Capacity: (pcph)	904	
Movement Capacity: (pcph)	904	
Prob. of Queue-Free State:	0.93	
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)	393	
Potential Capacity: (pcph)	1114	
Movement Capacity: (pcph)	1114	
Prob. of Queue-Free State:	0.97	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.97	
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)	699	
Potential Capacity: (pcph)	417	
Major LT, Minor TH Impedance Factor:	0.97	
Adjusted Impedance Factor:	0.97	
Capacity Adjustment Factor due to Impeding Movements	0.97	
Movement Capacity: (pcph)	404	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	43	404 >					
			598	7.3	0.7	B	7.3
NB R	61	904 >					
WB L	28	1114		3.3	0.0	A	0.3

Intersection Delay = 0.9 sec/veh

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Gainesville, FL 32611-2083
Ph: (904) 392-0378

Streets: (N-S) BOOTH ROAD (E-W) FOWLER
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... KDA
Date of Analysis..... 8/26/96
Other Information.....EXISTING PM PEAK HOUR
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	16	85			73	21	27		9			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		88
Potential Capacity: (pcph)		1250
Movement Capacity: (pcph)		1250
Prob. of Queue-Free State:		0.99

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)		99
Potential Capacity: (pcph)		1538
Movement Capacity: (pcph)		1538
Prob. of Queue-Free State:		0.99
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		0.99

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)		194
Potential Capacity: (pcph)		817
Major LT, Minor TH Impedance Factor:		0.99
Adjusted Impedance Factor:		0.99
Capacity Adjustment Factor due to Impeding Movements		0.99
Movement Capacity: (pcph)		806

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	31	806 >					
			882	4.3	0.0	A	4.3
EB R	10	1250 >					
NB L	19	1538		2.4	0.0	A	0.4

Intersection Delay = 0.8 sec/veh

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Gainesville, FL 32611-2083
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Streets: (N-S) BOOTH ROAD (E-W) WHITMORE AVENUE
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... KDA
Date of Analysis..... 8/26/96
Other Information.....EXISTING PM PEAK HOUR
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	0	0	0	> 0	< 0
Stop/Yield			N			N						
Volumes	93	222			143	19				15		54
PHF	.95	.95			.95	.95				.95		.95
Grade		0			0						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10									1.10		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		161
Potential Capacity: (pcph)		1148
Movement Capacity: (pcph)		1148
Prob. of Queue-Free State:		0.95

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		171
Potential Capacity: (pcph)		1421
Movement Capacity: (pcph)		1421
Prob. of Queue-Free State:		0.92
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		0.91

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		493
Potential Capacity: (pcph)		549
Major LT, Minor TH Impedance Factor:		0.91
Adjusted Impedance Factor:		0.91
Capacity Adjustment Factor due to Impeding Movements		0.91
Movement Capacity: (pcph)		501

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB	L	18	501 >					
				892	4.4	0.2	A	4.4
SB	R	63	1148 >					
EB	L	108	1421		2.7	0.2	A	0.8

Intersection Delay = 1.0 sec/veh

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Streets: (N-S) FAITH HOME ROAD (E-W) WHITMORE AVENUE
Analyst..... KDA
Date of Analysis..... 8/26/96
Other Information.....EXISTING PM PEAK HOUR
All-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	11	115	9	26	181	21	9	68	19	15	43	8
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95

Volume Summary and Capacity Analysis WorkSheet

	EB	WB	NB	SB
LT Flow Rate	12	27	9	16
RT Flow Rate	9	22	20	8
Approach Flow Rate	142	240	101	69
Proportion LT	0.08	0.11	0.09	0.23
Proportion RT	0.06	0.09	0.20	0.12
Opposing Approach Flow Rate	240	142	69	101
Conflicting Approaches Flow Rate	170	170	382	382
Proportion, Subject Approach Flow Rate	0.26	0.43	0.18	0.13
Proportion, Opposing Approach Flow Rate	0.43	0.26	0.13	0.18
Lanes on Subject Approach	1	1	1	1
Lanes on Opposing Approach	1	1	1	1
LT, Opposing Approach	27	12	16	9
RT, Opposing Approach	22	9	8	20
LT, Conflicting Approaches	25	25	39	39
RT, Conflicting Approaches	28	28	31	31
Proportion LT, Opposing Approach	0.11	0.08	0.23	0.09
Proportion RT, Opposing Approach	0.09	0.06	0.12	0.20
Proportion LT, Conflicting Approaches	0.15	0.15	0.10	0.10
Proportion RT, Conflicting Approaches	0.16	0.16	0.08	0.08
Approach Capacity	651	707	318	360

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
EB	142	651	0.22	2.3	A
WB	240	707	0.34	3.6	A
NB	101	318	0.32	3.3	A
SB	69	360	0.19	2.1	A

Intersection Delay = 3.0
Level of Service (Intersection) = A

Center For Microcomputers In Transportation
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512 Weil Hall
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Ph: (904) 392-0378

Streets: (N-S) BOOTH ROAD (E-W) HATCH ROAD
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... KDA
Date of Analysis..... 9/2/96
Other Information.....EXISTING PLUS PINEHURST PM PEAK HOUR
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 <	0	0 >	1	0	0 >	0 <	0	0	0	0
Stop/Yield			N			N						
Volumes		659	253	20	433		163		10			
PHF		.95	.95	.95	.95		.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	827	
Potential Capacity: (pcph)	528	
Movement Capacity: (pcph)	528	
Prob. of Queue-Free State:	0.98	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	960	
Potential Capacity: (pcph)	598	
Movement Capacity: (pcph)	598	
Prob. of Queue-Free State:	0.96	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.95	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	1304	
Potential Capacity: (pcph)	186	
Major LT, Minor TH Impedance Factor:	0.95	
Adjusted Impedance Factor:	0.95	
Capacity Adjustment Factor due to Impeding Movements	0.95	
Movement Capacity: (pcph)	176	

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB	L	189	176 >					
				183	324.4	20.8	F	324.4
NB	R	12	528 >					
WB	L	23	598		6.3	0.0	B	0.3

Intersection Delay = 36.6 sec/veh

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University of Florida
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Ph: (904) 392-0378

Streets: (N-S) FAITH HOME ROAD (E-W) HATCH ROAD
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... KDA
Date of Analysis..... 9/2/96
Other Information.....EXISTING PLUS PINEHURST PM PEAK HOUR
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 <	0	0 >	1	0	0 >	0 <	0	0	0	0
Stop/Yield			N			N						
Volumes		416	63	37	380		41		55			
PHF		.95	.95	.95	.95		.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	471	
Potential Capacity: (pcph)	799	
Movement Capacity: (pcph)	799	
Prob. of Queue-Free State:	0.92	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	504	
Potential Capacity: (pcph)	986	
Movement Capacity: (pcph)	986	
Prob. of Queue-Free State:	0.96	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.94	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	910	
Potential Capacity: (pcph)	315	
Major LT, Minor TH Impedance Factor:	0.94	
Adjusted Impedance Factor:	0.94	
Capacity Adjustment Factor due to Impeding Movements	0.94	
Movement Capacity: (pcph)	297	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	47	297 >					
			466	10.1	1.1	C	10.1
NB R	64	799 >					
WB L	43	986		3.8	0.0	A	0.3

Intersection Delay = 1.1 sec/veh

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512 Weil Hall
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Streets: (N-S) BOOTH ROAD (E-W) FOWLER ROAD
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... KDA
Date of Analysis..... 9/2/96
Other Information.....EXISTING PLUS PINEHURST PM PEAK HOUR
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	> 0	< 0	0	0	0
Stop/Yield			N			N						
Volumes	65	122			114	53	94		66			
PHF	.95	.95			.95	.95	.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10						1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)		148
Potential Capacity: (pcph)		1165
Movement Capacity: (pcph)		1165
Prob. of Queue-Free State:		0.93
Step 2: LT from Major Street	**SB**	**NB**
Conflicting Flows: (vph)		176
Potential Capacity: (pcph)		1413
Movement Capacity: (pcph)		1413
Prob. of Queue-Free State:		0.95
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		0.94
Step 4: LT from Minor Street	**WB**	**EB**
Conflicting Flows: (vph)		344
Potential Capacity: (pcph)		669
Major LT, Minor TH Impedance Factor:		0.94
Adjusted Impedance Factor:		0.94
Capacity Adjustment Factor due to Impeding Movements		0.94
Movement Capacity: (pcph)		631

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
EB L	109	631 >					
			777	6.1	1.1	B	6.1
EB R	76	1165 >					
NB L	75	1413		2.7	0.0	A	0.9

Intersection Delay = 2.2 sec/veh

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Streets: (N-S) BOOTH ROAD (E-W) WHITMORE AVENUE
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... KDA
Date of Analysis..... 9/2/96
Other Information.....EXISTING PLUS PINEHURST PM PEAK HOUR
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	0	1	< 0	0	0	0	0	> 0	< 0
Stop/Yield			N			N						
Volumes	190	486			278	30					27	103
PHF	.95	.95			.95	.95					.95	.95
Grade		0			0						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10									1.10		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		309
Potential Capacity: (pcph)		966
Movement Capacity: (pcph)		966
Prob. of Queue-Free State:		0.88
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)		325
Potential Capacity: (pcph)		1200
Movement Capacity: (pcph)		1200
Prob. of Queue-Free State:		0.82
TH Saturation Flow Rate: (pcphpl)		1700
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:		0.74
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)		1021
Potential Capacity: (pcph)		271
Major LT, Minor TH Impedance Factor:		0.74
Adjusted Impedance Factor:		0.74
Capacity Adjustment Factor due to Impeding Movements		0.74
Movement Capacity: (pcph)		200

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB	L	31	200 >					
				539	9.2	1.3	B	9.2
SB	R	119	966 >					
EB	L	220	1200		3.7	0.8	A	1.0

Intersection Delay = 1.7 sec/veh

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Streets: (N-S) PROJECT ACCESS (E-W) WHITMORE AVENUE
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... KDA
Date of Analysis..... 9/2/96
Other Information.....EXISTING PLUS PINEHURST PM PEAK HOUR
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	1	0	0	0	1	0	1
Stop/Yield			N			N						
Volumes	264	249			173	153				72		135
PHF	.95	.95			.95	.95				.95		.95
Grade		0			0						0	
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's	1.10									1.10		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		182
Potential Capacity: (pcph)		1120
Movement Capacity: (pcph)		1120
Prob. of Queue-Free State:		0.86

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		343
Potential Capacity: (pcph)		1177
Movement Capacity: (pcph)		1177
Prob. of Queue-Free State:		0.74

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		802
Potential Capacity: (pcph)		363
Major LT, Minor TH Impedance Factor:		0.74
Adjusted Impedance Factor:		0.74
Capacity Adjustment Factor due to Impeding Movements		0.74
Movement Capacity: (pcph)		269

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB	L	84	269		19.4	1.5	C	9.2
SB	R	156	1120		3.7	0.5	A	
EB	L	306	1177		4.1	1.2	A	2.1

Intersection Delay = 2.9 sec/veh

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Gainesville, FL 32611-2083
Ph: (904) 392-0378

Streets: (N-S) FAITH HOME ROAD (E-W) WHITMORE AVENUE
Analyst..... KDA
Date of Analysis..... 9/2/96
Other Information.....EXISTING PLUS PINEHURST PM PEAK HOUR
All-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0	0	> 1	< 0
Volumes	29	152	61	26	250	23	96	55	11	16	34	39
PHF	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95	.95

Volume Summary and Capacity Analysis WorkSheet

	EB	WB	NB	SB
LT Flow Rate	31	27	101	17
RT Flow Rate	64	24	12	41
Approach Flow Rate	255	314	171	94
Proportion LT	0.12	0.09	0.59	0.18
Proportion RT	0.25	0.08	0.07	0.44
Opposing Approach Flow Rate	314	255	94	171
Conflicting Approaches Flow Rate	265	265	569	569
Proportion, Subject Approach Flow Rate	0.31	0.38	0.21	0.11
Proportion, Opposing Approach Flow Rate	0.38	0.31	0.11	0.21
Lanes on Subject Approach	1	1	1	1
Lanes on Opposing Approach	1	1	1	1
LT, Opposing Approach	27	31	17	101
RT, Opposing Approach	24	64	41	12
LT, Conflicting Approaches	118	118	58	58
RT, Conflicting Approaches	53	53	88	88
Proportion LT, Opposing Approach	0.09	0.12	0.18	0.59
Proportion RT, Opposing Approach	0.08	0.25	0.44	0.07
Proportion LT, Conflicting Approaches	0.45	0.45	0.10	0.10
Proportion RT, Conflicting Approaches	0.20	0.20	0.15	0.15
Approach Capacity	585	631	433	209

Intersection Performance Summary

Movement	Approach Flow Rate	Approach Capacity	V/C Ratio	Average Total Delay	LOS
EB	255	585	0.44	5.2	B
WB	314	631	0.50	6.6	B
NB	171	433	0.39	4.5	A
SB	94	209	0.45	5.5	B

Intersection Delay = 5.6
Level of Service (Intersection) = B

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Streets: (N-S) PROJECT ACCESS (E-W) HATCH ROAD
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... KDA
Date of Analysis..... 9/2/96
Other Information.....EXISTING PLUS PINEHURST PM PEAK HOUR
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	1	1	1	0	1	0	1	0	0	0
Stop/Yield			N			N						
Volumes		394	275	112	286		167		93			
PHF		.95	.95	.95	.95		.95		.95			
Grade		0			0			0				
MC's (%)												
SU/RV's (%)												
CV's (%)												
PCE's				1.10			1.10		1.10			

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)	415	
Potential Capacity: (pcph)	853	
Movement Capacity: (pcph)	853	
Prob. of Queue-Free State:	0.87	

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)	704	
Potential Capacity: (pcph)	792	
Movement Capacity: (pcph)	792	
Prob. of Queue-Free State:	0.84	

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)	834	
Potential Capacity: (pcph)	348	
Major LT, Minor TH Impedance Factor:	0.84	
Adjusted Impedance Factor:	0.84	
Capacity Adjustment Factor due to Impeding Movements	0.84	
Movement Capacity: (pcph)	291	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
NB L	194	291		36.2	5.5	E	25.0
NB R	108	853		4.8	0.4	A	
WB L	130	792		5.4	0.6	B	1.5

Intersection Delay = 5.3 sec/veh

Appendix B

Public Services Review

SEWAGE COLLECTION ANALYSIS

GENERAL

The City of Ceres' collection system presently has nine lift stations and one lift station at the treatment plant headworks. The collection system is a gravity sewer system with the trunk lines comprised mostly of vitrified clay pipe and some reinforced concrete pipe.

The City of Ceres' Wastewater Treatment Plant is located near the Morgan Road/Service Road intersection. The plant has a wet weather capacity of 2.5 mgd.

EXISTING FACILITIES

There is an existing 12-inch main in Whitmore Avenue at Boothe Road. The line flows westerly in Whitmore Avenue to a lift station at Mitchell Road. The lift station is a duplex station with alternating pumps. The lift station discharges into a 12-inch main that flows southerly to Don Pedro Avenue. The 12-inch line in Mitchell Road does not currently have any excess capacity for future development.

The City of Ceres' Wastewater Treatment Plant is located near the Morgan Road/Service Road intersection. Wastewater is pumped to the City's wastewater treatment plant. The facility consists of aerated ponds followed by percolation land disposal. The disposal area is approximately 111 acres. The plant has a wet weather capacity of 2.5 mgd. The City is planning to increase the capacity of the plant in the near future.

DESIGN PARAMETERS

Wastewater flow estimates were obtained by assuming a wastewater coefficient of 93 gallons per capita per day to the residential land use designations. The coefficient was estimated from flow monitoring in Ceres' sewer systems.

Future population projections were estimated based on the lot sizes for the residential land uses. The wastewater flow estimates generated from the new development was calculated based on this information and applying the wastewater coefficient to estimate the quantity of wastewater generated by future development.

The proposed trunk lines were divided into pipe segments. Based on the location of the pipe segments within the trunk line, the segments were assigned a tributary area. The average and peak wastewater flows from the tributary area were totaled for each pipe segment. Peak wastewater flows were used in determining pipe size. Peaking factors were determined from sanitary sewer studies and are shown in Table C-1.

TABLE C-1

SANITARY SEWER PEAKING FACTORS

Population	500	1,000	3,000	5,000	10,000	20,000	50,000
Peaking Factors	6.00	4.40	3.20	3.00	2.80	2.40	2.20

The pipe diameter required was calculated using a velocity of 2 feet per second. Based on the pipe diameter required, a pipe size was selected.

PROPOSED FACILITIES

Sewage Collection System

Interim Conditions

A parallel 12-inch main line needs to be constructed in Mitchell Road from the lift station at Whitmore Avenue to Don Pedro Avenue. The capacity of a 12-inch main is approximately 1 million gallons per day. Based on the capacity of this pipeline, an additional 1,200 residential units could be constructed. The lift station discharge would have to be modified to tie into the proposed 12-inch main.

Internal sewer trunklines would have to be constructed to serve the 1,200 units. These lines should be constructed to their ultimate size as listed in the following section, Ultimate Conditions.

Ultimate Conditions

The following internal sewer trunklines need to be constructed to serve the Pinehurst Development and the proposed development easterly of Faith Home Road. These lines are shown on Exhibit **.

1. A 10-inch main needs to be constructed in Boothe Road from the existing 12-inch main at the Whitmore Avenue/Boothe Road intersection to Helen Perry Road.

2. A 15-inch line needs to be constructed in Whitmore Avenue from the existing 12-inch main at the Whitmore Avenue/Boothe Road intersection the North/South collector street.

3. A 10-inch line needs to be constructed in Whitmore Avenue from the North/South collector street to Faith Home Road.

4. A 12-inch line needs to be constructed in the North/South collector street from Whitmore Avenue to the first East/West collector street.

5. A 10-inch line needs to be constructed in the North/South collector street from the first East/West collector street to Helen Perry Road.

In addition, a new external sewer trunkline would have to be constructed as shown in Figure 5-2 of the *City of Ceres Draft General Plan, Draft Environmental Impact Report.*

Sewage Treatment Facilities

The City is planning to construct improvements to the existing plant to increase the plant capacity. After the plant expansion is complete, the plant would have adequate capacity to handle the Pinehurst Development. If there is development in the Pinehurst area prior to the treatment plant expansion, there would be some work required on the existing disposal ponds to increase their capacity to handle the development.

CITY OF CERES

GENERAL PLAN

NORTH

FIGURE 5-2

CONCEPTUAL SANITARY SEWER LAYOUT

EXISTING SEWER MAIN (10" AND LARGER)

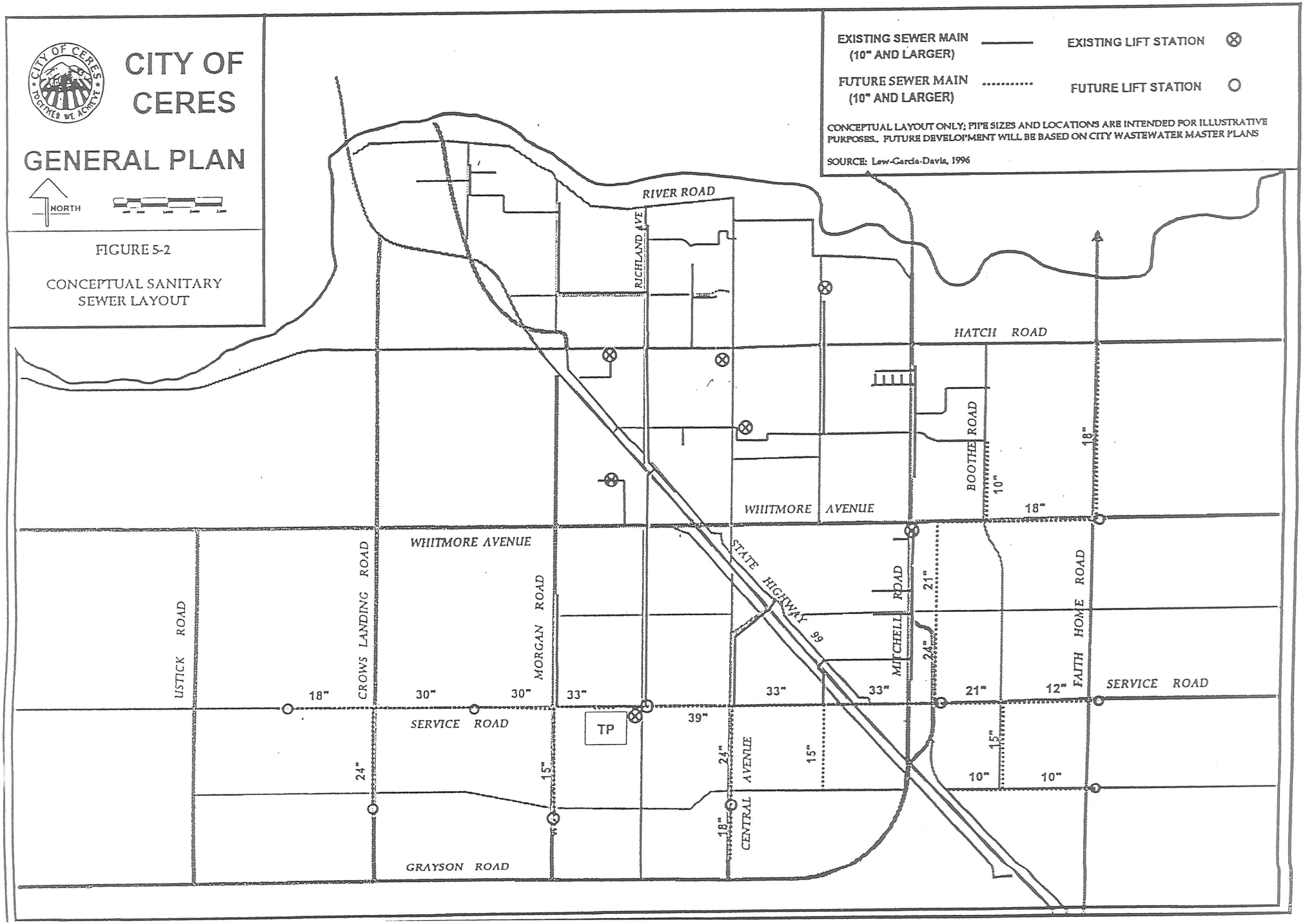
EXISTING LIFT STATION

FUTURE SEWER MAIN (10" AND LARGER)

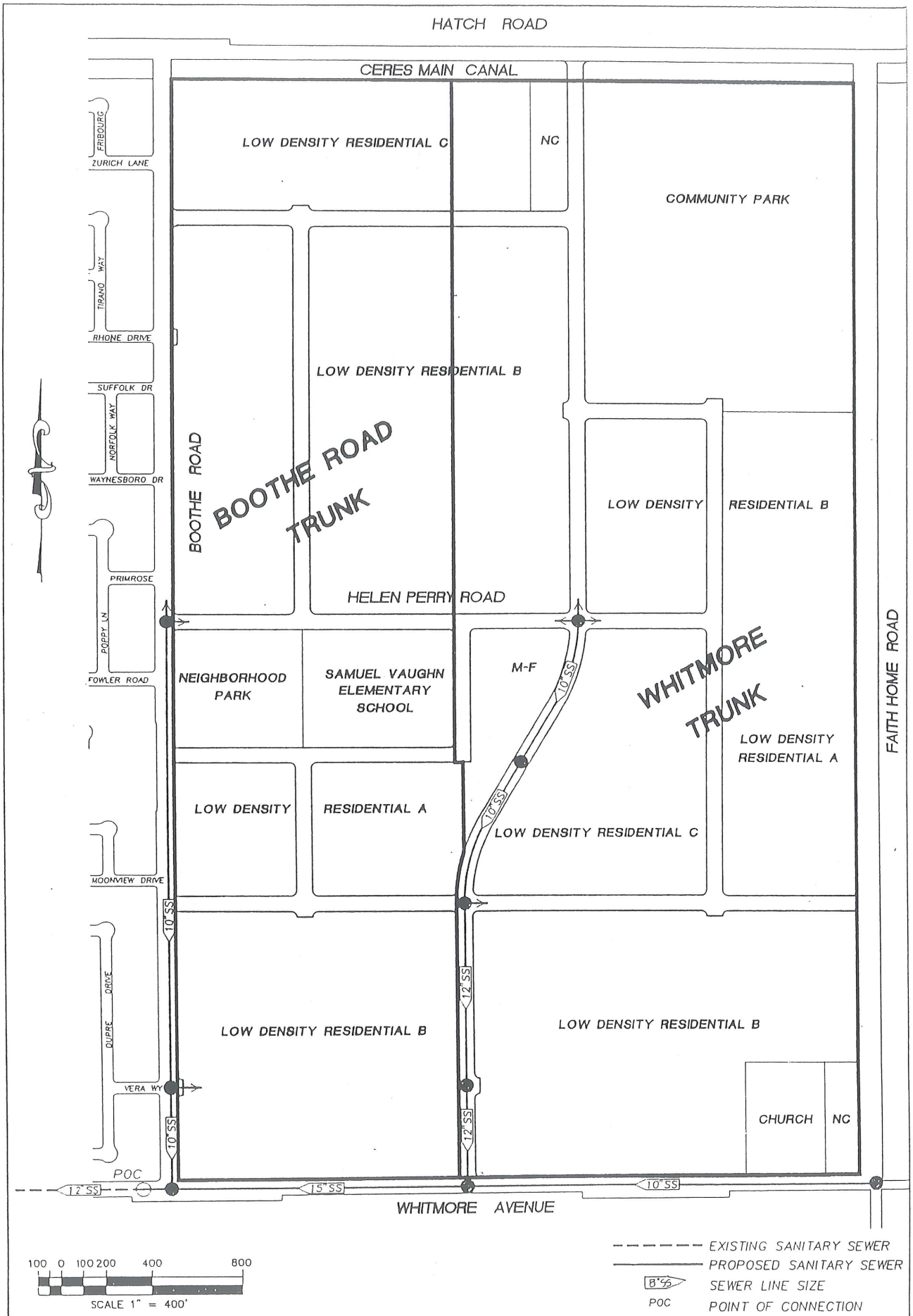
FUTURE LIFT STATION

CONCEPTUAL LAYOUT ONLY; PIPE SIZES AND LOCATIONS ARE INTENDED FOR ILLUSTRATIVE PURPOSES. FUTURE DEVELOPMENT WILL BE BASED ON CITY WASTEWATER MASTER PLANS

SOURCE: Lew-Garcia-Davis, 1996



SEGMENT		LAND USE											
TO	FROM	LDR-A	LDR-B	LDR-C	M-F	NC	TOTAL DU'S	ADDED CAPITA	TOTAL CAPITA	AVE. FLOW	PEAK FACTOR	PEAK FLOW	PIPE SIZE
ULT.	1		4				24	72	7749	1.12	2.51	2.79	16.00
1	2		6				36	108	5259	0.76	2.82	2.13	13.98
2	3						543	1629	1629	0.23	4.01	0.94	9.28
2	4		39.1				235	706	3522	0.51	3.18	1.61	12.15
4	5		3	14.2			79	237	2816	0.41	3.40	1.38	11.24
5	6			6.5			28	84	808	0.12	4.95	0.58	7.27
6	7	10.2	2	1.1			122	366	724	0.10	5.12	0.53	6.99
7	8	5.8		0.9			64	191	358	0.05	6.33	0.33	5.47
8	9	5.1		0.7			56	167	167	0.02	7.97	0.19	4.19
5	10				6.2		133	400	1770	0.25	3.91	1.00	9.56
10	11		7				42	126	1370	0.20	4.22	0.83	8.74
11	12		11				66	199	397	0.06	6.14	0.35	5.67
12	13		11				66	199	199	0.03	7.56	0.22	4.45
11	14		7				42	126	702	0.10	5.17	0.52	6.92
14	15		11				66	199	576	0.08	5.49	0.45	6.46
15	16					6.4	113	338	377	0.05	6.23	0.34	5.57
16	17						13	39	39	0.01	12.36	0.07	2.52
11	18		8				48	144	144	0.02	8.33	0.17	3.98
1	19		3				18	54	2417	0.35	3.56	1.24	10.65
19	20		24				144	433	1068	0.15	4.55	0.70	8.01
20	21	20.5					212	635	635	0.09	5.33	0.49	6.68
19	22		20				120	361	1295	0.19	4.30	0.80	8.57
22	23		33	26.2			311	934	934	0.13	4.74	0.64	7.64



LEW-GARCIA-DAVIS
ENGINEERING/SURVEYING
PLANNING/MAPPING
3841 MITCHELL ROAD CERES, CA 95307
(209) 538-3360

PINEHURST MASTER PLAN
SANITARY SEWER

REVISIONS	BY	DATE

Disk No. 8021_SS.DWG
Drawn: SH
Checked: WG
Date: 8/13/96
Scale: 1" = 400'
File No. 96021
Sheet 1 of 1

PUBLIC WATER ANALYSIS

GENERAL

The City will be the purveyor of water for domestic and commercial water use. The City's sole source of water supply is currently groundwater. An analysis was made of the water supply and distribution system required to mitigate any impacts on the existing system.

EXISTING FACILITIES

There is an existing 10-inch main in Helen Perry Road from Boothe Road to the easterly boundary of Samuel Vaugn School. There is an existing eight inch line in Boothe Road from Whitmore Avenue to Hatch Road and an eight inch line in Whitmore Avenue that ends at Lunar Drive. The proposed distribution system will connect to these existing lines.

There is an existing well located near Boothe Road and the Ceres Main Canal. This well has problems with water quality and requires well head treatment to comply with the State maximum contaniment levels.

DESIGN PARAMETERS

For the purpose of this *Master Plan*, the City's future water system is assumed to rely on groundwater supply. Although the City continues to participate in regional efforts to investigate the use of surface water supplies, the ability to acquire surface water rights is uncertain, and development of a surface water supply system would be a long-term effort that would take many years.

The impacts to the City's water supply and distribution system from development of the *Pinehurst Master Plan* land use alternatives were analyzed by assuming a residential peak hour water usage factor of 1 gpm per unit to the new development potential. The residential peak hour water usage includes the demands for the industrial and commercial land uses.

Peaking factors were provided by City staff. A maximum day to peak hour demand ratio of 2.00 was assumed; peak hour demand is assumed to be 3.4 times the annual average day demand.

The quantity of supply was based on meeting peak hour demands and meeting maximum day plus fire flow. The water supply system will be based on the larger flow of these two conditions.

The number of additional new wells was determined by estimating the maximum demands and available well capacity. The typical capacity of each well is between 750 gpm to 1,000 gpm. A conservative capacity of each well was assumed to be 750 gpm to calculate the number of wells required to accommodate future growth. The existing well capacity

reserve is to be maintained by constructing additional wells to meet the maximum demands generated by future growth.

PROPOSED FACILITIES

Water Distribution

There is a 12-inch main looped around the site in Whitmore Avenue, Faith Home Road, and Hatch Road. There is a 10-inch main proposed in the main north/south collector street from Whitmore Avenue to Hatch Road. The existing 10-inch line in Helen Perry Road is to be extended to the proposed 10-inch main proposed in the main north/south collector street. The proposed facilities are shown on Exhibit **.

Water Supply

The largest flow for the supply was based on the maximum day plus fire flow condition. The maximum flow at project buildout was estimated to be approximately 2,625 gpm with a 1,500 gpm fire flow. This would require 3.5 wells at a capacity of 750 gpm. Therefore, the Pinehurst Development would be required to construct 4 wells. The Pinehurst development could be given credit for the additional well capacity of the fourth well.

If single family residential development was the only development in the study area, the fire flow could be reduced to 1,000 gpm and 3 wells would be adequate to meet the water demands. The fourth well would be required only when the multi family, commercial, or the potential high school was developed.

INEHURST MASTER PLAN
/ATER SUPPLY SYSTEM

ROBLEM: CALCULATE NUMBER OF WELLS TO SERVE FUTURE PINEHURST AREA WITHOUT HIGH SCHOOL

EFERNCES:
1 CITY OF CERES DRAFT GENERAL PLAN
2 LAND USE DWELLING UNIT ESTIMATES PREPARED BY EMC

ARAMETERS:
1 TOTAL DWELLING UNITS = 1916 REF. #2
2 PEAK HOUR FLOW = 1 GPM REF # 1
3 PEAKING FACTORS =2.00 FOR PEAK DAY AND 3.4 FOR PEAK HOUR
4 EACH WELL WILL PRODUCE 750 TO 1,000 GPM
5 FIRE FLOW = 1,500 GPM
6 ALL FLOW FROM WELLS WITH NO STORAGE

OLUTION:

1 CALCULATE PEAK HOUR FLOW

DWELLING UNITS X PEAK HOUR FLOW = 1916 GPM

2 CALCULTE NUMBER OF WELLS REQUIRED

WELLS REQUIRED = 2.55 FOR 750 GPM WELL
WELLS REQUIRED = 1.92 FOR 1000 GPM WELL

3 CALCULATE RESIDENTIAL MAX DAY FLOW

PEAK HOUR FLOW/PEAKING FACTOR = 1127 GPM

4 CALCULTE NUMBER OF WELLS REQUIRED FOR MAX DAY FLOWS + FIRE FLOW

WELLS REQUIRED = 3.50 FOR 750 GPM WELL
WELLS REQUIRED = 2.63 FOR 1000 GPM WELL

PINEHURST MASTER PLAN
WATER SUPPLY SYSTEM

PROBLEM: CALCULATE NUMBER OF WELLS TO SERVE FUTURE PINEHURST AREA WITH HIGH SCHOOL

REFERNCES:
1 CITY OF CERES DRAFT GENERAL PLAN
2 LAND USE DWELLING UNIT ESTIMATES PREPARED BY EMC
3 CERES HIGH SCHOOL EIR

PARAMETERS:
1 TOTAL DWELLING UNITS = 1612 REF. #2
2 PEAK HOUR FLOW = 1 GPM REF # 1
3 PEAKING FACTORS =2.00 FOR PEAK DAY AND 3.4 FOR PEAK HOUR
4 EACH WELL WILL PRODUCE 750 TO 1,000 GPM
5 SCHOOL FLOW = 46,200 GPD
6 FIRE FLOW = 1,500 GPM
7 ALL FLOW FROM WELLS WITH NO STORAGE

SOLUTION:
1 CALCULATE RESIDENTIAL PEAK HOUR FLOW

DWELLING UNITS X PEAK HOUR FLOW = 1612 GPM

2 CALCULATE SCHOOL PEAK HOUR FLOW

AVE FLOW = 77 GPM (BASED ON A 10 HOUR DAY)
PEAK HOUR FLOW = 261.8 GPM (BASED ON A 10 HOUR DAY)

3 CALCULTE NUMBER OF WELLS REQUIRED FOR PEAK HOUR FLOWS

WELLS REQUIRED = 2.50 FOR 750 GPM WELL
WELLS REQUIRED = 1.87 FOR 1000 GPM WELL

4 CALCULATE RESIDENTIAL MAX DAY FLOW

PEAK HOUR FLOW/PEAKING FACTOR = 948

5 CALCULATE SCHOOL PEAK HOUR FLOW

AVE FLOW = 77 GPM (BASED ON A 10 HOUR DAY)
PEAK HOUR FLOW = 154 GPM (BASED ON A 10 HOUR DAY)

6 CALCULTE NUMBER OF WELLS REQUIRED FOR MAX DAY FLOWS + FIRE FLOW

WELLS REQUIRED = 3.47 FOR 750 GPM WELL
WELLS REQUIRED = 2.60 FOR 1000 GPM WELL

'INEHURST MASTER PLAN
'ATER SUPPLY SYSTEM

'ROBLEM: CALCULATE NUMBER OF WELLS TO SERVE FUTURE PINEHURST AREA WITHOUT HIGH SCHOOL AND SINGLE FAMILY RESIDENTIAL DEVELOPMENT ONLY

'EFERNCES:
1 CITY OF CERES DRAFT GENERAL PLAN
2 LAND USE DWELLING UNIT ESTIMATES PREPARED BY EMC

'ARAMETERS:
1 TOTAL DWELLING UNITS = 1916 REF. #2
2 PEAK HOUR FLOW = 1 GPM REF # 1
3 PEAKING FACTORS =2.00 FOR PEAK DAY AND 3.4 FOR PEAK HOUR
4 EACH WELL WILL PRODUCE 750 TO 1,000 GPM
5 FIRE FLOW = 1,000 GPM
6 ALL FLOW FROM WELLS WITH NO STORAGE

'OLUTION:
1 CALCULATE PEAK HOUR FLOW

DWELLING UNITS X PEAK HOUR FLOW = 1916 GPM

2 CALCULTE NUMBER OF WELLS REQUIRED

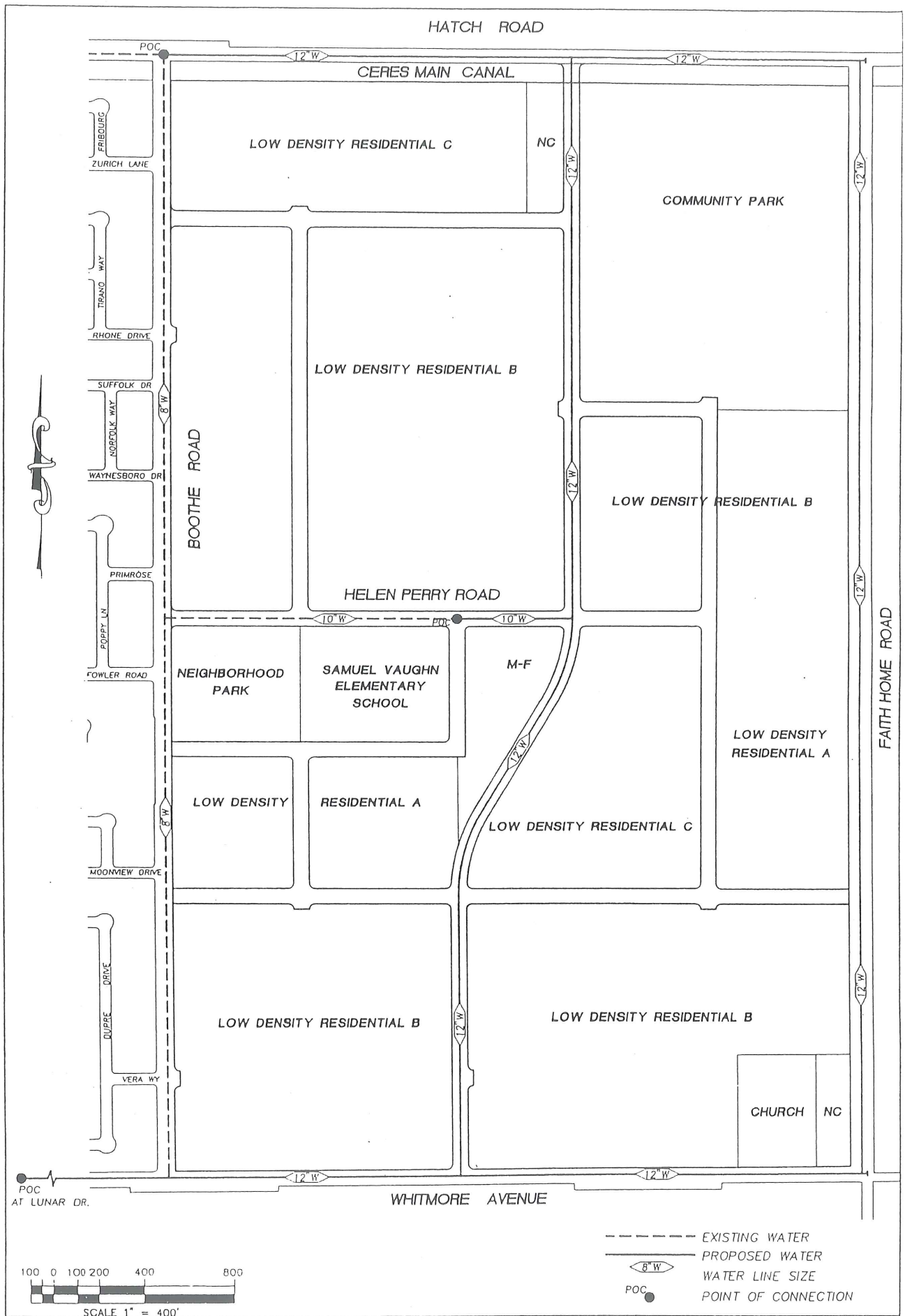
WELLS REQUIRED = 2.55 FOR 750 GPM WELL
WELLS REQUIRED = 1.92 FOR 1000 GPM WELL

3 CALCULATE RESIDENTIAL MAX DAY FLOW

PEAK HOUR FLOW/PEAKING FACTOR = 1127 GPM

4 CALCULTE NUMBER OF WELLS REQUIRED FOR MAX DAY FLOWS + FIRE FLOW

WELLS REQUIRED = 2.84 FOR 750 GPM WELL
WELLS REQUIRED = 2.13 FOR 1000 GPM WELL



LEW-GARCIA-DAVIS
ENGINEERING/SURVEYING
PLANNING/MAPPING
3841 MITCHELL ROAD CERES, CA. 95307
(209) 538-3360

PINEHURST MASTER PLAN
WATER

REVISIONS	BY	DATE

Disk No. 8021_W.DWG
Drawn: SH
Checked: MG
Date: 8/13/98
Scale: 1" = 400'
File No. 98021
Sheet 1 of 1

STORM DRAINAGE ANALYSIS

GENERAL

Storm drainage for this area will follow the concepts outlined in the City of Ceres Storm Drainage Master Plan. This means that storm water will be collected in drains in the streets and conveyed to a storm water detention basin in pipes. The storm water detention basin will be set up so that the City can force the runoff to enter the basin before it is conveyed to its ultimate disposal point which will be TID facilities.

Because the area is primarily residential all runoff will be disposed of in the City maintained system constructed by development. This even includes the small commercial areas.

Runoff from approximately 160 acres, generally located in the southwestern portion of the development will be disposed of through the existing system that serves the Persephone park/detention basin. Runoff from the balance of the development will be conveyed to a detention basin located in the northeast corner of the development.

After passing through the basins, storm water from the area adjacent and east of Booth Road will generally be disposed of in Ceres Main Canal through existing pumps. Storm water between this strip and Faith Home Road will generally be disposed of in the Faith Home Spill or Ceres Main Canal at the option of TID. In all cases the storm water must be able to enter a detention basin before it is conveyed to the TID facilities.

EXISTING FACILITIES

Existing facilities consist of an 1800 gpm pumping station serving the existing Persephone Park Detention Basin. Based on information provided in the City's Storm Drainage Master Plan this pump has capacity to handle a portion of the runoff from the project area. In fact, when the Persephone park/detention facility and pumping station was designed a pipe was stubbed out in Booth Road to serve an area east of Booth Road. The pump is of adequate size but the Persophone park/detention basin is not. This additional capacity will be provided in an existing 8 acre area adjacent to the Sam Vaughn school that has been designated to contain storm water detention facilities in conjunction with a park.

Ultimate disposal of storm water, after detention, will be in existing TID Canals as per the Ceres Storm Drainage Master Plan.

DESIGN PARAMETERS

Design parameters will be as outlined in the Ceres Storm Drainage Master Plan. Generally storm water is collected and conveyed through successively larger pipes to a designated detention facility. The detention facilities, designed to detain a 50 year storm, will hold excess runoff during the storm and when the storm is over, and TID facilities have adequate capacity, the detention basins are emptied by pumps into the TID facilities.

In addition to storm water developed by this project, water from approximately 550 acres south of Whitmore Avenue between Ceres Main Canal and Faith Home Road needs to be conveyed to the TID canal along Hatch Road on the north. This "off site" storm water is limited to between 8 and 9 cfs as it is the detained water that will be conveyed to the TID facilities within the approximately 48 hour period after the storm is completed. This requires that a flow of approximately 9 cfs be conveyed through the project to the pumps at Hatch Road. This water will be pumped to Whitmore Avenue so pipe cover will be based on requirements for the development not the off site water. These design concepts are outlined in the Ceres Storm Drainage Master Plan.

PROPOSED FACILITES

Detention Facilities

Two detention facilities will serve this development. Detention for approximately 80 acres generally in the southwesterly portion of the project will be provided by connecting new detention facilities to the existing Persephone park/detention basin. The runoff from the approximately 80 acres plus the 8 acre park and 10 acre school site will be handled by the new detention facilities. It will be necessary to control the maximum water elevation in the new facilities so that the design water elevation in the existing facilities will not be exceeded. The total detention capacity of both facilities combined will also need to meet the 50 year storm capacity criteria. Preliminary estimates indicate that this is approximately 11 acre feet storage with approximately 7 acre feet being provided by the existing Persephone park/detention basin.

Storm water detention for the balance of the project, approximately 190 acres, will be provided by a new facility in the northeast area of the project. Preliminary calculations indicate that this facility will need to detain approximately 18 acre feet of storm runoff.

Collection

The main component of the storm water collection system will be a pipeline located in the north-south street that connects Whitmore Avenue and Hatch Road. This pipeline will be connected to the detention basin in the northeast portion of the project. Storm runoff from approximately 190 acres will be conveyed to this pipeline from smaller storm drains that will serve the individual developments making up the 190 acres. The diameter of this main line will vary from approximately 30 inches near Whitmore Avenue to approximately 48 inches at the detention basin. The equivalent pipe size to convey the approximately 9 cfs from the area to the south will be approximately 27 inches in diameter. Final pipe sizes will be set during design.

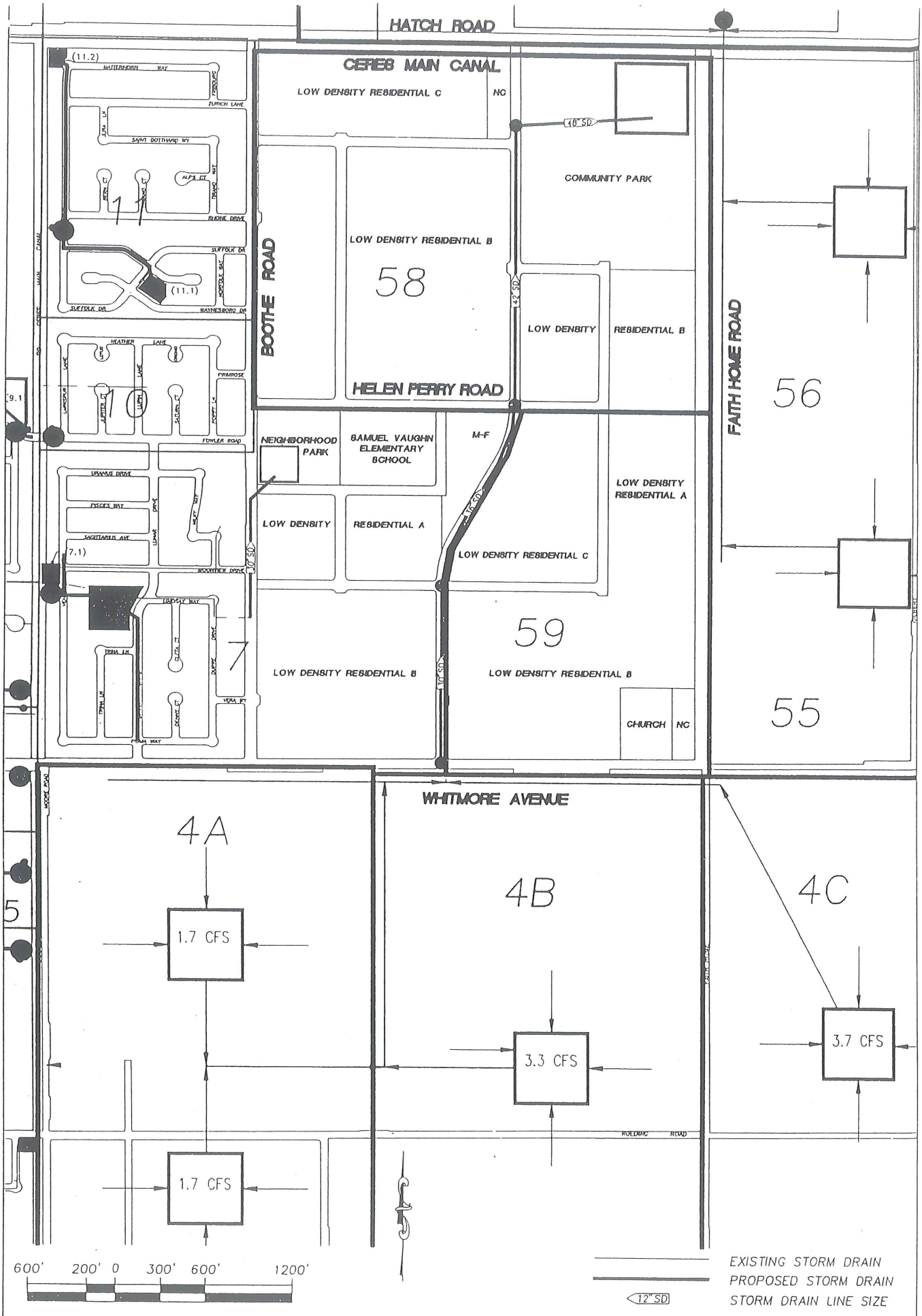
Disposal

Storm water disposal for the approximately 80 acres in the southeastern portion of the project will be through the existing 1800 gpm that serves the Pesephone park/detention basin.

Storm water disposal for the balance of the development plus the off site will be through a new lift station located at Hatch Road. The capacity of this lift station will be approximately 9200 gpm. Final capacity will be determined during the design process and will possibly be developed in stages as new development is added to the system. It is possible that this pump station will also handle disposal from lands east of Faith Home Road and North of Hatch Road. The rough breakdown in pumping requirements for each general area are as follows:

- Pinehurst 1600 gpm
- Area South of Whitmore 4600 gpm
- Area east of Faith Home Road 1800 gpm
- Area North of Hatch 1200 gpm

It will be necessary for the City to come to agreement with TID regarding final capacity and operational parameters for this pump station.



LEW-GARCIA-DAVIS
ENGINEERING/SURVEYING
PLANNING/MAPPING
3841 MITCHELL ROAD CERES, CA. 95307
(209) 538-3360

PINEHURST MASTER PLAN
STORM DRAIN

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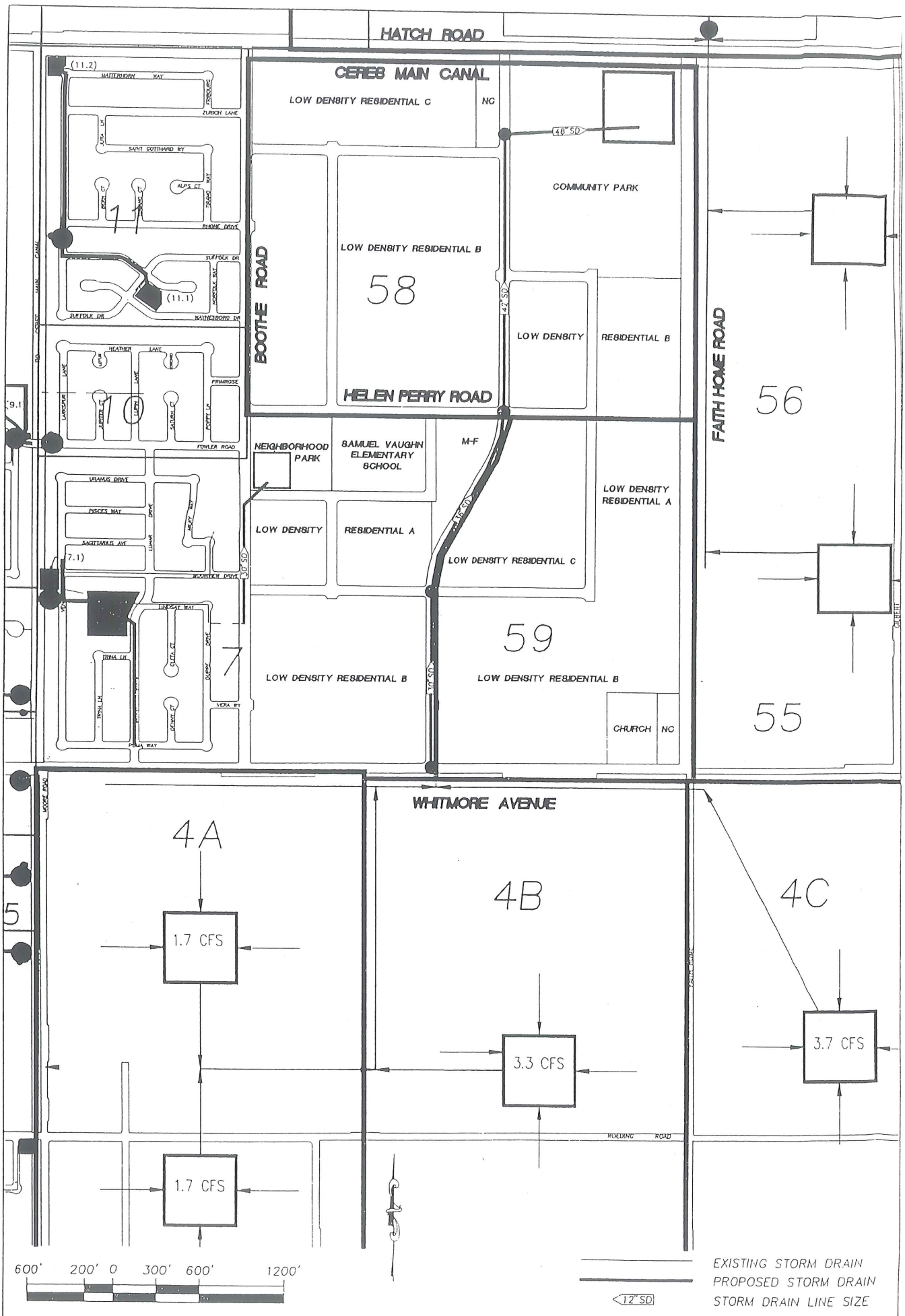

LEW-GARCIA-DAVIS
ENGINEERING/SURVEYING
PLANNING/MAPPING
3841 MITCHELL ROAD CERES, CA 95307

PINEHURST MASTER PLAN
STORM DRAIN

REVISIONS	BY	DATE
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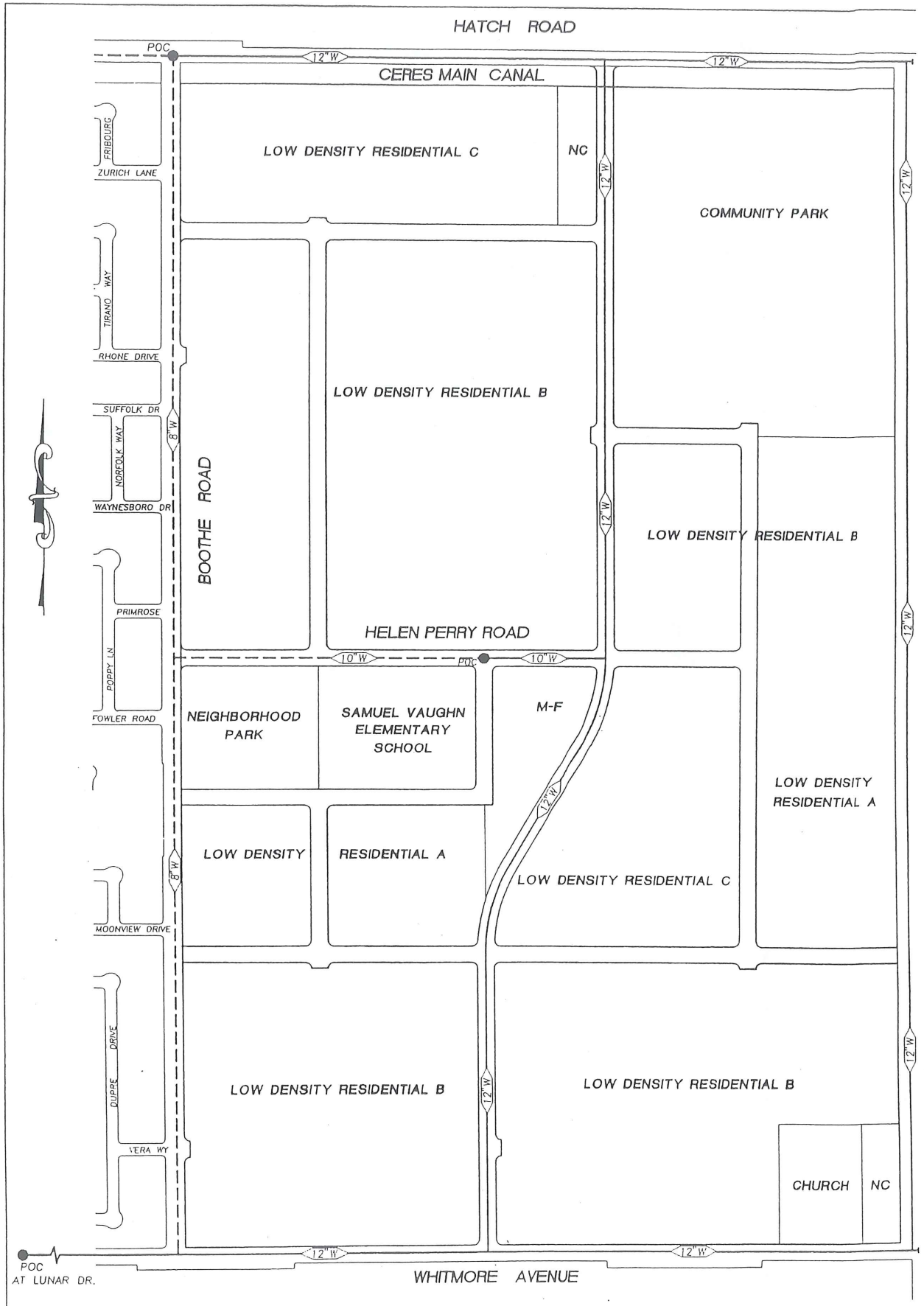

LEW-GARCIA-DAVIS
ENGINEERING/SURVEYING
PLANNING/MAPPING
3841 MITCHELL ROAD CERES, CA 95307
(209) 538-3360

PINEHURST MASTER PLAN
WATER

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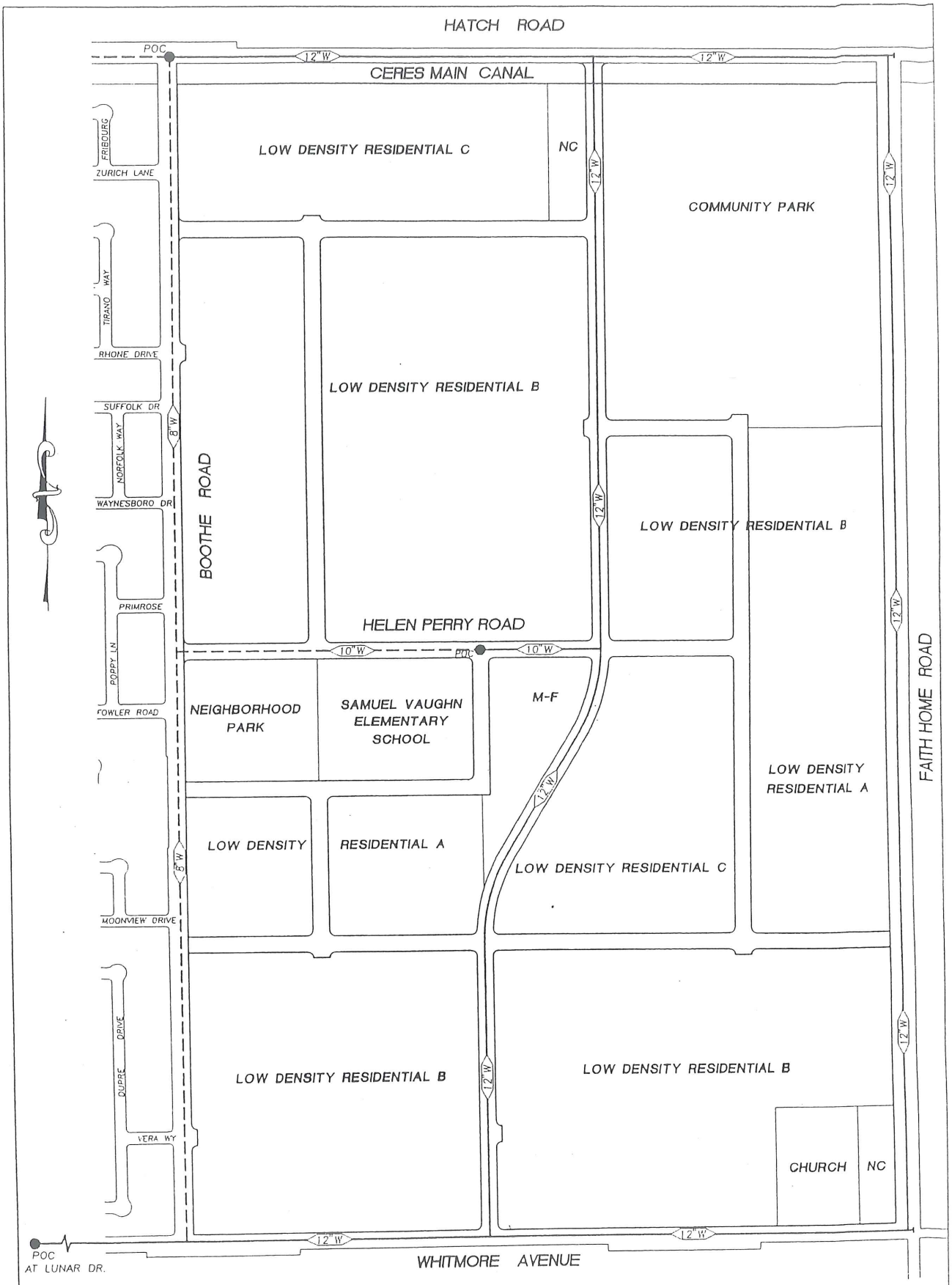

LEW-GARCIA-DAVIS
ENGINEERING/SURVEYING
PLANNING/MAPPING
3641 MITCHELL ROAD CERES, CA 95307
(209) 538-3360

PINEHURST MASTER PLAN
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