CITY OF FARMERSVILLE

COMPREHENSIVE INFRASTRUCTURE MASTER PLAN

November 2012

Quad Knopf

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INTRODUCTION

CHAPTER ONE INTRODUCTION

1.1 Background

The City of Farmersville is located in Tulare County in the southeastern portion of the San Joaquin Valley (see Exhibit A-1 for a general location map). Farmersville is located south of State Route 198, approximately 11 miles east of State Route 99, and is bisected by County Road 164 (Farmersville Boulevard). The level topography of the City slopes from the northeast at an elevation of 365 feet above sea level towards the southwest to an elevation of 345 feet above sea level. In 2010, the population of Farmersville was recorded at 10,588, which is an annual increase of approximately 3% since 1993. The population is expected to reach 13,320 by 2014.

The City has received a Sustainable Communities Planning grant to develop a Comprehensive Infrastructure Master Plan (CIMP). This master plan will include circulation improvements and the addition of bike lanes, sidewalks, and water, wastewater, and storm drainage facilities.

On the heels of significant growth that occurred in the past 20 years and strategically planning for even more development in the next 20, the timing is ripe for Farmersville to address its infrastructure, planning for the expansions necessary to accommodate future growth and development, especially for the land uses required to provide a sustainable community for the residents of Farmersville.

1.2 Authorization

The City Council of the City of Farmersville authorized the preparation of the CIMP in August 2011. The CIMP will provide a roadmap for infill development within the Farmersville Urban Area Boundary (UAB), while limiting the pressure for development on the valuable farm land outside of the UAB.

1.3 Scope

The CIMP will include circulation, water, wastewater, and storm drainage within the Urban Area Boundary (see exhibit A-2 for the study area boundary). The plan is intended to enable smart growth concepts to be implemented as part of the City's future development, improve public health, and promote self-sustaining economic development. Each portion of the CIMP will have a specific scope, but generally they will include:

- Compiling existing data
- Identifying existing problems
- Summarizing new development needs
- Specifying areas needing service
- Identifying future expansion areas
- Summarizing needed improvements

The CIMP is intended to comply with policies of the City of Farmersville's General Plan. Exhibit A-3 depicts the current General Plan land use designations and the current city boundaries.

The proposed sizes and locations of facilities developed in this report are considered to be only preliminary. The final design and locations of the facilities can only be determined after performing more detailed field surveys and engineering design.

This CIMP will update and revise the following plans:

- 1983 Sanitary Sewer Master Plan
- 1989 Storm Drainage Master Plan
- 1998 Community Infrastructure Study
- 2000 Water System Study
- 2003 Highway 198 Corridor Specific Study

1.4 Comprehensive System Reviews

The City's current master plans have been completed at various times since 1983. This CIMP will consolidate the various studies and plans into one report and update the information where appropriate. As each section of the CIMP was developed, other sections were referenced to avoid conflicts between sections. Infrastructure needs were considered together, to allow the City to take advantage of multiple benefits of co-locating future facilities and any potential conjunctive relationships that would be potentially more cost-effective and more supportive of a sustainable community.

The Circulation section identifies locations of the collector and arterial roadways. The water, sewer, and storm drain sections were developed so that the proposed master plan infrastructure will align with the proposed arterials and collectors.

The CIMP proposes improvements to serve the Farmersville UAB. Since the current General Plan does not designate land uses beyond the existing Urban Development Boundary (UDB), additional assumptions were needed for the area between the UDB and the UAB. For example, a majority of the land within the two limit lines will be residential except for lesser areas of industrial, institutional, and commercial uses. Exhibit A-4 depicts these assumed non-residential areas. The remainder of the undesignated area is assumed to be residential. These assumptions are only intended to be used to aid in determining the estimated size and capacity of future infrastructure needs for planning purposes. These assumptions do not supersede the City of Farmersville's General Plan Land Use Element, nor do they state a formal disposition towards future land uses for land lying between the UDB and UAB.

1.5 Public Outreach

The draft report was sent out to the following agencies for review and comment:
Farmersville Chamber of Commerce
Farmersville Chamber of Commerce
Tulare County Board of Supervisors
Kaweah Delta Water Conservation
Consolidated People's Ditch Company
San Joaquin Valley Air Pollution Control District
Farmersville Unified School District
Tulare County Association of Governments
Tulare County Health Services
Proyecto Campesino

Two comment letters were received (Kaweah Delta Water Conservation and San Joaquin Valley Air Pollution Control District). The first letter had no comments. The second letter, from the Air Pollution Control District, stated the CIMP would have no impacts on air quality; however future projects within the scope of the CIMP would need to abide by the district rules.

Two public outreach meetings were held on November 7, 2012. The first meeting was held in Spanish and the second meeting was held in English. Written comments were received at both meetings. The comment forms are included in Appendix F. The comment cards issues are addressed in comment boxes added to each comment form.

CHAPTER TWO

DEMOGRAPHICS AND LAND USE

CHAPTER TWO DEMOGRAPHICS AND LAND USE

The City of Farmersville's city limits currently contains 1,385 acres. The area between the City limits and the UAB currently contains 1,572 acres. The City's UAB including the area within the City limits contains a total of 2,957 acres. The urbanized area in the City of Farmersville is surrounded on all sides by agriculture. Forty percent of the UAB is identified as agricultural uses. One fifth of the UAB is devoted to residential uses (single family and multi-family). Undeveloped land in the UAB has approximately 290 acres that could be utilized for future development without relying upon additional land outside the UAB to meet the City's projected growth. Exhibit A-1 shows the general location of the study area. Exhibit A-2 identifies the study area boundaries.

2.1 Population

The General Plan, which was completed in 2002, contained the following population projections:

Table 2-1
City Developed Population Projections

Year	Population (2.9% growth rate)	Population (3.4% growth rate)
2005	10,079	10,327
2006	10,372	10,678
2007	10,672	11,040
2008	10,982	11,416
2009	11,300	11,804
2010	11,628	12,206
2011	11,965	12,620
2012	12,312	13,050
2013	12,670	13,494
2014	13,037	13,952
2015	13,415	14,427
2016	13,804	14,917
2017	14,204	15,424
2018	14,616	15,949
2019	15,040	16,491
2020	15,476	17,052
2025	17,854	20,839

The actual population in 2011 was 10,824[1] indicating that the actual growth rate for the City was significantly below the projections for the period reported. The declining economy may have been a significant factor for the lower growth rates; however, the pace of growth should not invalidate the other assumptions and policies within the General Plan.

[1] "New Report: California Added More than a Quarter Million in 2011; Total State Population nearly 37.7 Million". State of California Department of Finance. May 1, 2012.

2.2 Land Use

The Land Use Element of the City's General Plan depicts the UDB Line and the UAB Line for the community (see Exhibit A-3), for the General Plan land use designations.

According to the General Plan Land Use Element:

- Approximately 1,572 acres is located between the UAB and the current City limit line
- 417 residential acres are needed to meet the 2025 population projections
- 24 acres of Commercial/Office space are needed to serve the 2025 projected population

Even though the City's UAB has more than enough land for future development, the actual location of future development is unknown. The CIMP includes the UAB to ensure the area that develops has a appropriate plan for infrastructure for the point in time when the General Plan is updated to allow future development. In most cases, the timing to actually install this infrastructure would not occur until after the General Plan is updated, unless the infrastructure is needed to serve other areas that are situated within the UDB.

2.3 Future Service Area

The City of Farmersville's city limits currently contains 1,385 acres (160 acres have been annexed since the 2002 General Plan update) of which approximately 290 acres are currently undeveloped. The City's UAB contains 2,957 acres as shown in Exhibit A-2. Table 2-2 shows the existing land use as identified in the 2002 General Plan update.

Table 2-2
Land Use (per 2002 General Plan Update)

	City Limits (Acres)	Urban Area Boundary* (Acres)	Total (Acres)
Residential (Single Family)	416	111	527
Residential (Multi-Family)	21.8	64.6	86
Commercial (General)	27.5	2.3	30
Commercial (Service)	16.1	1.8	18
Industrial	32.4	41.8	74
Agricultural	193.5	981	1174
Parks	14.4	0	14
Parks (Quasi-Public)	62.5	66.9	129
Schools	76.9	5.2	82
Waterways	7.4	16.4	24
Vacant	185.8	28.7	215
Right of Way	151	433	584
TOTAL	**1,205**	**1,752**	**2,957**

* Urban Area beyond City Limits

In the General Plan, land uses were assigned to all areas within the UAB. For this study, the current General Plan was used as a guide to assign land uses as shown in Exhibit A-3. Table 2-3 shows the acreage for each future land use planned beyond the existing City Limits, but within the UAB.

Table 2-3
Future Land Uses

	Existing (Acres)	Urban Area Boundary* (Acres)	Total (Acres)
Residential	613	685	1298
Commercial	48	127	175
Industrial	74	354	428
Institutional	834	222	1056
TOTAL	**1,569**	**1,388**	**2,957**

* Urban Area beyond City Limits

Exhibit A-4 depicts the assumptions made for future land use areas listed above for Commercial, Industrial, and Institutional.

2.4 Sustainable Communities Land Use Objectives

2.4.1 SHOPPING AND JOBS

A significant deficit of commercial and retail development exists in Farmersville. Residents must travel 6 to 15 miles each way to obtain basic goods and services or to go to work. The City recently changed the zoning on two large parcels strategically located near the northern gateway to Farmersville at State Route 198 for a shopping center and an industrial park. However, currently the City is not well positioned to attract developers without necessary infrastructure improvements. Farmersville needs these types of plans in place to pursue economic development and improve the lives of its residents. The CIMP is necessary to plan for expanded transportation, water, wastewater, and storm drain improvements to make the economic development of these two areas viable. These new developments will make it possible for Farmersville residents to shop and work in their own City, supporting the local revenue and job base and eliminating numerous vehicle trips outside the City to purchase basic necessities.

2.4.2 HOUSING

The City's General Plan Housing Element notes that 2,244 dwelling units are planned for the long-term within the UAB. These planned future housing units will add significantly to the existing 2,972 units. One of the primary strategies of the CIMP will be to enable development to take place on vacant or underutilized parcels inside the UAB, meeting one of the City's General Plan policies to manage growth by avoiding "urban sprawl" and by developing infrastructure plans that promote infill, compact development, and affordable housing. By identifying targeted growth areas within the City's UAB, this CIMP will ensure that Farmersville's vision for a sustainable city is implemented through thoughtful master planning. Future shopping, jobs, parks, and housing are

hinging on plans for adequate roads, sidewalks, bike lanes, water supplies, wastewater disposal, and storm drainage systems. The strategy to achieve this infrastructure objective will be to maintain and improve existing infrastructure (50 year old systems in parts of the City) and plan for expansions to accommodate future growth and development. The following chapters will address the plans to bring necessary infrastructure to serve undeveloped parcels.

2.4.3 PARKS

In addition to providing opportunities for a shopping center and industrial park by constructing necessary infrastructure improvements, the CIMP will also support the development of parks and recreation opportunities. Currently, the community is served by only 1.7 acres of park space for every 1,000 residents. The standard ratio of park acreage for residents (per State of California Quimby Act) is 3.0 acres per 1,000 people. The CIMP will also create safe paths for walking or bicycling (most existing roads in Farmersville are not pedestrian or bicycle friendly) that will provide access to new parks and recreation facilities.

CHAPTER THREE

CIRCULATION

CHAPTER THREE CIRCULATION

3.1 Introduction

Farmersville's circulation system directly affects the quality of life, physical character, and economic vitality of the community. The CIMP proposes a circulation system that will promote critical development for retail and industrial properties within the Farmersville UAB, while protecting the valuable farm land outside the UAB. The CIMP is also designed to promote an interconnected transportation network for all modes of transportation. Decreased number of vehicle trips within the urban area will be achieved through circulation improvements such as shaded "green streets" and the addition of bike lanes and sidewalks to make alternative modes of transportation safer and more feasible in Farmersville. Plans for new roadways will allow for greater access to transit and will reduce the number of vehicle miles traveled by local residents by providing access to shopping and new job opportunities within the City limits.

The City's existing circulation network is based on a typical grid pattern with a limited number of curvilinear streets that roughly parallel Deep Creek and other drainage ways throughout the City. The circulation system consists of a State highway, arterials, collectors, local roadways, alleys, bikeways, sidewalks, a railroad, and public transit. The CIMP policies for improved circulation include the following list of strategies and guidelines.

3.1.1 CIRCULATION STRATEGIES

- Provide efficient and safe circulation access to all parts of Farmersville.
- Decrease the number of vehicle trips within the urban area by providing circulation that encourages alternative modes of transportation, including pedestrian, bicycles, and transit.
- Decrease the number of vehicle trips outside the urban area by providing circulation projects that will facilitate economic development projects creating new jobs and retail shopping opportunities.
- Provide additional north-south collectors at railroad crossings in the City to promote connectivity and relieve existing and future traffic congestion on Farmersville Boulevard.
- Provide neighborhood connectivity to shopping, jobs, schools, and parks.
- Provide a truck route system that facilitates the movement of truck traffic through and around Farmersville.
- Provide "green streets" that include native tree planting on new and existing streets to create shaded sidewalks and paths that will encourage walking and biking.

3.1.2 CIRCULATION DESIGN GUIDELINES

- The CIMP's layout of streets should be consistent with the City's adopted General Plan Circulation Element.
- Bikeway facilities within the CIMP should be consistent with the City's adopted Bicycle Transportation Plan.

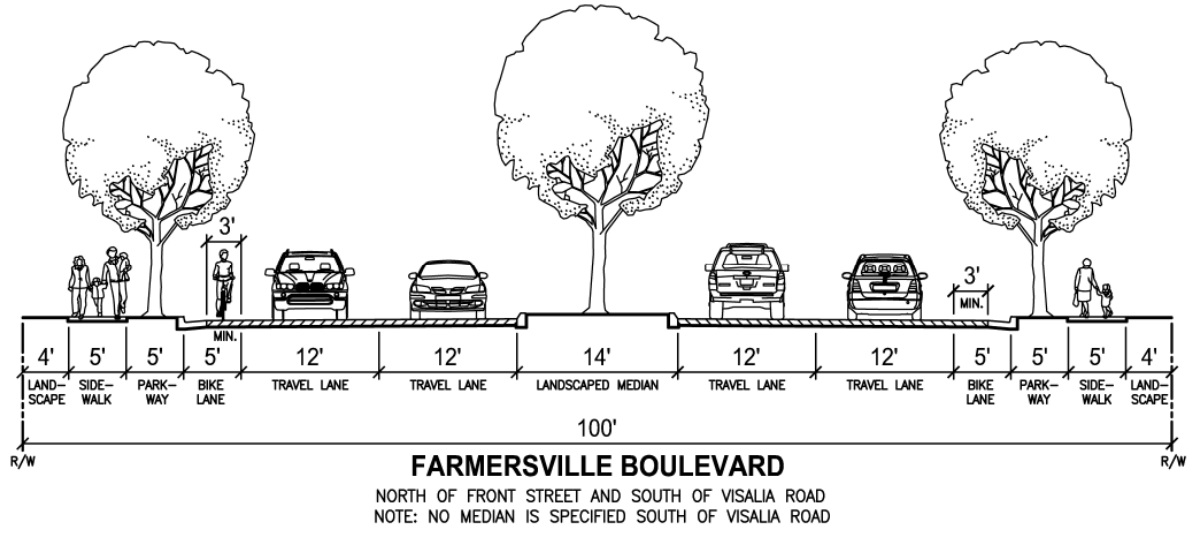
- Pathways within the CIMP should be consistent with the City's adopted Waterway Trails Master Plan.
- Compliance with the City of Farmersville's Improvement Standards for items not covered in this CIMP should be required.

3.2 Street Types

3.2.1 ARTERIAL

An arterial is a higher capacity, urban thoroughfare that moves traffic from collectors to highways or between urban activity centers. In many Central Valley cities, arterials are typically spaced every mile with intersecting collectors or other streets in between. Per the City's Circulation Element, the City shall "establish an arterial road system that conveys traffic in an efficient and safe manner" and "arterials should be visually pleasing, and designed to accommodate other modes of transportation, such as bicycles and pedestrians."[1] Currently, Farmersville Boulevard and Visalia Road are the only two designated arterials in the City.

Per the City's current Circulation Element, Farmersville Boulevard north of Front Street and south of Visalia Road includes two travel lanes, bicycle lanes, parkway, sidewalk, and landscape strip in each direction. The Circulation Element depicts a four-foot (4') bicycle lane that doesn't meet the current standards of the *Highway Design Manual*. The cross section noted below, with five-foot (5') bicycle lanes, is proposed for Farmersville Boulevard. A reduction in the landscape strip from five feet (5') to four feet (4') is being proposed to accommodate the bicycle lane widths. This proposed cross section meets the criteria of "green streets", including landscaped medians and tree lined parkways, as recommended in the City's current Circulation Element.

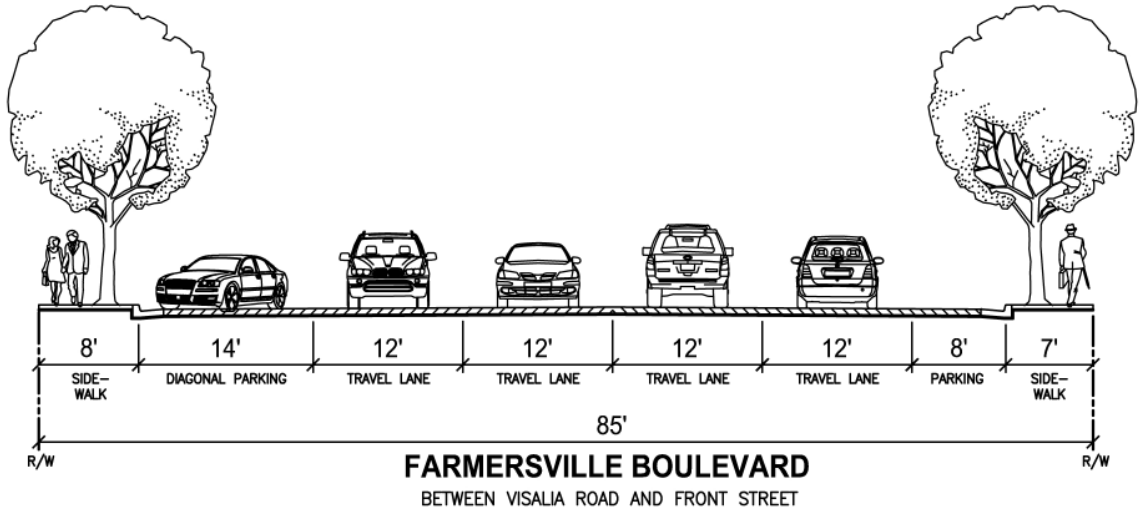


FARMERSVILLE BOULEVARD

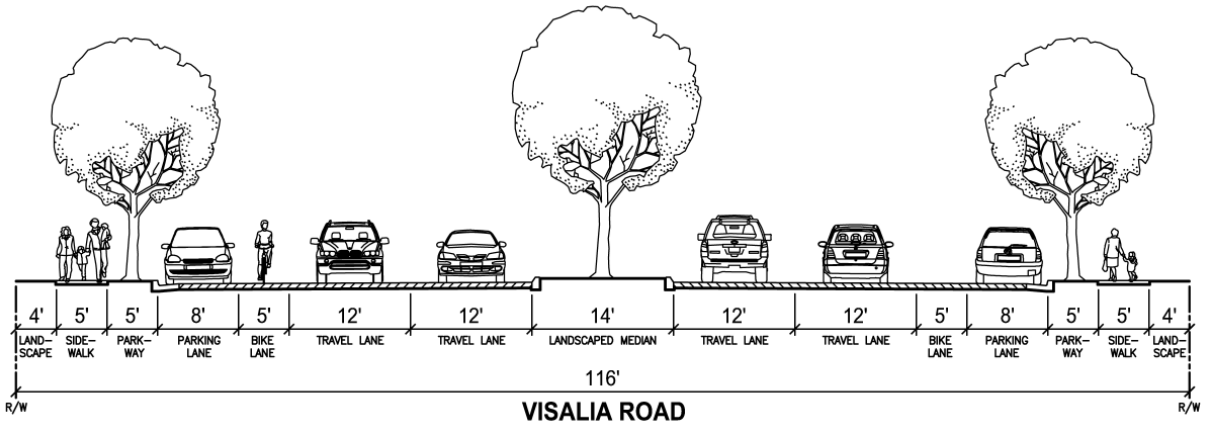
NORTH OF FRONT STREET AND SOUTH OF VISALIA ROAD
NOTE: NO MEDIAN IS SPECIFIED SOUTH OF VISALIA ROAD

[1] City of Farmersville, Farmersville General Plan Update (Collins & Schoettler Planning Consultants, 2002) 3-11.

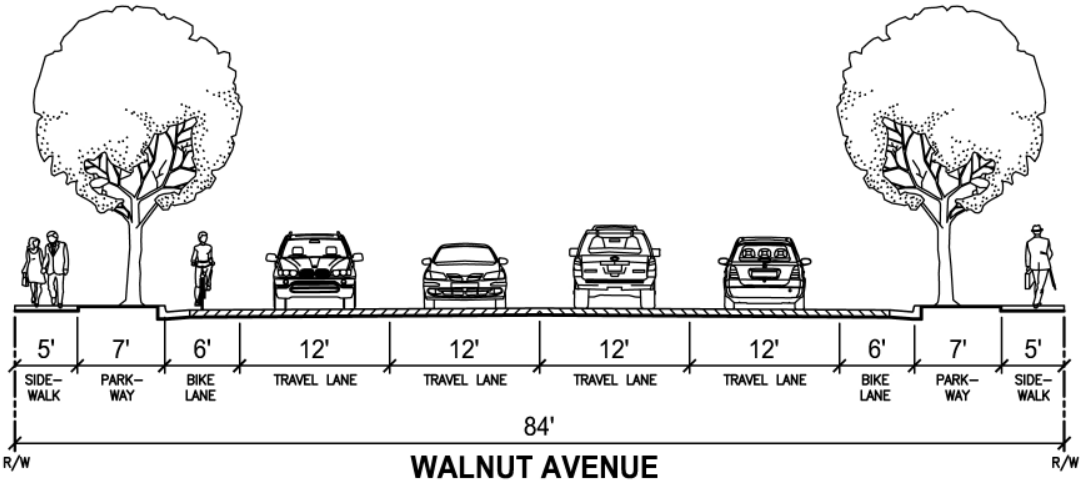
The City's Circulation Element currently indicates that Farmersville Boulevard between Visalia Road and Front Street will have two travel lanes in each direction with eight-foot (8') parallel parking and a seven-foot (7') sidewalk on the west side of the street. The east side of the street indicates 14-foot (14') diagonal parking and an eight-foot (8') sidewalk. The existing cross section for this segment of Farmersville Boulevard is depicted below. No changes to this cross section are proposed. Although this section of Farmersville Boulevard does not include a landscape median, it does include tree lined sidewalks, a "green streets" feature as indicated in the City's Circulation Element.



The existing cross-section for Visalia Road, per the City's Circulation Element, includes non-standard four-foot (4') bicycle lanes. To meet current standards per the *Highway Design Manual*, the cross section below, with five-foot (5') bicycle lanes, is proposed for Visalia Road. A reduction in the landscape strip from five feet (5') to four feet (4') is being proposed to accommodate the bicycle lane widths. The proposed cross-section for Visalia Road is shown below. It meets the criteria of "green streets", including landscaped medians and tree lined parkways, as recommended in the City's current Circulation Element.



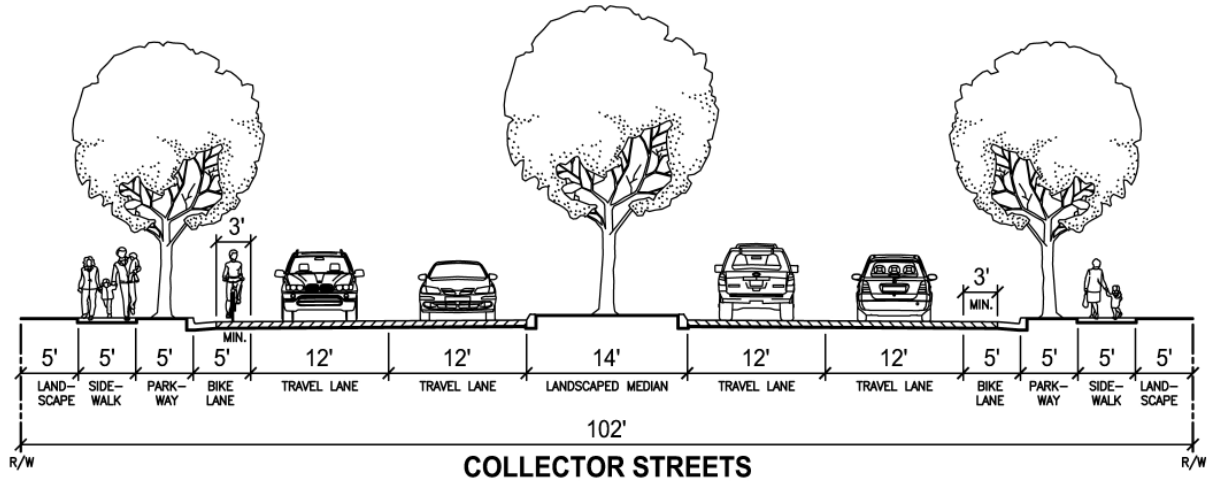
Walnut Avenue is currently designated a collector Street in the City's Circulation Element. Given it is approximately one mile north of the Visalia Road arterial and one mile south of SR 198, its spacing suggests it should be an arterial. Walnut Avenue will provide connection between collectors and activity centers in the City, as well as connection to the adjacent Cities of Exeter and Visalia. Therefore, it is recommended that Walnut Avenue be classified as an arterial with the cross section shown below. Although Walnut Avenue does not include a landscape median, it does include tree lined parkways, a "green streets" feature as indicated in the City's Circulation Element.



3.2.2 COLLECTORS

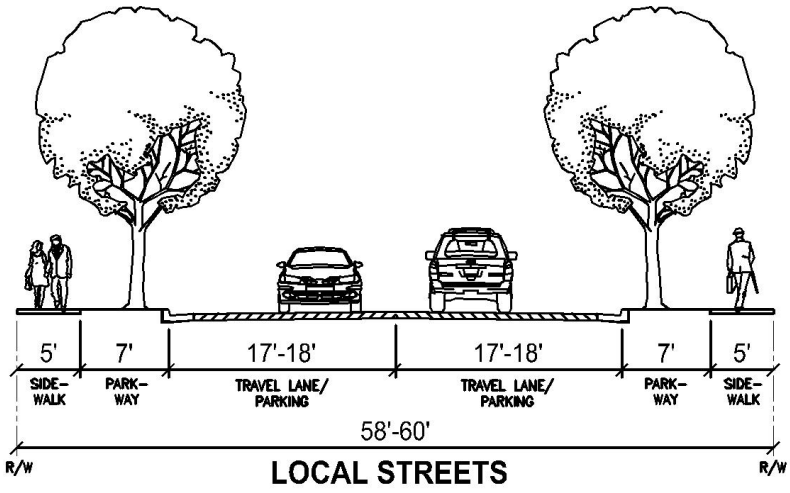
A collector street is a moderate capacity roadway whose function is to move traffic from arterials to local streets and provide access to residential neighborhoods. Per the current Circulation Element, Walnut Avenue is the only designated collector in the City. However, as indicated above, Walnut Avenue should be classified as an arterial. A few planned streets within the City's northern industrial areas, including Terry Avenue, are designated industrial collectors.

As indicated in the Existing Circulation Deficiencies/Concerns section, north-south, industrial, and school connectivity are major concerns for the City. As described in the Proposed Circulation Improvements section, additional collectors are proposed as shown in Exhibit B-1 to help address these concerns. The existing cross section for collectors is shown below and no changes are proposed. With landscaped medians and tree lined parkways, this proposed cross section meets the criteria of "green streets" per the City's Circulation Element.



3.2.3 LOCAL STREETS

Local streets, or residential streets, are a critical component of a City's overall transportation network. These are the streets residents live on, and they can be central to providing a sense of "community" in a City. The existing cross section for local streets is shown below and no changes are proposed.



NOTES:
1. Local streets on blocks less than 600 feet in length may be designed utilizing the smaller dimensions.
2. Subdivisions with average lot size larger than 8,000 s.f. are not required to install parkways.

3.3 Existing Circulation

The City's current General Plan Circulation Element was adopted by the City Council on November 6, 2002. The Circulation Element "identifies the different types of circulation routes in the community, such as roadways, bike paths and railroads"[2] that are existing and planned through year 2025. The current Circulation Element Map of the City's General Plan is shown in Figure 3.1. The City's current circulation system includes the following facilities:

3.3.1 HIGHWAY

State Route (SR) 198 is an east-west highway that serves Central California, stretching from U.S. 101 in the central coast region at its west end to the entrance of the Sequoia National Park at its east end. In the vicinity of Farmersville, SR 198 is a divided highway with two travel lanes in each direction and paved shoulders. There are interchanges at Farmersville Boulevard and Road 156.

3.3.2 ARTERIALS

Farmersville Boulevard is a north-south arterial that runs through the center of the community connecting to SR 198 near the northern City limits. The roadway continues south outside the Farmersville area and eventually connects to SR 137 (Tulare-Lindsay Highway). Through most of the City, Farmersville Boulevard has two travel lanes and a parking lane in each direction. North of Walnut Avenue and south of Oakland Street, Farmersville Boulevard tapers to one travel lane in each direction.

Design plans that include widening the roadway to include two travel lanes, a bicycle lane, parkway, and sidewalk in each direction are currently being completed for Farmersville Boulevard, from north of Walnut Avenue to SR 198. The plans include a landscaped median and prohibited parking. Construction is anticipated to be completed in 2014.

Visalia Road is an east-west arterial connecting Farmersville with the cities of Visalia to the west and Exeter to the east. Within the City, Visalia Road is typically two travel lanes in each direction with parking prohibited.

Design plans are currently being completed for Visalia Road to widen portions of the roadway to include two travel lanes in each direction. Where right-of-way is available, a landscaped median, bicycle lanes, and parking are also planned. Completion of construction is anticipated in 2013.

3.3.3 COLLECTORS

Walnut Avenue (Avenue 288) is an existing east-west collector running through the City midway between Visalia Road to the south and SR 198 to the north. In general, Walnut Avenue is one travel lane in each direction; however, newer developed sections are built to accommodate two travel lanes in each direction and a median or center two-way turn lane.

[2] City of Farmersville, Farmersville General Plan Update (Collins & Schoettler Planning Consultants, 2002) page 3-1.

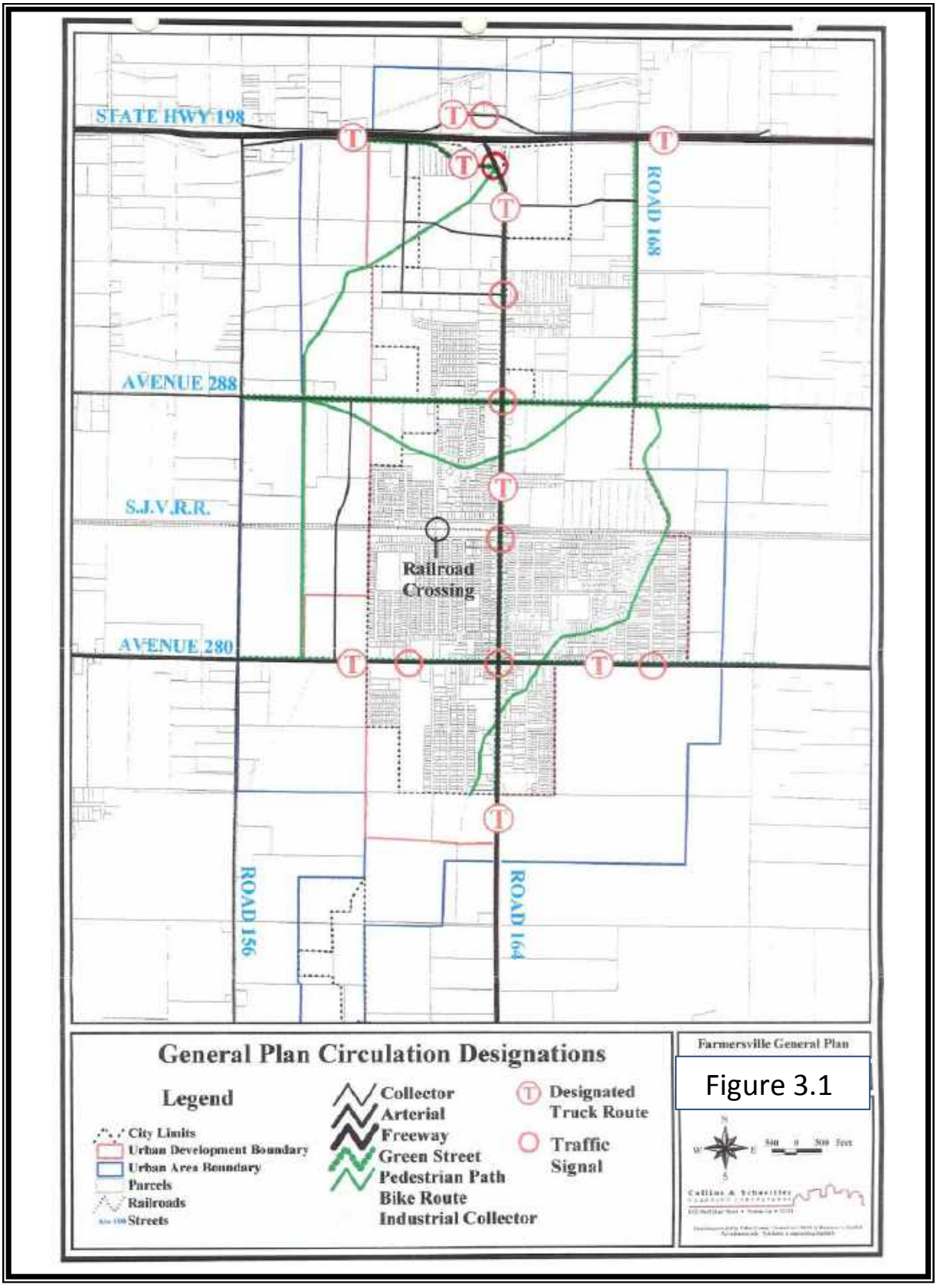

STATE HWY 198
ROAD 168
AVENUE 288
S.J.V.R.R.
Railroad Crossing
AVENUE 280
ROAD 156
ROAD 164
General Plan Circulation Designations
Legend
City Limits
Urban Development Boundary
Urban Area Boundary
Parcels
Railroads
Streets
Collector
Arterial
Freeway
Green Street
Pedestrian Path
Bike Route
Industrial Collector
Designated Truck Route
Traffic Signal
Farmersville General Plan

Figure 3.1

3.3.4 INDUSTRIAL COLLECTORS

The current Circulation Element identifies industrial collectors in the industrial and retail land use areas in the northern portion of the City near SR 198. Three new roadways have been proposed as industrial collectors, as well as the existing Terry Avenue.

3.3.5 LOCAL STREETS

Local streets provide traffic circulation internal to residential neighborhoods. Typically, local roadways are one travel and one parking lane in each direction. Local roadways connect neighborhoods to the transportation network.

3.3.6 ALLEYS

Alleys are limited in the City of Farmersville to providing rear access to older residential neighborhoods and to commercial buildings in downtown Farmersville.

3.3.7 BICYCLE FACILITIES

On October 25, 2010, the City of Farmersville adopted the Tulare County Regional Bicycle Transportation Plan for use in the City. Bikeway facilities include the following:

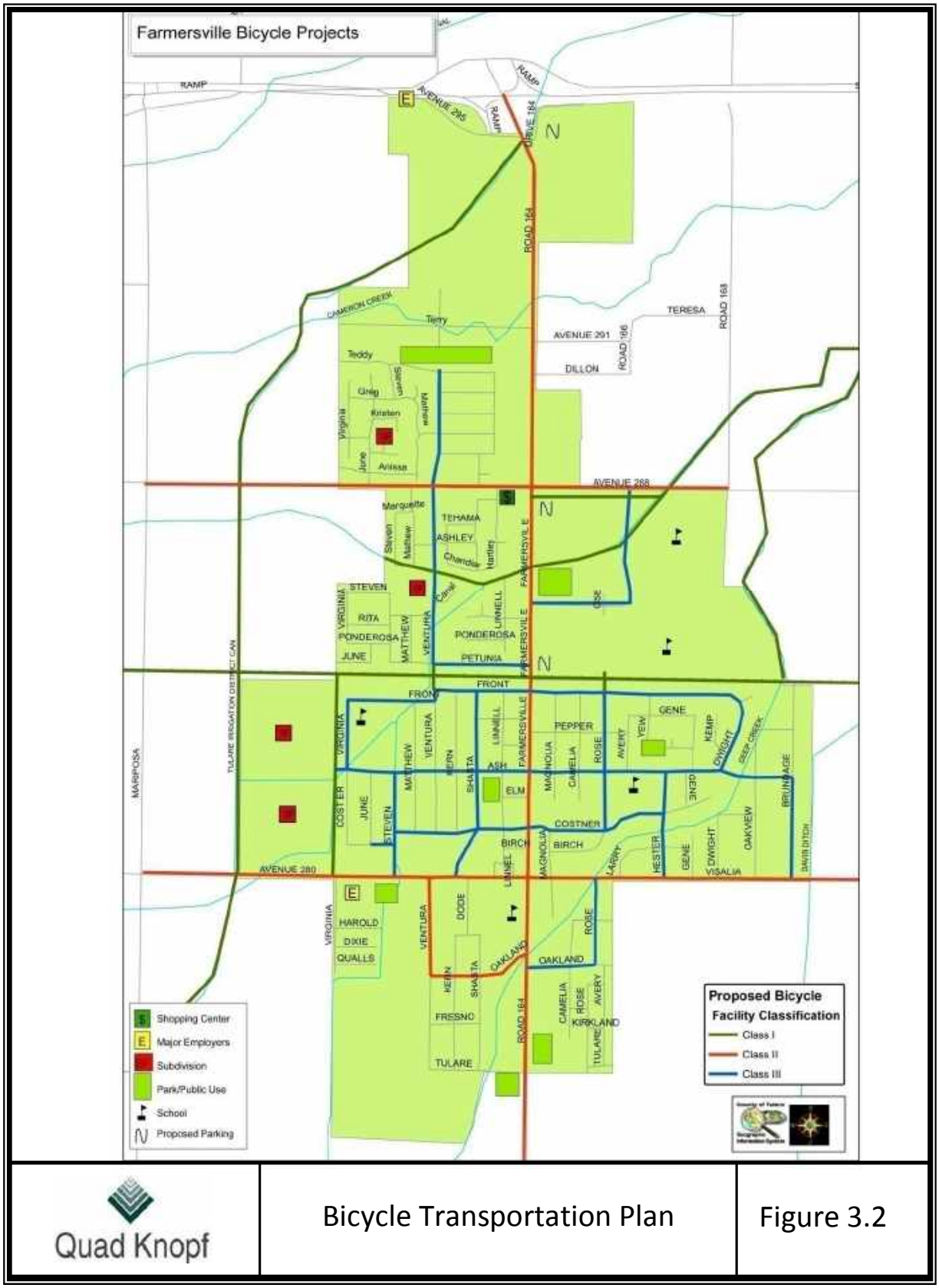
- Class I Bike Paths – provides for a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross flow by motorists minimized.
- Class II Bike Lanes – provides a signed and striped lane for one-way bike travel on a street or highway.
- Class III Bike Routes – provides for shared use with pedestrian or motor vehicle traffic. Class III Bike Routes are not striped but are often identified with signage.

Within Farmersville, the adopted plan proposes Class I Bike Paths along the Tulare Irrigation District Main Intake Canal, Extension Ditch, Blain Ditch, Deep Creek, the railroad frontage, and Walnut Avenue between Farmersville Boulevard and Extension Ditch. Class II Bike Lanes are proposed on Farmersville Boulevard, Visalia Road, Walnut Avenue, Oakland Street west of Farmersville Boulevard and a portion of Ventura Avenue south of Visalia Road. Class III Bicycle Routes are proposed on various local roadways to provide continuity to other bikeway facilities and connect neighborhoods to retail, schools and parks. The City's current Bicycle Transportation Plan is shown in Figure 3.2.

3.3.8 WATERWAY TRAILS

The City also adopted a Waterway Trails Master Plan[3] on February 22, 2010. This adopted master plan establishes a network of multi-purpose trails and open space corridors along the numerous waterways within the City. Paths, landscaping, and amenities such as lighting, benches, drinking fountains, and signage are included in the proposed plan. Trails are proposed along the Tulare Irrigation District Main Intake Canal, Cameron Creek, Extension Ditch, Blain Ditch, Deep Creek, and Davis Ditch. The map of the adopted Waterway Trails Master Plan is shown in Figure 3.3.

[3] City of Farmersville, Waterway Trails Master Plan (Collins & Schoettler Planning Consultants, 2010).



Quad Knopf	Bicycle Transportation Plan	Figure 3.2

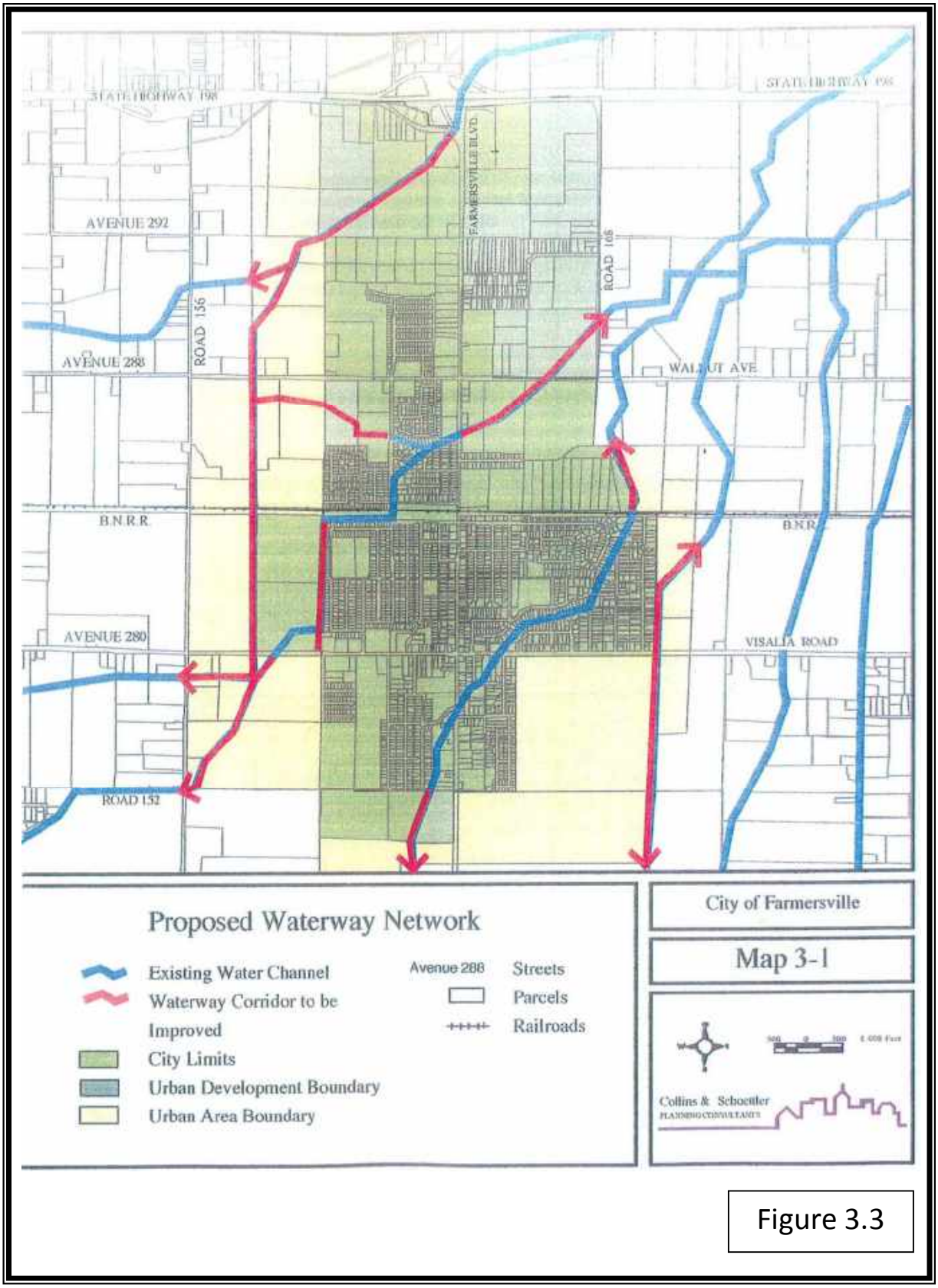

STATE HIGHWAY 198
AVENUE 292
AVENUE 288
AVENUE 280
ROAD 152
ROAD 156
ROAD 165
FARMERSVILLE BLVD
WALNUT AVE
B.N.R.R.
VISALIA ROAD
Proposed Waterway Network
Existing Water Channel
Waterway Corridor to be Improved
City Limits
Urban Development Boundary
Urban Area Boundary
Avenue 288
Streets
Parcels
Railroads
City of Farmersville
Map 3-1
Collins & Schoettler

Figure 3.3

3.3.9 SIDEWALKS

The Circulation Element indicates that all areas of the City shall have convenient pedestrian access, including connectivity between neighborhoods. Where possible, all street types are planned to include sidewalks for convenient and safe pedestrian access and parkways for shade trees.

3.3.10 TRAFFIC SIGNALS

Farmersville Boulevard has two existing traffic signals in the City – one at the intersection of Walnut Avenue and the other at Visalia Road. The City's current Circulation Element indicates these intersections are "not expected to require upgrades during the planning period (unless a large project is proposed that may adversely affect these intersections)."[4] The Circulation Element also identifies additional intersections that would require some type of traffic signalization during the period of the current General Plan. These intersections are:

- Farmersville Boulevard and Front Street,
- Farmersville Boulevard and Terry Avenue,
- Farmersville Boulevard and the frontage roads on both sides of SR 198,
- Visalia Road and Steven Avenue, and
- Visalia Road and Oakview Avenue.

Existing and proposed traffic signals, per the City's current Circulation Element, are shown in Figure 3.1.

3.3.11 RAILROADS

The Union Pacific Railroad (UPRR) runs east-west through central Farmersville connecting the Cities of Exeter and Visalia, and generally has a 100 foot right-of-way width, although some portions narrow to as little as 50 feet in width. The railroad is operated by San Joaquin Valley Railroad (SJVRR). Farmersville Boulevard is the only existing railroad crossing within the City limits. An additional crossing is located on the eastern UAB at Mariposa Avenue (Road 156). Currently, there are no spurs or sidings, and no utilization of the railroad in the City of Farmersville for the transportation of goods.

3.3.12 PUBLIC TRANSPORTATION

Visalia Transit currently has two convenient fixed routes that service the City of Farmersville. Route 9 originates at the Visalia Transit Center in downtown Visalia, and travels through Farmersville from Noble Avenue south on Mariposa Avenue, east on Walnut Avenue, south on Farmersville Boulevard, and east on Visalia Road to the City of Exeter. Along Visalia Road, Route 12 connects the Cities of Farmersville and Exeter to major retail centers on Mooney Boulevard in the City of Visalia. Route 9 has a bus stop in either direction at Farmersville Boulevard and Visalia Road. Route 12 has a bus stop at the City Hall located at Farmersville Boulevard and Virginia Avenue approximately one half mile west of downtown Farmersville.

[4] City of Farmersville, Farmersville General Plan Update (Collins & Schoettler Planning Consultants, 2002) page 3-6.

3.3.13 GREEN STREETS

The City's current Circulation Element states that the City shall establish a "green streets" program that incorporates landscaped medians and tree lined parkways. Although an official program has not been adopted, the Circulation Element designates Farmersville Boulevard, Walnut Avenue, and Visalia Road as "green streets". Current plans being designed for the widening of Farmersville Boulevard north of Walnut Avenue and the planned Visalia Road widening incorporate the landscaped medians and parkways, where space permits. Green streets policies encourage native tree planting. The infrastructure improvements will support land use plans that provide green spaces and landscaped streets. The strategy counteracts the effects of motor vehicle emissions and also serves to trap particulate matter and thereby improve air quality. "Green streets" will also encourage walkability, reducing vehicle trips.

3.4 Existing Circulation Deficiencies/Concerns

3.4.1 NORTH-SOUTH CONNECTIVITY

Currently, the existing railroad divides the northern and southern sections of Farmersville and is a major obstacle to providing traffic circulation connectivity throughout the City. Only one railroad crossing at Farmersville Boulevard exists within the City limits. This forces all neighborhood residents north or south of the tracks to travel to Farmersville Boulevard in order to cross to the other side of the City. When trains are moving through town, traffic can back up for a great distance, and any north-south movements are halted until the crossing is cleared.

Another railroad crossing exists at Mariposa Avenue. Although this is within the City's current UAB, it is approximately one-half mile west of the City limits. Additionally, the only existing connections to Mariposa Avenue near the City are from Visalia Road and from Walnut Avenue. Because this crossing is further away than the Farmersville Boulevard crossing for most neighborhoods in the City (one mile), it is often not used as a north-south connection for area residents.

Additional north-south collectors should be planned in the City. These additional collectors would provide additional connectivity to improve congestion on Farmersville Boulevard, allow direct access to the industrial and retail land uses planned in the northern portion of the City, reduce vehicle trip length, reduce fuel consumption and air pollution, and improve emergency response times in the City.

3.4.2 INDUSTRIAL AREA CONNECTIVITY

Per the City's existing Land Use Element of the General Plan, two large areas are reserved for industrial uses in northern Farmersville on either side of Farmersville Boulevard near SR 198. Existing access to these areas is limited to the Terry Avenue and Drive 164 connections to Farmersville Boulevard. As these areas develop, additional accesses will be needed to limit the amount of industrial (truck and employee) traffic on Farmersville Boulevard and various local roadways. Additional accesses to the industrial land uses will increase the viability of the industrial area, and reduce trip lengths, fuel consumption, and air pollution. Emergency response vehicles will also have better access, thereby improving public safety protection for this area.

3.4.3 SCHOOL COMPLEX CONNECTIVITY

Farmersville Unified School District is planning to complete development of a large, integrated school complex bordered by Freedom Drive on the west, Citrus Drive on the south, the alignment of Road 168 on the east, and Walnut Avenue on the north. The existing complex currently includes Farmersville High School, Freedom Elementary School, and the Farmersville Unified School District Office. Future plans for the school complex include a Middle School.

Currently, only two roadways provide access to the school complex; East Citrus Drive, west of the elementary school connecting to Farmersville Boulevard, and Freedom Drive, extending south from Walnut Avenue along the west boundary of the school complex. However, an existing fence at the east end of East Citrus Drive has for some time, prohibited vehicular through traffic but allows pedestrian access. Unrestricted vehicular access is currently limited to Freedom Drive only.

On May 14, 2012, the City Council approved the opening of East Citrus Drive to allow one-way vehicular eastbound access to the school complex with no returning westbound traffic, pending amendments and approval of environmental documents by the School District. Regardless of the approved partial opening of East Citrus Drive, traffic congestion occurs on East Citrus Drive, Freedom Drive, and Walnut Avenue. Studies completed by the School District indicate these streets will continue to operate at unacceptable levels during the peak hours and will worsen with the addition of the Middle School and as student population grows. Additional accesses to the school complex are needed to alleviate some of this congestion.

3.4.4 INCONSISTENCY OF EXISTING BICYCLE PLANNING DOCUMENTS

Plans for bicycle circulation in Farmersville are identified in three separate adopted and approved documents:

- Farmersville General Plan,
- Waterway Trails Master Plan, and
- Bicycle Master Plan.

The latter was prepared by Tulare County Association of Governments and then adopted by the City. While these plans are mostly compatible with each other, there are a few places where they are in conflict with each other. An analysis of each of the plans is needed to reconcile inconsistencies and develop a comprehensive approach for how each of the plans can function collectively.

3.5 Proposed Circulation Improvements

The proposed Circulation Plan, including proposed improvements, is shown in Exhibit B-1. As described below, this plan addresses the existing deficiencies and concerns noted in Section 3.4 above. The Bicycle Plan is shown in Exhibit B-2. This plan combines and reconciles the three adopted documents that together provide direction for bicycle planning efforts for the City.

3.5.1 NORTH-SOUTH CONNECTIVITY

Two new north-south collectors are proposed within the UAB. One is west of the existing City limits, and west of the existing residential neighborhoods along Virginia Avenue. See Figure 3.4. This proposed curvilinear alignment was chosen to accommodate approved plans for the proposed Plum Blossom subdivision located south of the railroad and west of Virginia Avenue. In the northern portion of the City, the proposed collector would realign to the east, connecting to Farmersville Boulevard approximately one half mile north of Walnut Avenue. This would provide direct connection to the northern industrial and retail land uses for the residents in the western portions of the City. In the southern portion of the City, the proposed collector would again realign to the east connecting to Farmersville Boulevard at the UAB. Local roadway extensions to this north-south collector should be planned at West Ash Street, West Petunia Street, West Garrett Avenue, West Anissa Street, West Carolyn Street, and Teddy Street.

To further improve connectivity as the City develops towards its western UAB, additional east-west collectors should be planned to connect this north-south collector to Mariposa Avenue. This would provide more direct access to SR 198 at Road 156 interchange. Two such collectors are proposed: the first at the southern UAB and the second north of the railroad tracks.

The second north-south collector is located east of Brundage Avenue. See Figure 3.5. This collector serves as an edge to the City and could help protect existing farm land outside of the UAB. It provides an additional connection to the industrial and retail land uses in northern Farmersville, and to SR 198 at the Farmersville Boulevard interchange. A local roadway extension to this north-south collector should be planned at East Ash Street.

Figure 3.4
Western North/South Collector

Figure 3.5
Eastern North/South Collector

3.5.2 INDUSTRIAL AREA CONNECTIVITY

As indicated above, the additional north-south collector proposed west of the City limits would realign to the east connecting at Farmersville Boulevard approximately midway between Walnut Avenue and SR 198 (Figure 3.6). The collector provides additional access to the City's industrial areas. Two collectors are also proposed in the western industrial area; one connecting to Noble Avenue and the other connecting to Mariposa Avenue. Both of these will provide additional access to SR 198 at the Road 156 interchange.

To help improve circulation within the eastern industrial area, a local roadway has been planned along the Road 166 alignment connecting to East Noble Avenue. This provides an outlet for the industrial area traffic to SR 198 via East Noble Avenue or Farmersville Boulevard. Terry Avenue is planned to extend to the west to provide full access to the southern portion of the western industrial area. A local roadway is planned to connect Terry Avenue to the proposed collector through the industrial areas. This provides additional access and allows for an industrial traffic connection to SR 198 via the Farmersville Boulevard or Road 156 interchange.

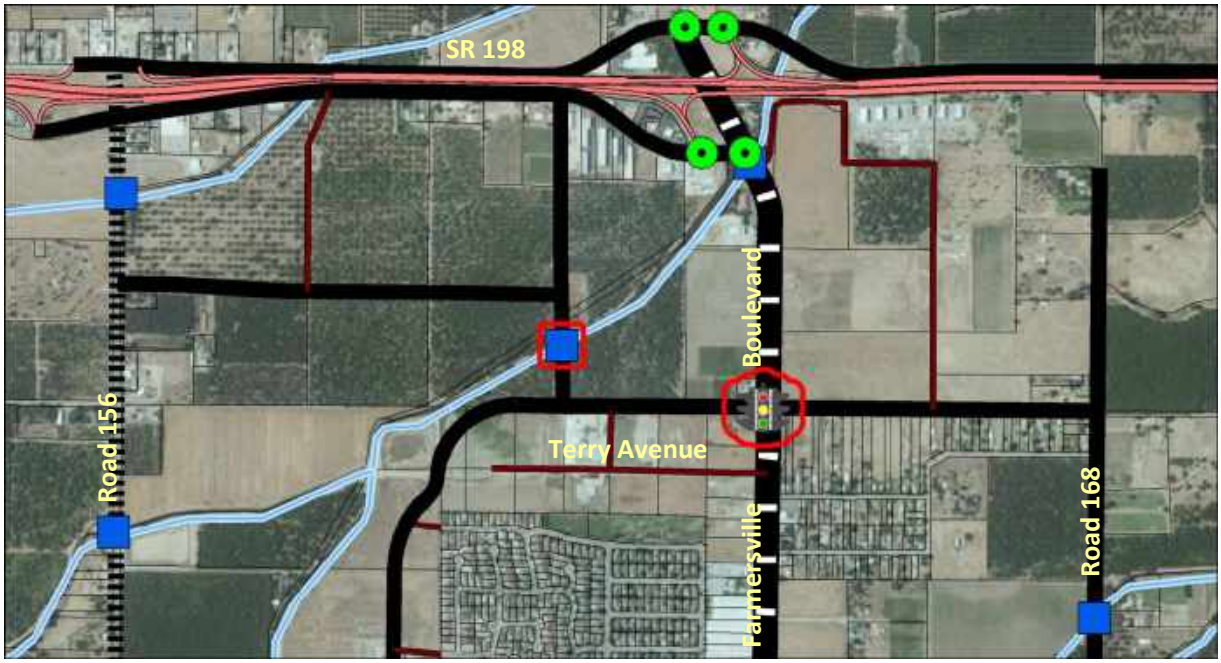


Figure 3.6 – Industrial Area

3.5.3 SCHOOL COMPLEX CONNECTIVITY

With the addition of the proposed Middle School, the school district plans to extend East Citrus Drive to the eastern limit of Farmersville High School (see Figure 3.7). A north-south local roadway is planned between East Citrus Drive and Walnut Avenue aligning with Road 168. The installation of a traffic signal is also planned at the Walnut Avenue and Road 168 intersection to help accommodate traffic entering and exiting the school complex.

In addition to the planned access east of Farmersville High School along the Road 168 alignment, East Citrus Drive is recommended to be extended to the planned north-south collector at the eastern edge of the City. This will increase connectivity around the school complex; decrease congestion on the existing roadways; and improve emergency response times to the area.

Figure 3.7 – Farmersville School Complex

3.5.4 TRAFFIC SIGNALS

As indicated previously, the current Circulation Element identifies intersections that would require some type of traffic signalization during the period of the current General Plan. These intersections are:

- Farmersville Boulevard and Front Street,
- Farmersville Boulevard and Terry Avenue,
- Farmersville Boulevard and the frontage roads on both sides of SR 198,
- Visalia Road and Steven Avenue, and
- Visalia Road and Oakview Avenue.

However, based on the proposed circulation improvements, including the planned additional collectors, local roadway connections to collectors, and changes to circulation in the north industrial area and around the school complex, not all of these intersections may require signalization. Future traffic signalization will likely occur at the intersections of arterials and collectors as shown in Exhibit B-1; however, the decision to install a traffic signal to control an intersection should always be based on an engineering study of roadway, traffic, and other conditions.

3.5.5 ROUNDABOUTS

The City's current General Plan encourages the use of roundabouts to provide traffic control at intersections. Design plans are currently being completed for a modern roundabout at the intersection of Farmersville Boulevard and Noble Avenue. Construction is anticipated to be completed in 2014. The City's future plans also include a complete SR 198/Farmersville Boulevard interchange redesign to include the installation of modern roundabouts at the off- and on-ramp intersections and the Farmersville Boulevard/SR 198 north frontage road intersection. These future roundabouts are depicted in Exhibit B-1.

Roundabouts can also be used as an alternative to the installation of a traffic signal or other control measures at some intersections. Before choosing a roundabout as an intersection control measure, a feasibility analysis should be completed to confirm its appropriateness for a given location.

3.5.6 BIKEWAYS

As indicated previously, the City of Farmersville adopted the Tulare County Regional Bicycle Transportation Plan for use in the City, as well as a Waterway Trails Master Plan. The Waterway Trails Master Plan focuses on Class I Bike Paths/Trails along the numerous waterways throughout the City. The Tulare County Regional Bicycle Transportation Plan addresses Class I Bike Paths/Trails in all areas of the City, as well as Class II Bike Lanes and Class III Bike Routes. Although these two plans focus on different types of bikeway facilities, there are overlapping components to the plans and they are not consistent with each other. This CIMP consolidates both of these adopted plans and address the inconsistencies, and also identifies appropriate bikeway facilities to be included with the proposed CIMP network. The proposed CIMP bikeway facilities are shown in Exhibit B-2.

Along with the existing bikeway facilities shown in Figures 3.2 and 3.3, the CIMP proposes additional facilities to address the connectivity issues in the City. As shown in Exhibit B-2, Class II Bike Lanes are included along all the new collectors proposed in the City. These facilities provide direct connections for the residents to the industrial and retail land uses, schools, and parks. The addition of these facilities provides a travel option which reduces congestion, thereby reducing fuel consumption and air pollution.

The Waterway Trails Master Plan recommends an open space corridor, with a trail, on both sides of the waterway. Although this is an ideal scenario, this may not be feasible for the City of Farmersville. An open space corridor and trail on only one side of the waterway should be allowed when existing conditions prohibit development on both sides. In this case, connections to adjacent neighborhoods on both sides of the waterway should be included to ensure access to the trail system wherever possible.

3.6 Estimated Costs

The development of a master plan for the City's Circulation system is dependent upon both the prioritization which should be afforded to each needed facility and the funding which can be made available for construction. The proposed Circulation Master Plan includes arterials, collectors and local roadways. Since local roadways are ordinarily the responsibility of the

developer, only the arterial and collector costs are included in the CIMP. A cost per linear foot was estimated for each type of roadway and includes: asphalt, class II base, street lights, sidewalks, curb and gutter, and median curbs, signals, culvert crossings, railroad crossings and landscaping where appropriate.

Right-of-way was not part of the estimate, because it is assumed that right-of-way will be dedicated with the future development projects that need the roadways. Table 3-1 is the summary of the estimated costs.

Table 3-1
Estimated Costs per Lineal Foot

Type	Cost/l.f.	Developer Cost/l.f.	Net Cost/l.f.
Farmersville Blvd (100' R/W)	$568.02	$333.20	$234.82
Visalia Road (116' R/W)	$704.68	$333.20	$371.48
Walnut Avenue (82' R/W)	$347.31	$256.65	90.66
Collector Street (102' (R/W)	$518.18	$307.98	$210.20

Applying these costs to the circulation system depicted on Exhibit B-1, the following capital costs in Table 3-2 are established.

Table 3-2
Capital Improvement Program Summary

Type	Length (ft)	Cost	Developer	Net
Farmersville Blvd (100' R/W)	10,560	$5,998,000	$3,518,000	$2,480,000
Visalia Road (116' R/W)	2,800	$1,973,000	$933,000	$1,040,000
Walnut Avenue (82' R/W)	5,650	$1,962,000	$1,450,000	$512,000
Road 156 (100' R/W)	7,900	$4,487,000	$2,632,000	$1,855,000
Collector Street (102' R/W)	50,793	$26,320,000	$15,643,000	$10,677,000
Construction Subtotal		$40,740,000	$24,176,000	$16,564,000
Contingencies (15%)		$6,111,000	$3,626,400	$2,485,000
Subtotal		$46,851,000	$27,802,000	$19,048,600
Engineering, Surveying and Construction Administration (20%)		$9,370,000	$5,561,000	$3,810,000
Total Cost		**$56,221,000**	**$33,363,000**	**$22,858,000**

The costs included in Tables 3-1and 3-2 are estimates based on the 2012 bidding atmosphere, and actual costs could vary from the estimates presented, depending on inflation/deflation rates affecting construction. It is common practice to use Engineering News Record (ENR) construction cost index to project the change in costs on a yearly basis. The costs included in this report should be reviewed every five years and at the minimum, the ENR construction cost index should be applied to adjust the estimates on an annual basis.

3.7 Fees

The proposed roadways developed in this study were not based on traffic generation, but circulation needs of the City. The proposed roadways will be used to serve the newly developed areas outside the existing city limits. The City will require the developer to install the outside 32 feet of all collectors and arterials which would include sidewalk, curb and gutter. This will reduce the overall cost as shown in 3-2. It also is anticipated that the City will receive grants for street improvements in the amount of $250,000 per year. This amount is based on the City receiving $10,000,000 over the next 20 years from State Transportation Program and Measure R. It is anticipated the City will receive $6,000,000 in the next two years (from Measure R) for the construction of Farmersville Boulevard. The other $4,000,000 is a conservative estimate for future grants. The grant funding would cover the entire project whether it is anticipated to be developer cost or City cost, thus reducing the overall City cost to $17,800,000.

Total Acres to develop = 1,752 (UAB) + 186 (Vacant) – 433 (right of way) = 1,505

Cost per acres = $17,800,000/1505 = $11,827.25 per acre.

The calculated fee per acre will need to be adjusted on an annual basis based on the Engineering News Record Construction cost Index.

3.8 Recommendations

The recommendations provided below are proposed to improve traffic circulation in the City of Farmersville. Some of these recommendations are the product of previously adopted plans or proposed modifications to these plans. Many of these recommendations are long term goals for the City, but should be planned for as the City continues to grow. Continued growth in the City utilizing these recommendations will help promote critical development of the retail and industrial areas, improve connectivity throughout the City, revitalize the downtown area with new street and landscape improvements, decrease the number of vehicle trips and fuel consumption within and outside the urban areas, improve air quality by decreasing ozone levels and particulate matter, lessen childhood asthma triggers, decrease obesity and inactivity rates by providing sidewalks and bikeways and improved access to parks, and allow efficient and safe movement for all modes of transportation.

1. Amend the Circulation Element of the City's current General Plan as follows:

    - Reclassify Walnut Avenue from a collector to an arterial roadway.
    - Include the new collector streets proposed in this CIMP.
    - Revise the railroad and signal locations proposed in this CIMP.
    - Include the proposed roundabouts proposed in this CIMP.
    - Update the street types to include the proposed cross-sections to meet current design standards.
    - Designate Mariposa Street as an arterial.

2. Continue developing, and implementing, a "green streets" program in the City.

3. Amend the next City Bicycle Master Plan to include the Class I, II, and III bikeways proposed in this CIMP.

CHAPTER FOUR

WATER SYSTEM

CHAPTER FOUR WATER SYSTEM

4.1 Existing Water System

4.1.1 INTRODUCTION

The CIMP will provide a road map for serving critical infill development within the Farmersville Urban Area Boundary, while protecting the valuable farmland outside of the boundary. The CIMP will include planning for water lines to enable new infill development. The development of a well-planned water system will support infill development and increased housing density, which is forecast for Farmersville. Planning for the necessary infrastructure to support this compact growth pattern will allow the City to meet the challenges of adopted land use plans and sustain the community in the long term. Many future planned developments are depending on plans for adequate water supplies.

The Farmersville CIMP will also help the State achieve its' goal to reduce per capita water consumption by 20 percent by the year 2020, by linking Farmersville's land use plans with water planning. The CIMP will focus on the nexus between water and growth, accommodating growth that minimizes the effect on water consumption and distribution costs. The Farmersville CIMP is consistent with the water-related objectives outlined in the Integrated Regional Water Management Plan.

4.1.2 GENERAL SYSTEM DESCRIPTION

Water production for the water distribution systems is generated from groundwater wells, and currently does not depend on surface waters. The water system consists of eight (8) water wells, hydropneumatic pressure tanks, approximately 144,000 lineal feet of pipe, and various valves and hydrants. The water distribution system is interconnected between fire and domestic services through a network of pipes that are directly fed by water wells located in different parts of the City.

The existing pipe network system is comprised of the major elements shown in Table 4-1:

Table 4-1
Existing Water System Inventory

Pipe Size (inches)	Length (feet)
4	10,600
6	53,200
8	56,300
10	9,500
12	14,000
Pressure Tanks	8
Wells	8
Storage Tanks	0

4.1.3 EXISTING WELL SITES

Currently eight well sites are located in the City's water distribution system (see Exhibit C-1). Well Site 2 is currently out of service, and Well Site 8 is undergoing maintenance. On average, the wells can each produce around 700 gallons per minute (gpm), and are considered fairly shallow, with groundwater depths encountered approximately 60 feet below ground surface. The operation of the water wells is dependent on the production rate of a well being matched with the water demand of the service connections. During the peak demand periods, the existing hydropneumatic tanks provide some of the equalization required to absorb the differences between the demands from the service connections and the production rates from the wells.

4.1.4 EXISTING WATER DEMANDS

In 1993, the average daily demand of the water system was recorded at 1,000 gpm, and currently the system is meeting an average daily demand of 1,500 gpm. There are two peak demands that could stress the production rates of the system. The first peaking factor is the maximum daily demand, which includes the peaking factors of diurnal patterns on an average day; currently estimated at 3,900 gpm. The second peaking factor accounts for peak hour demands, which includes the peaking factors of diurnal patterns, and fire protection demands; currently estimated at 6,000 gpm.

The current water distribution system is handling average daily demands, maximum daily demands, and peak hour demands with low head losses and is suitable under normal operation conditions. A second analysis was conducted using the maximum daily demands along with fire demands and assuming the best producing well is out-of-service. The results of the water model show that the existing water system can reasonably meet the existing demands under fire flow conditions with velocities below seven feet per second and pressures at 60 psi as shown in Exhibit C-2.

4.1.5 CAMERON CREEK COLONY

The CIMP will address critical water needs for Cameron Creek Colony, an 81-lot neighborhood located adjacent to the city, but just outside Farmersville city limits. Privately owned wells are failing due to their shallow depth and contamination from septic systems that are too close to the domestic wells serving the existing residences. Some residents have requested city water be extended into the area because they are buying water for drinking and cooking. In some cases, the septic tanks are failing, resulting in pollution of critical groundwater supplies due to nitrate contamination. This study will consider appropriate costs to provide City water service to the area.

4.2 Evaluation of Future Water System

4.2.1 FUTURE WATER DISTRIBUTION SYSTEM

In order to allow the City to eventually grow out to the Urban Area Boundary (UAB), new water lines will need to be installed to service areas outside the existing City limits. While the current

General Plan only allows development within the Urban Development Boundary (UDB), the water system needs to be master planned to support growth to the UAB to avoid water line under sizing. The current water distribution system will also need an additional well site with a storage tank, and the extension of the distribution system with 6-inch, 8-inch, 10-inch, and 12-inch water lines as shown in Exhibit C-3.

An additional well site located in the northeast portion of the UAB will be required for future expansion. In addition to the new well, a 500,000 gallon storage tank (0.50 MG), with the potential for a second 500,000 gallon storage tank, is recommended.

4.2.2 NEW WELL AND STORAGE TANK

To accommodate peak hour demands within the UAB, a new well site is recommended to increase the water production capacity. Since the northeast portion of the City has the highest elevation, an at-grade storage tank at the location would provide a good source of storage for fire protection with the inclusion of a booster station. The American Water Works Association (AWWA) M32 recommends storage tanks to have a volume capacity equal to 25% of the average daily demand plus four hours of fire protection storage, which results in approximately 0.90 MG of storage or two 0.50 MG tanks. For meeting the current needs, one 0.50 MG storage tank would meet the fire protection requirements and the City could continue to use the hydropneumatic tanks for meeting maximum daily demands.

4.3 Estimated Costs

4.3.1 DISTRIBUTION SYSTEM

The development of a master plan for the City's water system is dependent upon both the prioritization that should be afforded to each needed facility and the funding which can be made available for construction.

The summarized components of the plan are outlined in Table 4-2. Priority of the lines to be constructed will be dependent upon how the City grows. The City is hoping to attract industrial users to the northwest portion of the UAB, which would increase the priority to construct new water facilities to serve that area.

Table 4-2
Capital Improvement Program Summary

Item	Quantity	Unit	Cost/Unit	Approx. Cost
8" Water Line	23,400	LF	$ 85.00	$ 1,989,000.00
10" Water Line	5,900	LF	$ 94.00	$ 554,600.00
12" Water Line	4,300	LF	$ 95.00	$ 408,500.00
Water Well	1	EA	$ 900,000.00	$ 900,000.00
Booster Pump (from Tank)	2	EA	$ 60,000.00	$ 120,000.00
Water Storage Tank (0.5 MG)	1	EA	$ 500,000.00	$ 500,000.00
Boring	300	LF	$ 450.00	$ 135,000.00
Land Acquisition	0.75	AC	$ 30,000.00	$ 22,500.00
Construction Subtotal				**$ 4,629.600.00**
Contingencies (15%)				$ 694,440.00
Subtotal				**$ 5,324.040.00**
Engineering, Surveying, and Construction Administration Cost (20%)				$ 1,064,808.00
Total Cost				**$ 6,388,848.00**

Note: The cost estimates per lineal foot includes trench resurfacing, isolation valves at intersections, complete in place at current prevailing wage rates.

The top priority on the list of recommended improvements is the 0.50 MG storage tank and booster pump station, if land can be made available near the northeast boundary of the City. Other capital improvements on the list will depend on the City's growth areas.

The costs included in Table 4-2 are estimates based on the 2012 bidding atmosphere, and actual costs could vary from the estimates presented, depending on inflation/deflation rates affecting construction. It is common practice to use Engineering News Record (ENR) construction cost index to project the change in costs on a yearly basis. The costs included in this report should be reviewed every five years and at the minimum, the ENR construction cost index should be applied to adjust the estimates on an annual basis.

4.3.2 CAMERON CREEK

The current city water system has the ability to serve Cameron Creek Colony once the water lines are installed. Since the water lines for Cameron Creek Colony are considered local lines the cost for construction will fall on the residents of Cameron Creek Colony. The cost estimate shown in Table 4-3 would be used to help the residents find funding to construct the water lines.

Table 4-3
Cameron Creek Colony Water Improvement Program Summary

Item	Quantity	Unit	Cost/Unit	Approx. Cost
8" Water Line	4462	LF	$ 85.00	$ 379,270
Fire Hydrants	6	EA	$ 2,500.00	$ 15,000.00
Valves	10	EA	$ 900.00	$ 9,000.00
Water Meters	89	EA	$ 500.00	$ 44,500.00
Booster Pump (from Tank)	2	EA	$ 60,000.00	$ 120,000.00
Construction Subtotal				**$ 447,770.00**
Contingencies (15%)				$ 67,000.00
Engineering, Surveying, and Construction Administration Cost (20%)				$ 103,000.00
Total Cost				**$ 618,000.00**

Note: The cost estimates per lineal foot includes trench resurfacing, isolation valves at intersections, complete in place at current prevailing wage rates.

4.3.3 Fees

The proposed water lines within this master plan are based on the potential development out to the UAB. Since some of this area is outside the current general plan and there is no certainty regarding the location of future development, the basis of the fee will be the undeveloped acreage contained within the UAB.

Total Acres to develop = 1,752 (UAB) + 186 (Vacant) – 433 (right of way) = 1,505 ac.

Cost per acres = $6,388,848/1505ac. = $4,245 per acre.

The calculated cost of $4,245 per acre need to be adjusted on an annual basis based on the Engineering News Record Construction cost Index.

4.4 Conservation

4.4.1 STRATEGIES

The Farmersville CIMP will meet water conservation objectives by utilizing five important strategies:

- A full review of existing water infrastructure will be conducted to identify areas of "system fatigue," reduce leakage, and prevent future water losses. The Environmental Protection Agency (EPA) reports there are 240,000 water main breaks per year in the United States. Taking proactive steps to maintain and/or rehabilitate existing infrastructure is an important strategy to protect water resources and ensure safe, reliable water delivery. The "fix it first" strategy is typically deemed to be most critical to protecting valuable water resources.

- The CIMP will enable compact growth and efficient land use strategies that will save water. As noted in the EPA guide, "Growing towards More Efficient Water Use: Linking Development, Infrastructure, and Drinking Water Policies", compact growth helps communities reduce costs and conserve water. Compact neighborhood design, which makes maximum use of smaller lots and attached housing, has less landscaping and thus less demand for water (lawns, landscaping, and gardens account for 50-70% of water usage). Ultimately, this could make the difference between Farmersville needing to develop new water sources or using existing water sources efficiently well into the future.

- The area's system of surface irrigation ditches and channels provides abundant opportunities to design storm water facilities in locations that can also accept surface water sources for ground water recharge. This can be accomplished through exchange agreements with area farmers and irrigation companies for supplies of year-round treated waste water, once the City has implemented tertiary treatment of its wastewater to meet Title 22 requirements.

- The City's properly treated wastewater can be reused, providing a year-round supply of water for recharging groundwater and for irrigation of certain crops.

- In 2010, the City began installing water meters for 100% of its customers. Empirical evidence has proven that metered water delivery and billing encourages more conscientious water use. The CIMP will support the City's efforts to establish metered delivery and billing for all of its customers before the 2020 deadline.

4.5 Recommendations

The current water system is functioning adequately. A key issue for this system is the lack of water storage. The current system relies completely on groundwater pumping to supply the needed water. If there are problems with more than one well at a given time there will be problems providing fire flow. In the future, the City may also experience difficulty balancing well production with service demand. These issues can be resolved with the addition of a water storage tank. The northeast portion of the City has the highest elevation and should be considered the best location for the storage tank.

To improve water circulation and overall system performance in the area bounded by Rose Avenue, Brundage Avenue, Visalia Road and Front Street, a 10 inch water line is needed in Visalia Road. Currently this area is serviced by 8 inch and smaller lines which run through local streets. The proposed 10 inch line in Visalia Road will provide this area with a larger connection to the water wells on the east side of the City.

CHAPTER FIVE

WASTEWATER

CHAPTER FIVE WASTEWATER

5.1 Existing Sewer System

5.1.1 INTRODUCTION

The CIMP will provide a road map for critical infill development within Farmersville's Urban Area Boundary, while protecting the valuable farmland outside of the boundary. The CIMP will include planning for wastewater lines to enable new infill development. The development of a well-planned wastewater system will support infill development and increased housing density, which is forecast for Farmersville. Planning for the necessary infrastructure to support this compact growth pattern will allow the City to meet the challenges of adopted land use plans and sustain the community in the long term. Many planned developments are dependent on plans for adequate wastewater disposal systems.

5.1.2 GENERAL SYSTEM DESCRIPTION

The Farmersville sewer system is fairly typical for Tulare County communities and is a combination of underground gravity flow pipelines, lift stations and a sewer treatment plant.

The existing system is comprised of the major elements shown in Table 5-1:

Table 5-1
Existing Sewer Inventory

Pipe size (inches)	Length (feet)
6	26,350
8	74,580
10	22,230
12	10,880
18	1,390
21	1,920
24	1,780
Manholes	390
Lift stations	4

5.1.3 EXISTING LIFT STATIONS

The City's sewer system currently has four lift stations. One lift stations is located at the Oakview Avenue and Ash Street intersection. The second lift station is located at the intersection of Yew Street and Sandy Avenue. Both of these lift stations serve a small area that is not scheduled to be expanded. These lift stations function adequately for the areas served.

A third lift station is located at Petunia Street and Ventura Avenue. This lift station is functioning properly and serves a small area that is not proposed to expand beyond current flows.

The fourth lift station is located at the intersection of Walnut Avenue and Ventura Avenue and was designed to service the northern portion of the City. The existing lift station has a capacity of 500 gpm and was designed to allow for larger pumps to be installed that would increase the capacity to 1,035 gpm at a future date. This lift station was designed to handle the area within the UAB north of Walnut Avenue. This lift station lacks a flow meter and, without a flow meter, it will be difficult to decide when the bigger pumps will be needed.

5.1.4 EXISTING SEWER TREATMENT PLANT

The City's sewer treatment plant is located about a mile south of Visalia Road along the extension of Virginia Avenue. The facility consists of headworks and aerated ponds first constructed in 1967. The plant was expanded in 1978 and the aeration ponds were lined in 1987. The design capacity of the existing plant is 1.25 mgd; the current average daily flow is approximately 0.95 mgd.

5.1.5 USAGE

The 1983 master plan calculated a disposal rate of 140 gallons per day per capita, which in the context of a master plan is considered to be very high. With the advent of water conservation strategies and availability of more accurate population numbers, the calculated usage rate has declined since 1983. Currently, on a straight population basis (no commercial/industrial factors), the disposal rate is estimated to be 88 gallons per capita per day. Since this estimate is based on a straight population basis, its use for planning the needs of future growth would be conservative.

5.1.6 CAMERON CREEK COLONY

The CIMP will address critical wastewater needs for Cameron Creek Colony, an 81-lot neighborhood located adjacent to the City, but just outside Farmersville city limits. Privately owned wells are failing due to their shallow depth and contamination from poorly operating septic systems that are too close to the domestic wells serving the existing residences. In some cases, the septic tanks are failing resulting in inadequate treatment of sewage and pollution of critical groundwater supplies due to nitrate contamination. Some residents have requested city sewer be extended into the area because of the failing septic systems. This study will consider appropriate costs to provide City sewer service to the area.

5.2 Evaluation of Future Sewer System

5.2.1 SEWER COLLECTION SYSTEM

In order to plan for the City to grow out to the UAB, new sewer lines will need to be installed to service areas outside the existing City limits. The original 1983 sanitary sewer master plan served the east side of Farmersville (Areas 1, 2, 3, 4, 5) with a new trunk line labeled Line 1. The west side of Farmersville (Areas 12, 13, 14) was served by a new trunk line labeled Line 6 (a portion of line 6 from the treatment plant to Visalia Road was installed in 1997).

Line 1 was proposed to serve the area south and east of the existing City limits. This line is still needed to serve this area. There are 40 acres along Visalia Road (originally called Tributary Area 5) that would be serviced by the existing 10 inch line in Visalia Road.

Line 2 will not be necessary. This line was eliminated by development that has occurred in this area. The west side of Farmersville Boulevard is being serviced by the line in Walnut Avenue as well as a line located in Ashley Street. The east side of Farmersville Boulevard is proposed as a single development and would be serviced by the Walnut Avenue Line (Line 4).

Line 4 will be needed in the future to serve the area north of Walnut Avenue and east of Farmersville Boulevard. It will also be available for the school complex on the south side of Walnut Avenue should the Citrus Avenue line reach its ultimate capacity.

In 2000, the North Side Sewer Study was completed. The study sized sewer lines to accommodate growth in the area north of Walnut Avenue. This area included 713 acres with an estimated ultimate flow of 1,035 gpm. The CIMP has expanded the area of study to include the lands within the UAB. As a result, the area serviced by the Walnut Avenue lift station is now 925 acres. Using the same rational as the North Side Sewer Study (use rate of 0.0011 million gallons per day per acre), the flow for this area will be 1.018 mgd or 707 gpm. This is within the ultimate flow rate for the study but reduces the peaking factor from 1.6 to 1.5.

Since other sewer plans have been completed since the 1983 master plan was adopted, new service areas were created to allow for the incorporation of the new study areas into the CIMP. Exhibit D-3 shows the new service areas.

The new service areas are called regions and the acreages they include are listed in Table 5-2.

Table 5-2
Sewer Study Areas

Region Name	Total Acres	Residential Acres	Commercial Acres	Industrial Acres	Institutional Acres
North Sewer Study	925	236	230	439	20
West Region	467	327	20	0	120
Southeast Region	509	464	27	0	18

The southeast region contains Tributary 5 which will be served by existing sewer lines. This will reduce the southeast region to 469 acres.

5.2.2 FUTURE COLLECTION SYSTEM

For the purposes of this study, the future density will be six (6) dwelling units per acre and 3.2 people per dwelling units. Also, the current estimated use of 88 gallons per person per day was used. This will result in an estimated flow of 1,689 gallons per day per acre.

The North Side Sewer Study referenced earlier, sized the sewer lines and the existing lift station to serve the area north of Walnut Avenue. The main line in Farmersville Boulevard and the Walnut Avenue lift station were installed in 2001. The current lift station has a capacity of 500 gpm with an ability to upgrade to 1,035 gpm. The lift station is in need of a flow meter to allow the City to monitor the actual flows in order to properly plan for the timing of the future upgrade of the pumps.

Two trunk lines are needed in the North Side Sewer Study area. A trunk line, Line F, will need to be located on Walnut Avenue east of Farmersville Boulevard. A second line, Line G, will need to be installed in Noble Avenue with a bore under the freeway to extend a sewer line to Mineral King Avenue, to serve the area north of Highway 198. The remaining lines to be installed in the north sewer study area will be considered developer-responsible lines. These lines are 8 inch or 10 inch lines sized to service a specific area within the study. See Exhibit D-2 for location of trunk lines.

The southeast region will be serviced by trunk lines that will follow the proposed collectors in the area. The expected flow from the southeast area is estimated to be 530,000 gpd. Applying a peaking factor of 1.6, the peak flow is expected to be 848,000 gpd. To accommodate this estimated peak flow, the trunk line along the south side of the area will need to be a 15” line with a minimum slope of 0.0014. This sizing is consistent with the 1983 Sewer Master Plan. The pipe size can be reduced to 10” once the line has extended to the east UDB, and can be further reduced to 8” once the line has extended to Visalia Road. The future residential developments in this area will need to install the local sewer lines to serve the areas being developed. Exhibit D-2 depicts the proposed lines in this area as A, B, and C.

The west region will be serviced by an existing 24” trunk line located in Virginia Avenue south of Visalia Road. North of Visalia Road, the area will be served by a proposed trunk line located in the proposed collector street that runs through the middle of that area. The west region is expected to generate an estimated flow of 528,000 gpd. Applying a peaking factor of 1.6, the peak flow is estimated to be 845,000 gpd. This will require a 15 inch sewer line located within the proposed collector. This line may be reduced to 10 inch once it extends beyond Front Street. Development within the area will be responsible for installing the local sewer lines to serve the areas being developed. Exhibit D-2 shows the proposed lines in this area as D and E.

5.2.3 SEWER TREATMENT PLANT

The Preliminary Engineering Report (PER) completed in 2010 for the Wastewater Treatment Plant and updated in August of 2012, calls for an expansion of the sewer treatment plant to 1.4 mgd. This is expected to serve the City until 2025 or until a population of 15,866. The recommendation of the PER was for the use of aeration lanes with activated sludge. This

configuration is scalable, and can be incrementally expanded by adding additional aeration lanes. The PER has projected the 2050 population of Farmersville at 24,746 with a needed treatment capacity of 2.4 mgd.

5.3 Estimated Costs

5.3.1 COLLECTION SYSTEM

The development of a master plan for the City's sewer system is dependent upon both the prioritization that should be afforded to each needed facility and the funding which can be made available for construction.

The summarized components of the plan are outlined in Table 5-3. Priority of the lines will depend on how the City grows. The City is currently trying to attract industrial users in the North Side Sewer Study Area. This might require the planned upgrade to the Walnut Avenue lift station.

The foremost priority on the list is the flow monitor on the Walnut Avenue Lift Station. The remaining capital improvements on the list will depend on the actual activity within the various growth areas of the City.

The costs included in Table 5-3 are estimates based on the 2012 bidding atmosphere and actual costs could vary from the estimates presented, depending on inflation/deflation rates affecting construction. It is common practice to use Engineering News Record (ENR) construction cost index to project the change in costs on a yearly basis. The costs included in this report should be reviewed every five years and, at the minimum, the ENR construction cost index should be applied to adjust the estimates on an annual basis.

Table 5-3
Sewer Capital Improvement Program Summary

Item	Qty.	Unit	Cost/Unit	Approx. Cost
Add flow meter to Walnut Lift Station	1	EA	10,000	$10,000.00
Upgrade Walnut Avenue Lift Station	1	EA	$50,000.00	$50,000.00
10” North Sewer Study Line	1,320	LF	$100.00	$132,000.00
8” North Sewer Study Line	2,100	LF	$90.00	$189,000.00
Highway 198 bore	250	LF	$450.00	$112,500.00
15” Southeast Sewer Line	6300	LF	$125.00	$787,500.00
10” Southeast Sewer Line	3400	LF	$100.00	$340,000.00
8” Southeast Sewer Line	2600	EA	$90.00	$234,000.00
15” West Sewer Line	3300	LF	$125.00	$412,500.00
10” West Sewer Line	2500	LF	$100.00	$250,000.00
Construction Subtotal				$2,517,500.00
Contingencies (15%)				$377,625.00
Subtotal				**$2,895,125.00**
Engineering, Surveying, and Construction Administration Cost (20%)				$579,025.00
Total Cost				**$3,474,150.00**

The cost per lineal foot includes a manhole every 400 feet and trench resurfacing.

5.3.2 WASTEWATER TREATMENT PLANT

The PER completed for the City in 2010 and updated in August, 2012 recommended the current plant be upgraded to secondary treatment and expanded to handle 1.4 mgd. The PER estimated the cost of the upgrade to be $14.5 million which included design, land costs and contingencies.

5.3.3 CAMERON CREEK COLONY

The current city wastewater system has the ability to serve Cameron Creek Colony once the sewer lines are installed. Since the sewer lines for Cameron Creek Colony are considered local lines the cost for construction will fall on the residents of Cameron Creek Colony. The cost estimate in Table 5-4 would be used to help the residents find funding to construct the sewer lines.

Table 5-4
Cameron Creek Sewer Improvement Program Summary

Item	Qty.	Unit	Cost/Unit	Approx. Cost
8" Sewer Line	4600	LF	$80	$368,000
Manholes	14	EA	$3,500	$49,000
Laterals	81	EA	$1,500	$121,500
Construction Subtotal				$538,500
Contingencies (15%)				$80,775
Engineering, Surveying, and Construction Administration Cost (20%)				$123,855
Total Cost				**$743,130**

The cost per lineal foot includes trench resurfacing.

5.3.4 FEES

The proposed sewer lines within this master plan are based on the potential development out to the UAB. Since some of this area is outside the current general plan and there is no certainty regarding the location of future development, the basis of the fee will be the undeveloped acreage contained within the UAB. The wastewater treatment fee will need to be based on dwelling units. This is due to the fact the treatment plant has a fixed hydraulic treatment capacity and future expansions will need to be funded by the future development. The 1.4 mgd wastewater treatment plant is estimated to cost $14,500,000. The existing flow into the plant is 0.9 mgd, so 0.5 mgd (36%) is for future growth. This 0.5 mgd will serve an estimated population of 5,500 people based on 90 gallons per person. Using the current people per household of 3.2 this equates to 1,719 dwelling units.

Total Acres to develop = 1,752 (UAB) + 186 (Vacant) – 433 (right of way) = 1,505 ac.

Wastewater collection fee:
Cost per acre = $3,474,150/1505ac. = $2,308.50 per acre.

Wastewater Treatment fee:
Cost per acre = $5,220,000/1719 du. = $3,036.65 per dwelling unit

The calculated fees will need to be adjusted on an annual basis based on the Engineering News Record Construction Cost Index.

5.4 Recommendations

The current collection system is functioning adequately. The only current problem areas are the lack of a flow meter at the Walnut Avenue lift station and the condition/capacity of the existing wastewater treatment plant.

The flow meter at the Walnut Avenue lift station should be installed as soon as practical to ensure that the capacity of the lift station is not reaching the limits of the existing installed pumps.

The capacity of the treatment plant has been an issue for a number of years. The current decline in new home construction has given the City time to plan the upgrade without affecting the overall development of the City.

CHAPTER SIX

STORM DRAIN

CHAPTER SIX STORM DRAIN

6.1 Existing Storm Drain Facilities

6.1.1 INTRODUCTION

The CIMP will provide a road map for critical infill development within Farmersville's UAB, while protecting the valuable farmland outside of the boundary. The CIMP will include storm drainage facilities to enable new infill development. The development of a well planned storm sewer system will support infill development and increased housing density, which is forecast for Farmersville. Planning for the necessary infrastructure to support this compact growth pattern will allow the City to meet the challenges of adopted land use plans and sustain the community in the long term. Many planned developments are dependent on plans for adequate storm water disposal and management systems.

The CIMP will also provide guidelines to recapture storm water for recharge and groundwater sustainability programs. New storm drain systems will capture urban runoff and direct it to percolation ponds to naturally filter and return surface water back into the ground. A second strategy to improve water quality includes recapturing and naturally filtering urban runoff from storm drain systems, which will be planned in the CIMP. This strategy decreases water pollution by directing runoff into percolation ponds. The contaminated water is naturally filtered as it seeps into the ground and recharges the local water table. Directing the storm drainage that is generated within the City to recharge facilities is essential to keep underground water supplies replenished and to reduce the number of contaminants that could potentially reach the local water supply.

6.1.2 GENERAL SYSTEM DESCRIPTION

The Farmersville storm drainage system is fairly typical for Tulare County communities and consists of a combination of surface drainage and underground gravity flow pipelines. The three primary discharge locations are Deep Creek, Extension Ditch and the Front Street detention pond. The existing storm drainage system is comprised of the major elements shown in Table 6-1:

Table 6-1
Existing System Specifications

Pipe size (inches)	Length (feet)
12	5,971
15	221
18	510
21	108
24	57
27	8
30	19
33	8
42	17
48	92

Drainage Inlets – 304

Manholes – 137

Drainage ponds – 5
- Front Street(detention) approximate capacity 36.0 acre-feet
- Roy Park Pond (detention)
- City Hall basin (retention)
- Woodcrest Pond (retention)
- Terry Avenue Pond (retention)

Storm Drainage Lift Stations – 1
- Front Street

6.1.3 LINE CAPACITIES AND FLOWS

Existing drainage areas and pipeline slopes and sizes were determined using information from the master plan of 1989 and other existing information. In order to evaluate line capacities and design flows, the following generalized assumptions were made:

a. Two-year design storm (a storm intensity which statistically has a 50% probability of occurring in any given year) based on City of Farmersville rainfall intensity curves

b. Coefficient of runoff – "C" (the percentage of total rainfall which reaches the drainage system):

   See Table 6-2

c. Roughness coefficient – "n" (coefficient based on pipeline roughness; the larger the "n", the less the pipeline capacity):

   "n" = 0.013

Each drainage area and sub-area was evaluated to compare existing line capacity to design flows. Two design flows were established. First, an "unrestricted" design flow assumed that the entire drainage area contributed to the line being evaluated as if all upstream pipelines were adequately sized. Second, a "restricted" design flow that allowed upstream pipelines to contribute only at their existing capacity. Through this analysis process, it was determined that the existing system is appropriately sized for the given drainage flows experienced.

6.1.4 DRAINAGE PONDS

The existing drainage ponds serve various areas within the City.

Front Street Pond (Detention)
This is the largest of the ponds and serves Areas A, B, C, and AA (see Exhibit E-1 for areas) with a combined total land area of approximately 423 acres. The current capacity of the pond is approximately 36 acre-feet. Two (2) 10 hp pumps are used (one is for backup) to pump water from the pond into Extension Ditch. Each pump has a capacity of approximately 2,100 gpm. One (1) pump has the ability to drain a full pond in four days.

Roy Park Pond (Detention)
This pond serves Area W and has a total land area of approximately 0.30 acres. The pond capacity is estimated at 1.2 acre-feet.

City Hall Basin (Retention)
This pond is part of the City Hall complex. Streets do not drain into this pond. The only runoff that it receives is from the City Hall Complex. No problems with this pond have been reported.

Woodcrest Pond (Retention)
This pond is a temporary pond sized to serve the Woodcrest Subdivision. This subdivision is comprised of 54 residential lots. The pond is maintained by the subdivision and there are no reports of problems.

Terry Avenue Pond (Retention)
This pond is located at the end of the current asphalt surface on Terry Avenue. The pond is temporary and was sized to handle only the street runoff from Terry Avenue. The parcel map for this area depicts a permanent pond at the very westerly end of the parcel map. Current lots that front on Terry Avenue are required to maintain their lot drainage on site.

6.1.5 EXISTING DITCH CAPACITY

Watercourses within the study area are Cameron Creek, Deep Creek, Extension Ditch, Blain Ditch, Lower Extension Ditch, Hart-Sweeney Ditch and Sims-Davis Ditch. Except for Cameron Creek, which is operated by the Tulare Irrigation District (TID), all other channels are operated by the Consolidated People's Ditch Company (CPD). In reviewing existing and proposed discharges into these channels, the CPD and its ditches are currently at or near capacity and they have indicated that no further discharges can be accepted by CPD. Deep Creek is capable of taking significant discharge increases (in the order of 20-30 cubic feet per second). Discharges to CPD facilities are governed by an agreement between the CPD and the City of Farmersville.

6.1.6 EXISTING DRAINAGE AREAS

The existing drainage facilities along with their tributary areas are shown in Exhibit E-1.

The existing areas of the 1989 Storm Water Master Plan were used as the starting point to evaluate the existing condition of the storm drain system. Adjustments were made to the individual drainage sub-area boundaries if new drainage patterns have been implemented. Also, new drainage sub-areas were added to cover the lands within the City's UAB.

Sub-Area A (Citrus Drive)
This area consists of approximately 31 acres, located on both sides of Farmersville Boulevard. Surface flows run westerly to collection points on Citrus Drive, Ponderosa Street and Linnel Avenue where a pipeline carries the drainage into Sub-Area B and into the Front Street Storm Drain Pond. The curb and gutter, and cross-gutters along Citrus Drive, between Farmersville Boulevard and Linnel Avenue are very flat, creating local ponding issues.

Sub-Area B (Petunia Street to Farmersville Boulevard)
This area contains approximately 16.5 acres. A 30-inch pipe in Petunia Street carries drainage from this sub-area as well as Sub-Area A, to the Front Street ponding basin.

Sub-Area C (Front Street and Ventura Avenue)
This area contains approximately 140 acres, created primarily by the various phases of Orchard Estates and Lewis Estates. A series of pipelines collect surface runoff and carry the drainage flows to the Front Street ponding basin.

Sub-Area D (Farmersville Boulevard)
This area contains approximately 65 acres, including Farmersville Boulevard, from the railroad to Deep Creek, Visalia Road easterly to Deep Creek, and the Birch Street/Magnolia Avenue area. The existing 15 inch pipe in Farmersville Boulevard, which gravity drains southerly to Deep Creek, is significantly undersized; and once south of Visalia Road, it is only capable of carrying 16 percent of design flows. The most serious existing drainage problem is on Magnolia Avenue, just north of Visalia Road. This area used to flood severely because water from Farmersville Boulevard would back up and "bubble-up" at this location. This problem was reduced in 1986, when a flap-gate was installed on the discharge, but the area is still susceptible to flooding.

Sub-Area E (Rose Avenue and Ash Street)
This area contains approximately 54.5 acres. The storm drainage flows are collected by pipelines which ultimately drain through a 30 inch pipeline into Deep Creek.

Sub-Area F (Pepper Street and Gene Avenue)
This area contains approximately 33 acres. The storm drainage flows are collected by pipelines which ultimately drain through a 27 inch pipeline into Deep Creek.

Sub-Area G (Dwight Avenue)
This area contains approximately 9 acres. The storm drainage flows from this small area are collected by 12 inch and 15 inch pipelines which drain into Deep Creek.

Sub-Areas H, I, J, K, L and M (along both sides of Deep Creek, from Hester to Southern Pacific Railroad) and ***Sub-Areas T, U and V (along both sides of Deep Creek, from Magnolia Avenue to Visalia Road)***

These are all small drainage areas (1.4 to 16.5 acres) which each surface drain to a single drainage inlet or curb opening and then flow directly into Deep Creek. No drainage problems were identified by City staff in these areas.

Sub-Area N (E. Visalia Road)
This area contains approximately 38 acres. The storm drainage flows are collected into a pipeline running westerly along Visalia Road, which eventually discharges through a 21 inch pipeline into Deep Creek. Although the pipe sizes are adequate, a 21 inch pipeline enters Deep Creek below the bottom of the creek bed, and therefore must bubble-up into the creek through a recently installed outlet structure. This bubble-up reduces the system's effectiveness.

Sub-Area O (Hester Avenue and Larry Street)
This area contains approximately 13 acres. Storm drainage flows drain along the alley north of Visalia Road by surface and "bubble-ups", to a 12 inch pipeline, which drains into Deep Creek. The 12 inch pipeline is capable of carrying only 63 percent of design flow.

Sub-Area P (Shasta Avenue and Visalia Road)
This area contains approximately 23 acres, with surface flows draining to a 12 inch pipeline along Visalia Road. This pipeline overflows through an outlet structure into Hart-Sweeney Ditch. The 12 inch pipeline is capable of carrying only 26 percent of design flow. Further, there are no drainage facilities available in the area of Peco Street and Linnel Avenue.

Sub-Area Q (Harold Street and Virginia Avenue)
This area contains approximately 19.5 acres. In this area, surface flows are conveyed in streets and through pipelines to two retention basins. These systems are adequate.

Sub-Areas R and S (Shasta Avenue and Kern Avenue)
These two areas contain approximately 66 acres. Surface flows drain from the north end of these areas, south to Tulare Street, and then are collected into two undersized 12 inch pipelines, capable of carrying only 31 percent and 33 percent of design flows).

Sub-Area W (Langford Tract)
This area contains approximately 15 acres. The surface flows in this area are collected by an 18 inch pipeline, which drains into a retention basin. This system is adequate.

Sub-Area X (Camelia Avenue)
This area contains approximately 13 acres. This area has no sub-surface collection or disposal system. Storm water flows surface drain to the south end of Camelia Avenue, where they are drained onto vacant property to the south.

Sub-Area Y (S. Farmersville Boulevard)
This area contains approximately 21 acres. The area's storm drainage flows were originally partially collected by an undersized 15 inch pipeline (50 percent of design flows) which drains to Deep Creek. A recent cleaning of the line shows that it was fully plugged and the outfall in Deep Creek could not be found. Areas south of the 15 inch inlet, as well as overflow from the 15 inch pipeline, surface drain south onto vacant agricultural land just south of the existing City limits. There are also onsite collection points at an apartment site and the City Corporation Yard which have gravity pipeline connections to Deep Creek.

Sub-Area Z (Walnut Avenue east of Farmersville Boulevard)
This area is essentially composed of the Farmersville Unified School District's school site and the future City Sports Park. The area contains approximately 146 acres. The school site will continue to retain the storm drainage generated from this area on site. The future sports park will also be designed to retain drainage on site.

Sub-Area AA (Walnut Avenue west of Farmersville Boulevard)
This area contains approximately 236 acres. The area has curbs and gutters which allow storm drainage flows into a pipe network that drains into the Front Street ponding basin. New projects along Farmersville Avenue south of Ashley Avenue have been required to retain storm water on site since the existing pipe system does not extend to this area.

Sub-Area AB (Terry Avenue)
This area contains approximately 112 acres. This is a mostly undeveloped area zoned for industrial uses. Drainage from individual parcels fronting on Terry Avenue are required to retain drainage on site. Existing drainage along Terry Avenue is captured in a temporary retention pond at the end of the pavement. Future plans, per the SR 198 Corridor Specific Plan, call for a retention pond at the west end of Terry Avenue.

Sub-Area AC (Cameron Creek Colony)
This area contains approximately 309 acres. This area is mostly undeveloped except for the Cameron Creek Colony, an unincorporated county residential area. The drainage from this area is planned to be handled by two detention ponds; one to be constructed in the future north of Cameron Creek Colony, and the other near Walnut Avenue.

Sub-Area AD (Industrial area north of TID Canal)
This area contains approximately 177 acres. This area is currently outside the City limits but within the City's UAB. This area lies north of the TID canal.

Sub-Area AE (UAB south of Walnut Avenue)
This area contains approximately 525 acres. This area is currently undeveloped except for the Linnel Colony at the southeast corner of Walnut Avenue and Avenue 156. The drainage from this area will be handled by detention ponds.

Sub-Area AF (East UAB)
This area contains approximately 346 acres. This area is currently undeveloped.

Sub-Area AG (South UAB)
This area contains approximately 167 acres. This area is currently undeveloped.

6.2 Engineering and Planning Criteria

6.2.1 HYDROLOGY

One of the most important steps in the preparation of the Storm Drain Master Plan of 1989 was the development of the hydrology. This occurred before any determination could be made as to

pipeline sizes and storm water basin capacities. Hydrology, in its broadest sense, is the science which deals with the occurrence of water on and in the earth. The hydrology used to prepare this report is the same as that which was studied and developed for the Storm Drain Master Plan of 1989, as a review of the past hydrology was found to be consistent with current methodologies in use today.

An accepted procedure for urban drainage design for small drainage areas – such as located within the City of Farmersville – is a procedure called the Rational Method. The basic Rational Method formula, used in this study, is

Q=CIA

Where:

Q = Peak flow rate in cubic feet per second (cfs)
C = Coefficient of Runoff
I = Average rainfall rate in inches per hour corresponding to the time of concentration
A = Drainage area in acres

The basic design criteria used in this report is the once-in-two-year-storm, or more commonly referred to as a storm that has a two-year return period. "Return period" does not imply that there will be a given number of years between storm events. It only means that over many years such a storm will occur an average of the number of years designated. The two-year return period storm will occur on the average of 50 times in 100 years. For example, three of these storms may be in successive years, all three may occur in the same year or many years could elapse between such events.

The coefficient of runoff (C) is primarily based on the land use of the drainage area, and the rainfall intensity. The coefficient of runoff is a dimensionless ratio which measures the amount of runoff that can be expected to occur for a particular land use. An example of this would be if 1 inch of rain falls on a residential lot, it is expected that 0.30 inches of rain would occur as runoff and the balance would be retained on the property. The coefficient of runoff in this example would be 0.30. The coefficient of runoff values used in this report are listed in Table 6-2:

Table 6-2
Coefficient of Runoff (C)

Land Use	(C)
Commercial/Industrial/Office	0.80
Residential	
Low Density	0.30
Medium Density	0.40
High Density	0.50
Parks, Open Space	0.10

The land uses listed above are based on the Farmersville General Plan map which was adopted in November 2002.

The rainfall intensity (I) is based on the time of concentration and the storm frequency. The time of concentration is the time that it takes runoff to travel from the furthest point of the drainage area to the point for which the peak flow rate is being calculated. For the purpose of this study, time of concentration is equal to the lot time (or initial time) plus the travel time from the initial area to the point being considered. The lot, or initial time, is based on the Tulare County Improvement Standard which states the lot to street time is 20 minutes for lots smaller than ½ acre and 15 minutes for lots larger than ½ acre. A maximum lot time of 20 minutes was used for exceptionally large lots such as school grounds. Travel time is dependent upon the method of conveyance, i.e., pipeline or gutter. For runoff being conveyed by gutter, the velocity of the water is assumed to travel at 1.5 feet per second. For water being conveyed by pipeline, the calculated velocity of flow is used. This rainfall intensity (I) for a particular storm frequency and a time of concentration can then be obtained from Exhibit E-4. This information was developed by the use of the procedures outlined in the Tulare County Flood Control Master Plan. These procedures were developed from hydrologic analysis of available data and studies of the National Weather Service and the California Department of Water Resources.

One of the significant integral parts of the master plan facilities in the City of Farmersville is the use of detention and retention storm water basins and the use of temporary detention basins when required master planned trunk lines are not yet installed.

The basic storm criterion for the sizing of a ponding basin is either: a) a 10 year storm with 18" free board below the lowest street drainage curb inlet grate, or b) a 50-year storm with water at the top of the lowest top of curb within the drainage area, whichever creates the largest pond. The storage equation for a basin is:

S = (P/12)CA

Where:

S = Storage, in acre-feet
P = Rainfall depth for design storm in inches
C = Coefficient of Runoff
A = Drainage area in acres

Rainfall depth, P, is the total amount of rainfall that will occur for a given design storm. The 10-year return period/10-day duration storm will yield a total of 4.3 inches. The 50-year return period/10-day duration storm will yield a total of 5.6 inches. These amounts are taken from Exhibit E-3.

The Coefficient of Runoff (C) and Drainage Area (A) have been discussed earlier in this Section.

Retention Basins

The design criteria for sizing a retention basin (no discharge except for percolation and evaporation) is either a 10 year or 50 year storm as outlined above, for a duration of 10 days. The storage equation is used as outlined above.

Detention Basins

The design criteria for sizing a detention basin (discharge by pump or gravity during the design storm period) is the same 10 or 50 year storm as outlined, except that the duration period is chosen for that point during the design storm where the difference between total inflow and total discharge

is the greatest. The duration period will vary with each drainage area and can be solved graphically utilizing the Rainfall Depth Curves, as shown in Exhibit E-3.

Since detention basins are designed with an outlet to a water channel they should also be designed to allow for groundwater recharge during the dry time of the year. The design would divert water from the water channel to the detention basin and allowed to percolate.

Temporary Basins

Temporary basins shall use the same criteria as a retention basin to hold the runoff generated by the area served by the basin. Temporary basins are allowed only upon the approval of the City Engineer.

6.2.2 HYDRAULICS

The method used in determining pipeline sizes is by use of Manning's Formula. This equation is:

$$\mathbf{Q = (1.486/n)AR^{2/3}S^{1/2}}$$

Where:

Q = Discharge of pipeline in cubic feet per second (cfs)
n = Coefficient of roughness
A = Area of pipe based on Inside Diameter
R = Hydraulic Radius
S = Slope of the Energy Grade Line

In the use of this formula, the following assumptions and limitations are to be used:

1. Coefficient of roughness (n) = 0.013
2. Pipes assumed to be flowing at full capacity.
3. Limiting minimum velocities of 2.5 feet per second which is considered to be a minimum self-cleansing velocity.

One of the major criteria that is used in all the study areas is the utilization of existing drainage facilities. Those facilities that are hydraulically sufficient to carry the required flows are incorporated in the final master plan drainage facilities.

6.3 Estimated Costs

Table 6-3
Storm Drain
Capital Improvement Program Summary

Item	Qty.	Unit	Cost/Unit	Approx. Cost
Area for Storm Ponds	65	Ac	$30,000.00	$1,950,000.00
42" Storm Line	2,650	LF	$250.00	$662,500.00
36" Storm Line	15,200	LF	$200.00	$3,040,000.00
24" Storm Line	11,000	LF	$180.00	$1,980,000.00
Pump Stations	6	EA	$50,000.00	$300,000.00
Construction Subtotal				$7,932,500.00
Contingencies (15%)				$1,189,875.00
Subtotal				**$9,122,375.00**
Engineering, Surveying, and Construction Administration Cost (20%)				$1,824,475.00
Total Cost				**$10,946,850.00**

The cost per lineal foot includes a manhole every 400 feet and trench resurfacing.

Table 6-4
Existing Deficiency Costs

Item	Qty.	Unit	Cost/Unit	Approx. Cost
Area for Storm Pond	5	Ac	$30,000.00	$150,000.00
42" Storm Line	670	LF	$250.00	$167,500.00
36" Storm Line	3,440	LF	$200.00	$688,000.00
24" Storm Line	2,650	LF	$180.00	$477,000.00
12" Storm Line	1,100	LF	$100.00	$110,000.00
Pump Stations	1	EA	$50,000.00	$50,000.00
Install Pumps on Front Street pond	1	EA	$25,000.00	$25,000.00
Construction Subtotal				$1,667,500.00
Contingencies (15%)				$250,125.00
Subtotal				**$1,917,625.00**
Engineering, Surveying, and Construction Administration Cost (20%)				$383,525.00
Total Cost				**$2,301,150.00**

The cost per lineal foot includes a manhole every 400 feet and trench resurfacing.

6.3.1 FEES

The proposed storm system within this master plan are based on the potential development out to the UAB. Since some of this area is outside the current general plan and there is no certainty regarding the location of future development, the basis of the fee will be the undeveloped acreage contained within the UAB.

Total Acres to develop = 1,752 (UAB) + 186 (Vacant) – 433 (right of way) = 1,505ac.

Cost per acre = $10,946,850/1505ac. = $7,273.65 per acre.

The calculated fee per acre will need to be adjusted on an annual basis based on the Engineering News Record Construction cost Index.

6.4 Recommendations

6.4.1 EXISTING ISSUES

Areas D, P, Q, R, S, X and Y need a storm drain pond and trunk lines to properly handle the drainage generated from those sub-areas. The storm drain pond would be located in an area south of Tulare Street adjacent to Deep Creek. This pond will be a detention pond with an outlet to Deep Creek. The pond will need to be a minimum of 29 acre-feet capacity and the outlet pump needs to be a minimum of 8 cfs. The trunk lines need to be:

1. 42” line east from the pond to Carmela Avenue.
2. 12” line from the end of Carmela Avenue to the Trunk line.
3. 36” line in Farmersville Boulevard from Visalia Road south to the Trunk line.
4. 36” line (in Tulare Street) west from the pond to Matthew Avenue.
5. 24” line from Visalia Road to the Trunk line in Tulare Street.

The Front Street pond in its current configuration is undersized. To meet the current City standards, the pumps will need to be a minimum of 30 horsepower pumping 14 cfs. This would mean adding a 20 horsepower pump and continue operating the existing 10 horsepower pumps. The Extension Ditch has a cross section that can handle approximately 30 cfs. Preliminary discussions with CPD to increase the discharge by 10 cfs from this pond to Extension Ditch are ongoing.

6.4.2 FUTURE NEEDS

The SR 198 Corridor Specific Plan (completed in 2003) proposed two ponds for the industrial area. These ponds were proposed as detention basins with the basin on the east side of Farmersville Boulevard discharging into the basin west of Farmersville Boulevard and this basin having an outlet discharging into the TID canal. The pond on the east side of Farmersville Boulevard will need to be a minimum of 26 acre-feet capacity with a discharge pump of 10 cfs. The pond on the east side of Farmersville Boulevard needs to be a minimum of 29 acre-feet capacity with a discharge pump of 10 cfs.

The SR 198 Corridor Specific Plan split Area AC in half with the north half being industrial and included in the plan and the south side being residential and outside the plan area. The residential area needs a retention pond to serve the area. The retention pond would be located north of Walnut Avenue near Road 168. The retention pond will need to be 29 acre-feet capacity.

Area AD which lies north of the TID canal contains approximately 177 acres and needs a detention basin of 30 acre-feet capacity. This basin is proposed to be adjacent to the TID canal.

Area AE contains 525 acres and will require a total of 52 acre-feet of detention basin volume. This is proposed to be accommodated in three basins. The first would be located near Walnut Avenue with a 6 acre-feet capacity. The second would be located near the Front Street basin with a16 acre-feet capacity. The third basin is proposed at the south end of the area at the TID canal. This basin will need to be 30 acre-feet capacity.

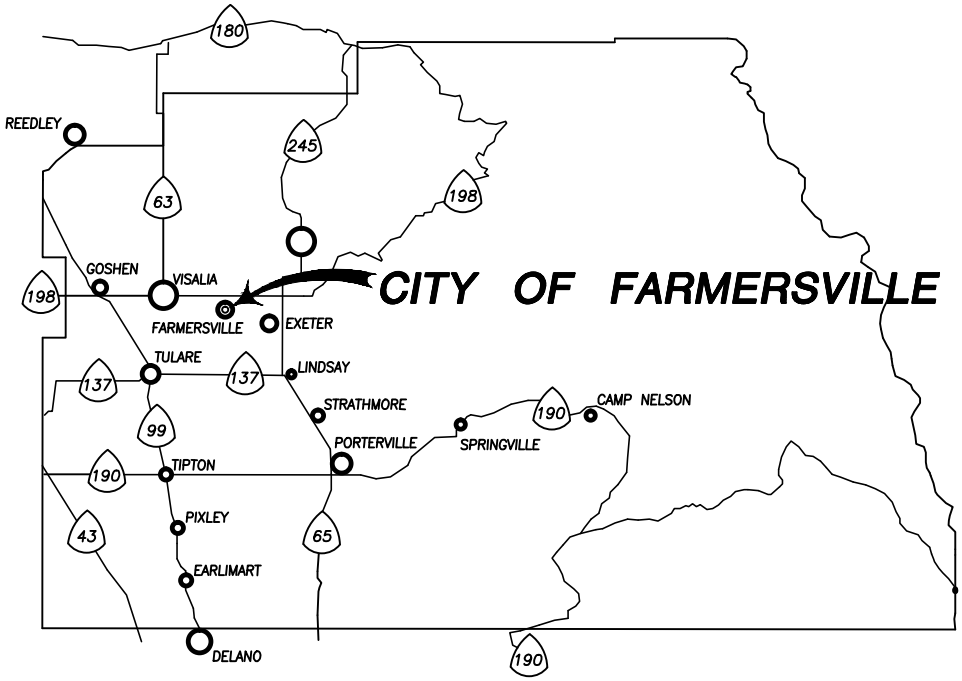
Area AF contains 346 acres and will require retention of approximately 66 acre-feet capacity. This is proposed to be addressed with the use of two basins. The first will be approximately 30 acre-feet capacity and be located south of Walnut Avenue along the UAB line. The second will be approximately 36 acre-feet capacity and located at the UAB around the Avery Avenue alignment.

Area AG contains 167 acres and will require a detention basin with a discharge to Deep Creek. The basin will need to be approximately 12 acre-feet capacity with a discharge pump of 5 cfs.

APPENDICES

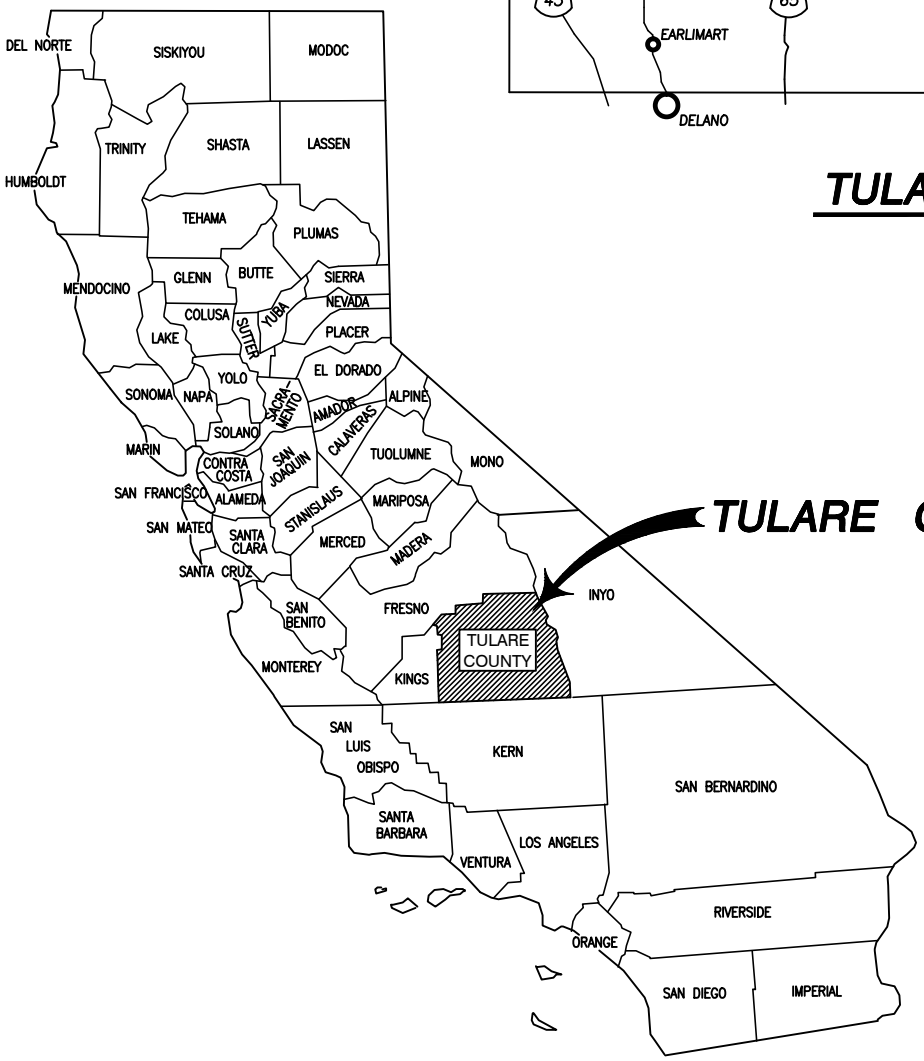
APPENDIX A

GENERAL MAPS



TULARE COUNTY

No Scale



TULARE COUNTY

STATE MAP

No Scale

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JOB NO.	F110131
DWG. NAME:	F110131-EXHIBIT A-1.dwg
SCALE:	AS SHOWN
SHEET NO.:	1 OF 1

EXHIBIT A-1

LOCATION MAP

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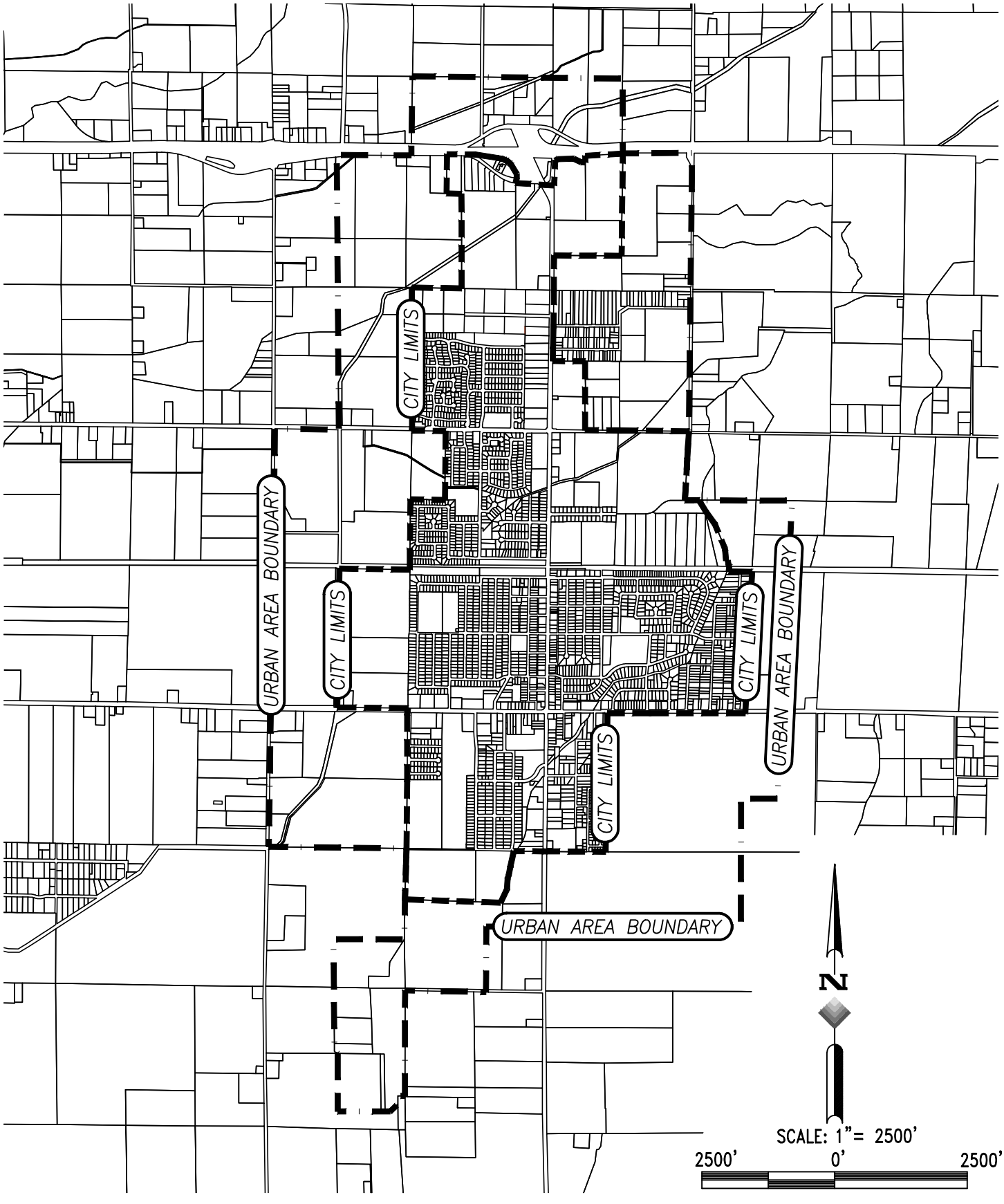
DRW BY: M.GAINES | CHK BY: DJ



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PLOT DATE:	May-29-2012 01:24PM
JOB NO.	F110131
DWG. NAME:	F110131-EXHIBIT A-2.dwg
SCALE:	AS SHOWN
SHEET NO.:	1 OF 1

EXHIBIT A-2

STUDY AREA BOUNDARY

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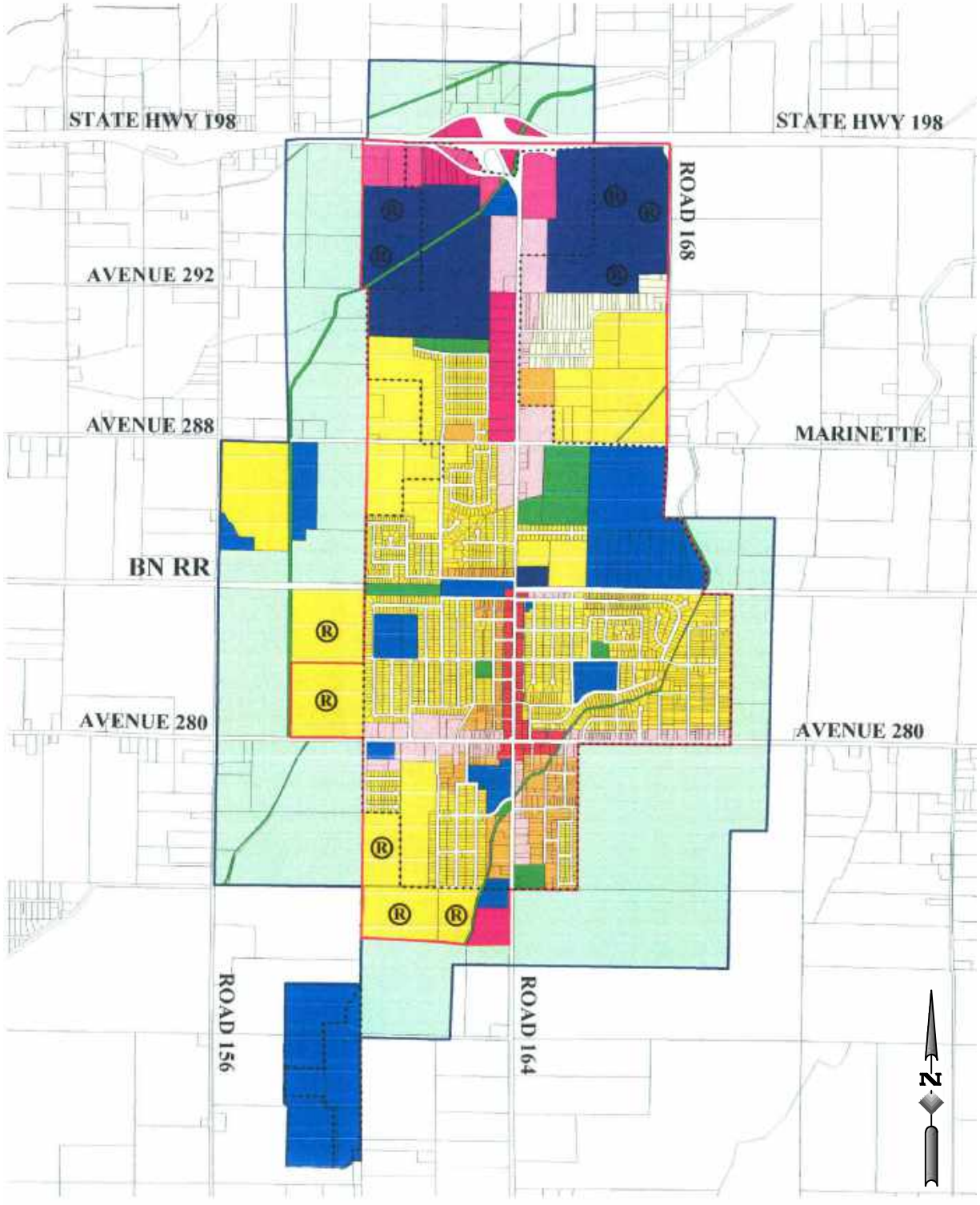

General Plan Land Use Designations

- Low Density Residential
- Medium Density Residential
- Medium-High Density Residential
- General Commercial
- Central Commercial
- Highway Commercial
- Service Commercial
- Industrial
- Public Facilities
- Open Space
- Agriculture/Urban Reserve
- Mixed Use Overlay
- Right-Of-Way
- Ⓡ Reserve

Legend

- City Limits
- Urban Development Boundary
- Urban Area Boundary
- Parcels
- Rd. 164 Streets

FILE NAME: L:\Projects\2011\F110131\ACAD\Exhibits\F110131-EXHIBIT A-3.dwg - LAST SAVE: 5/29/2012 1:18:43 PM PDT - BY: Michael Gaines

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DWG. NAME:	F110131-EXHIBIT A-3.dwg
SCALE:	NO SCALE
SHEET NO.:	1 OF 1

EXHIBIT A-3

GENERAL PLAN LAND USE DESIGNATIONS

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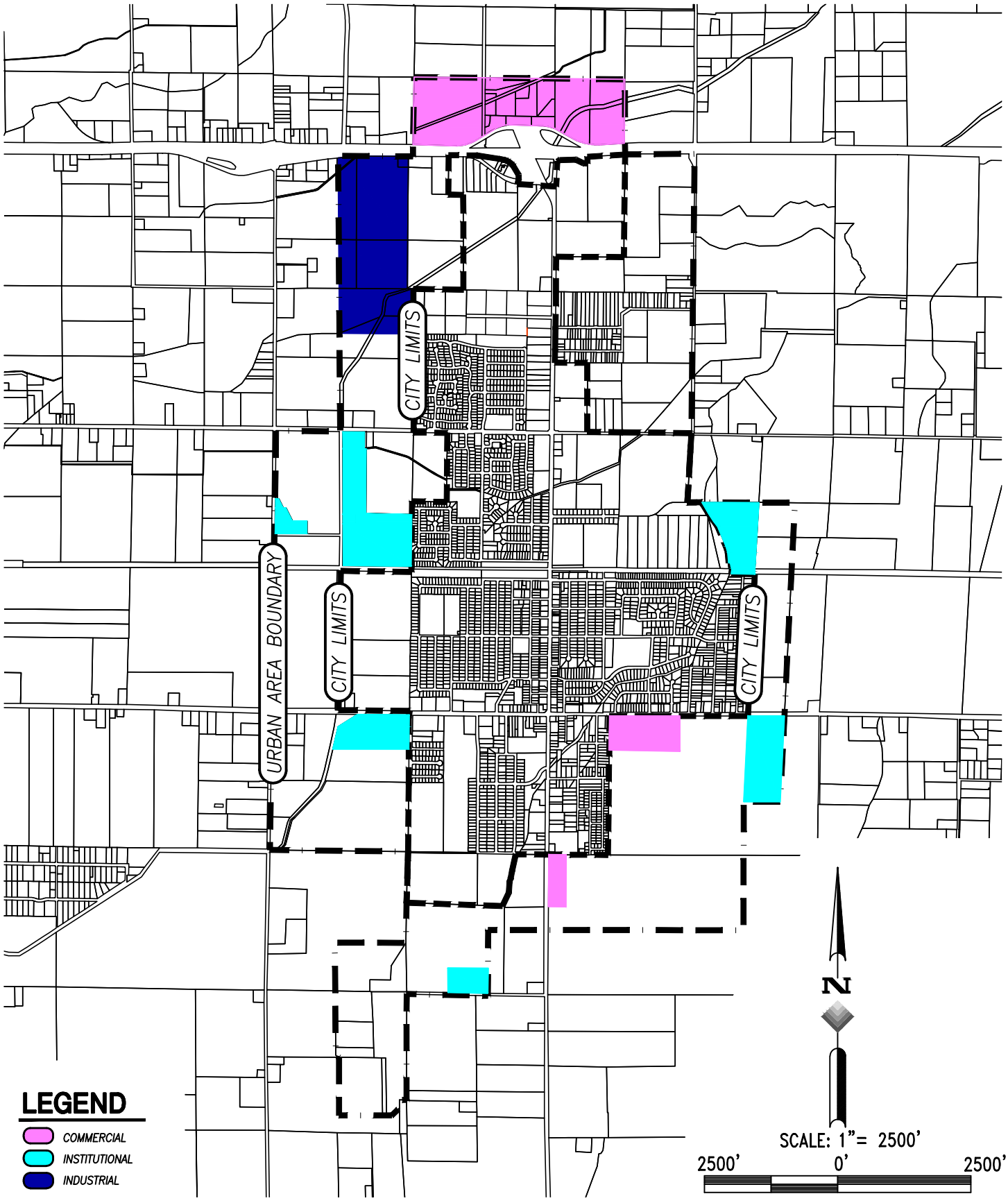
DRW BY: M.GAINES | CHK BY: DJ



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DWG. NAME: F110131-EXHIBIT A-4.dwg
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SHEET NO.: 1 OF 1

EXHIBIT A-4

FUTURE LAND USE

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DRW BY: M.GAINES | CHK BY: DJ

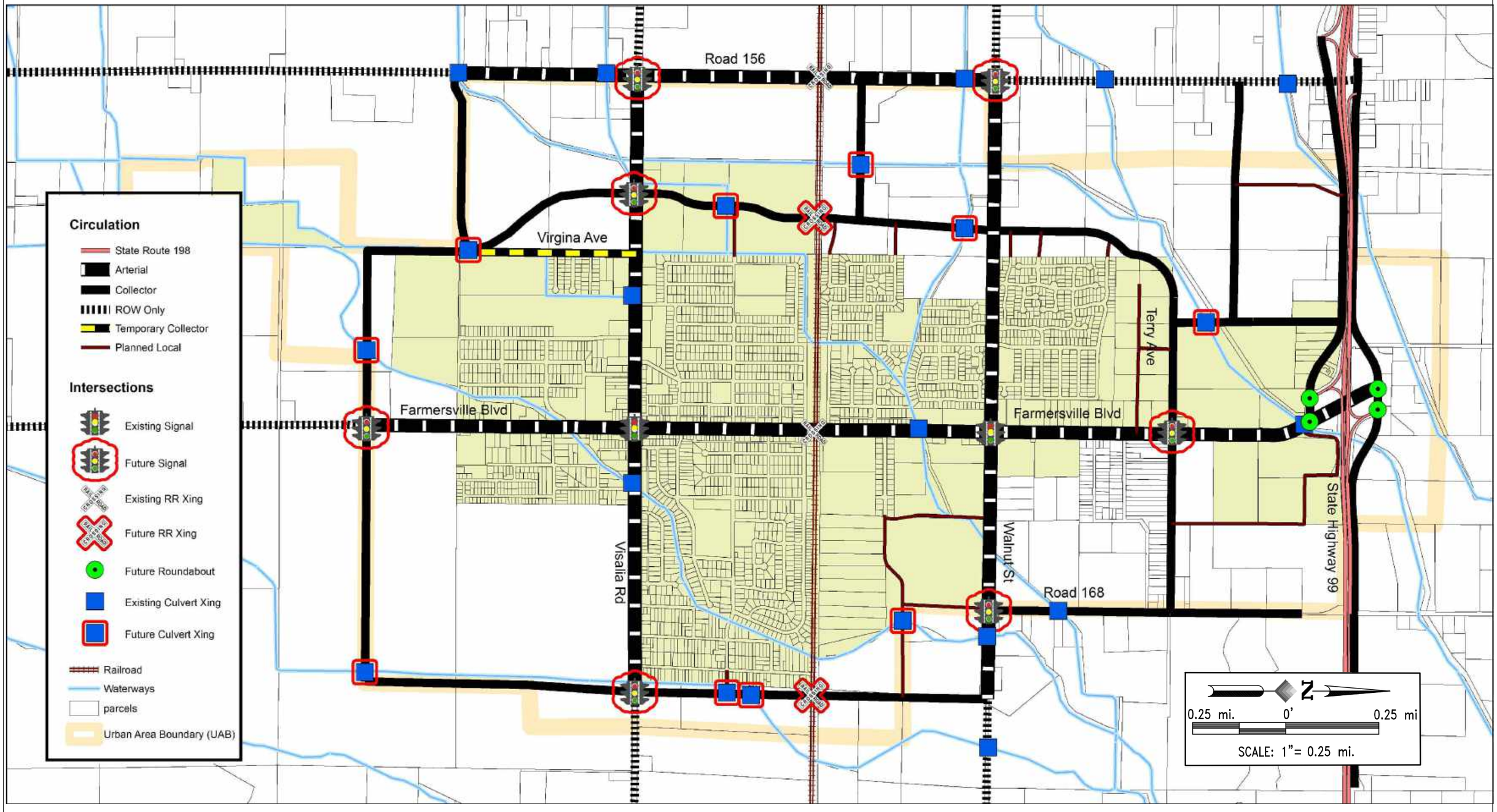
STREET MAP

Quad Knopf	
City of Farmersville	
INFRASTRUCTURE MASTER PLAN	**EXHIBIT A-5**

FILE NAME: L:\Projects\2011\F110131\ACAD\Exhibits\11x17\F110131–Exhibit A–5.dwg – LAST SAVE: 9/5/2012 8:40:38 AM PDT – BY: David Jacobs

APPENDIX B

CIRCULATION MAPS

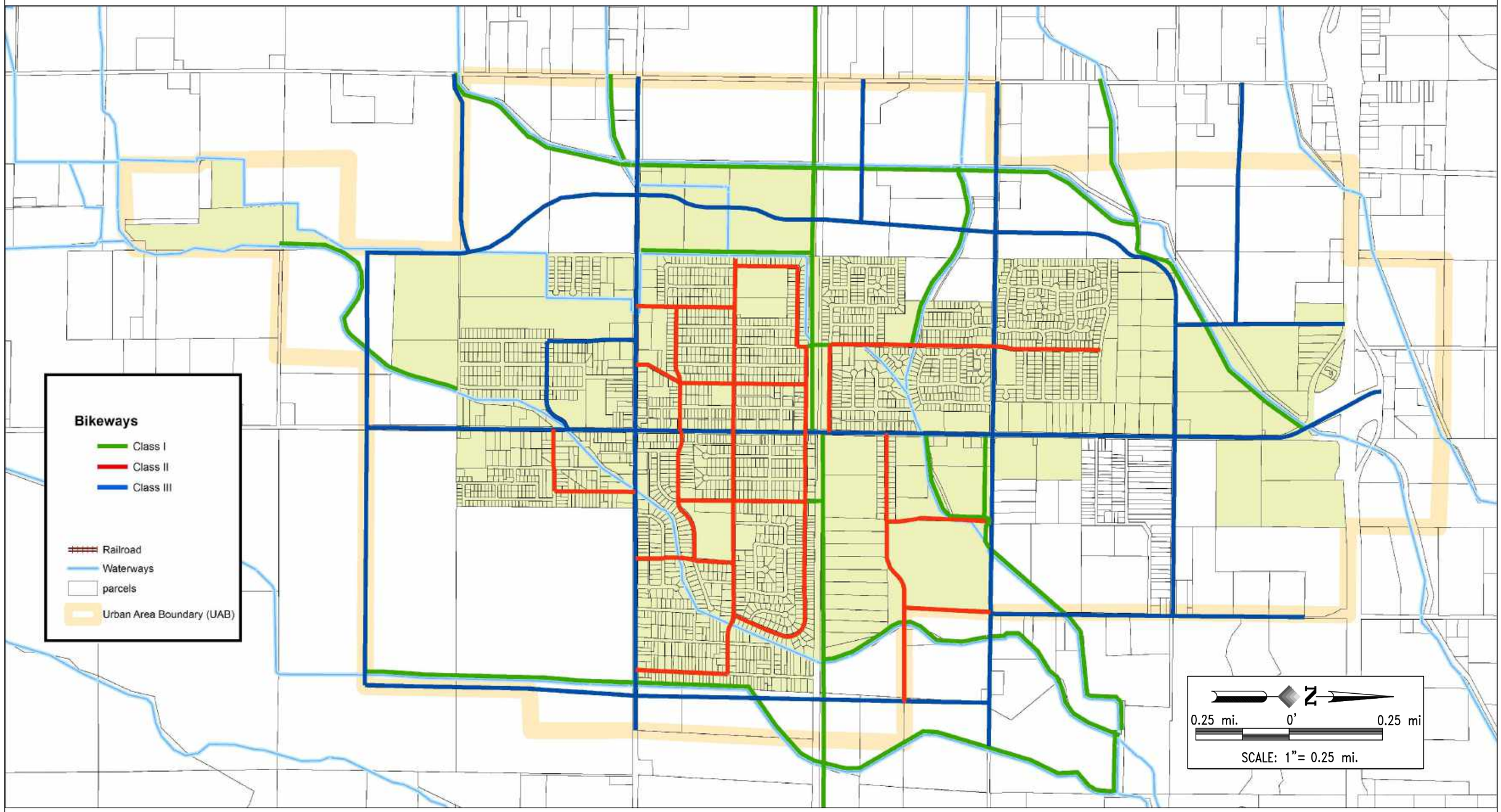


Quad Knopf

CIRCULATION PLAN

INFRASTRUCTURE MASTER PLAN

EXHIBIT B-1



Quad Knopf

CITY OF FRESNO

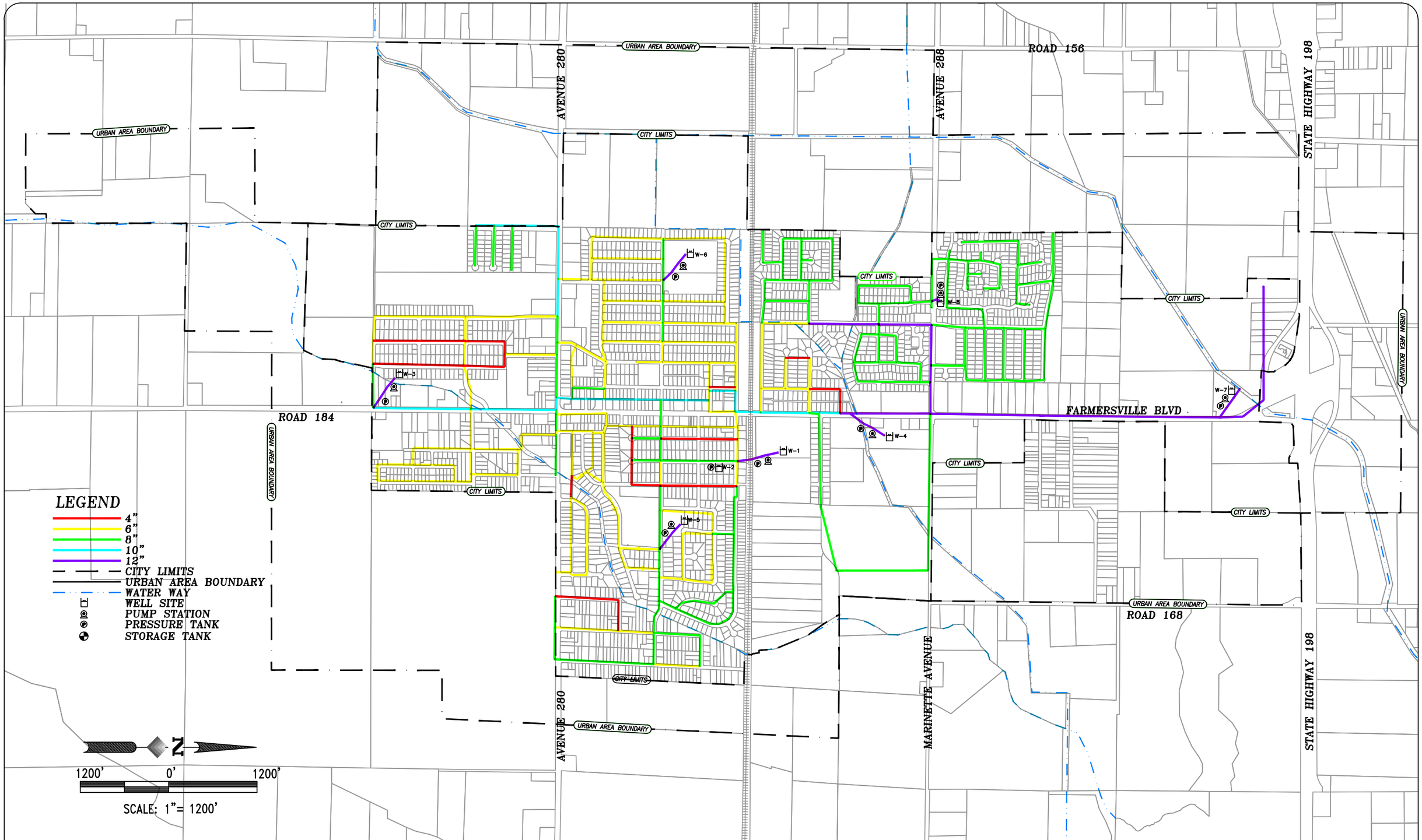
BIKEWAY PLAN

INFRASTRUCTURE MASTER PLAN

EXHIBIT B-2

APPENDIX C

WATER MAPS

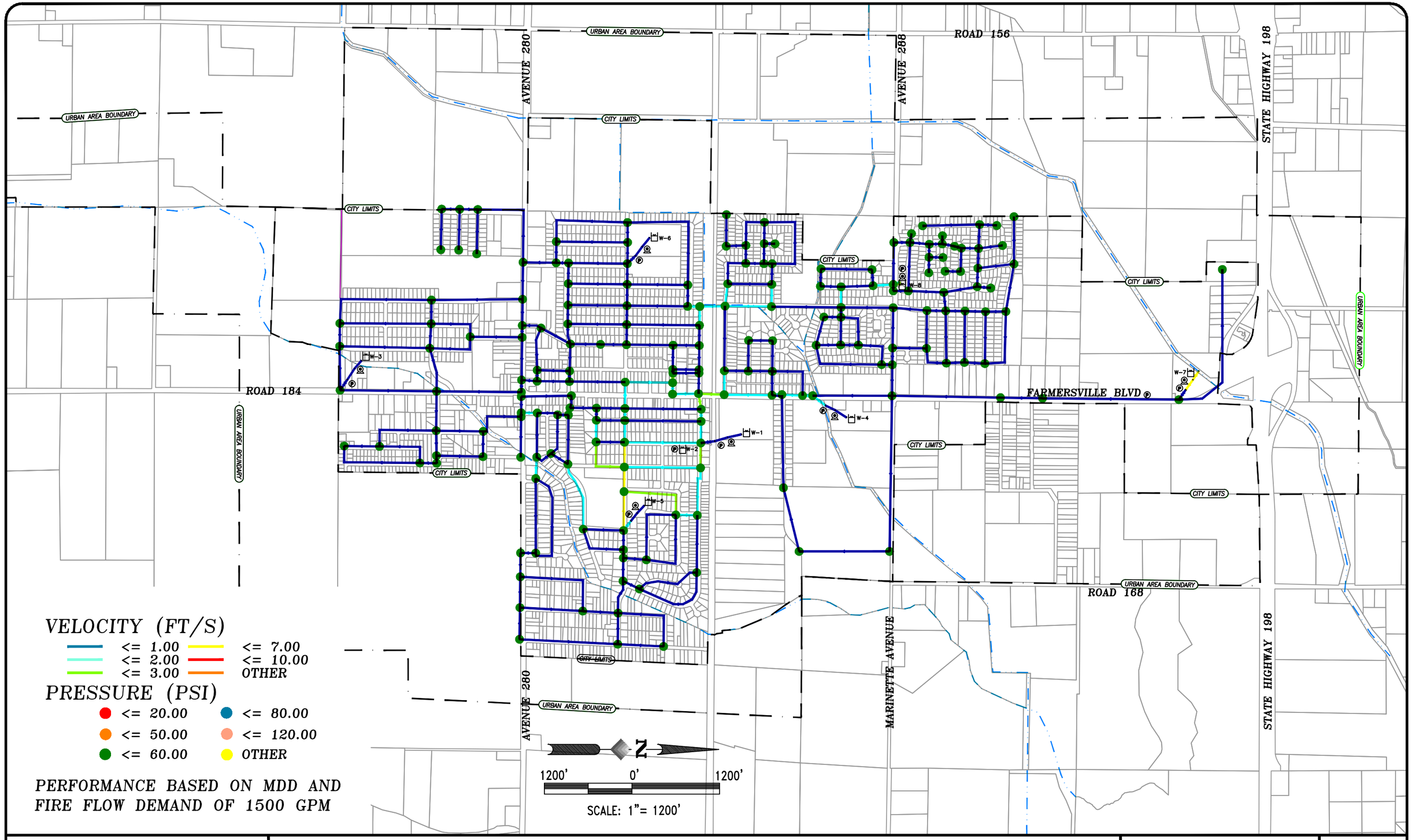


Quad Knopf

EXISTING WATER SYSTEM

INFRASTRUCTURE MASTER PLAN

EXHIBIT C-1



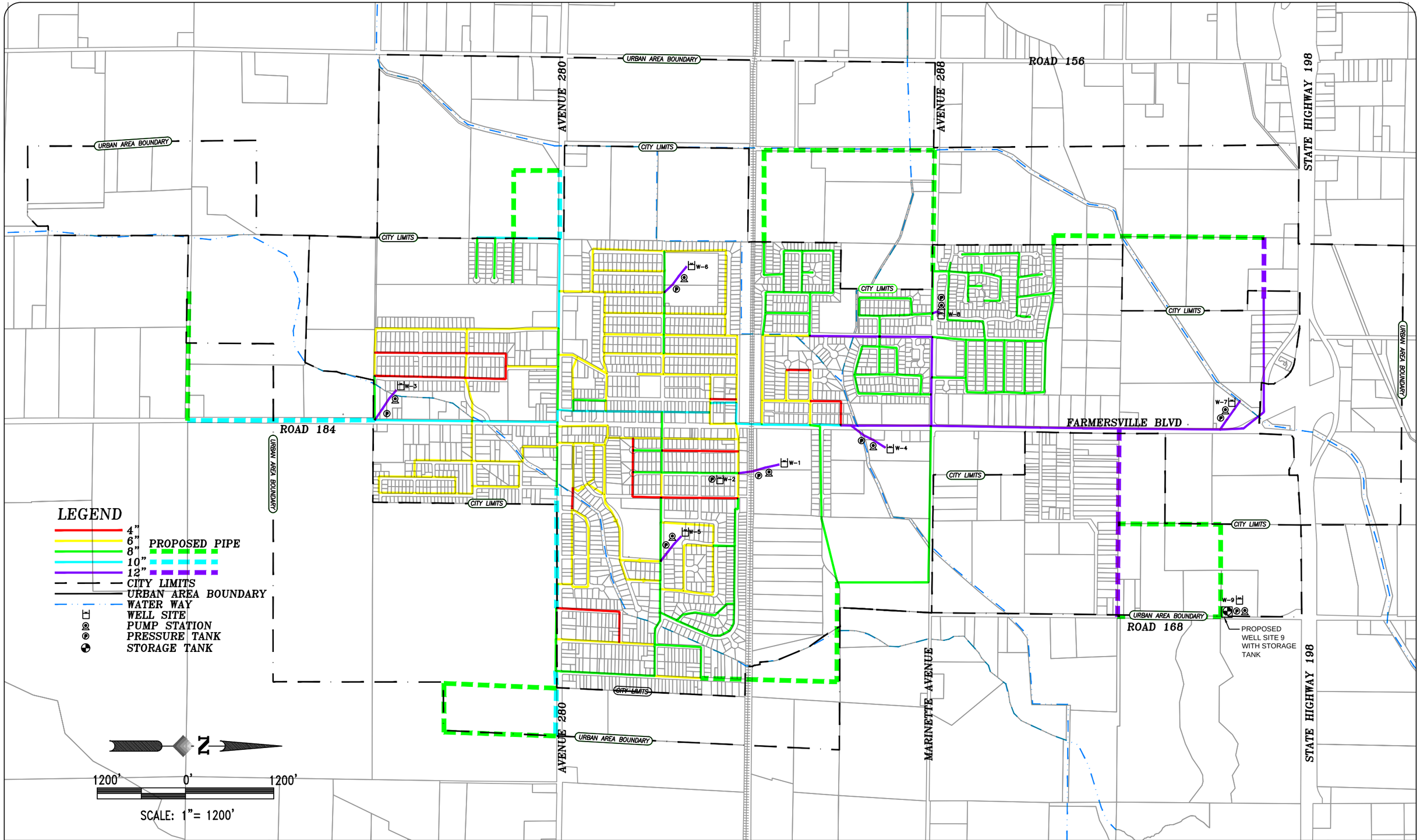
Quad Knopf

CITY OF FARMERSVILLE

EXISTING WATER SYSTEM PERFORMANCE

INFRASTRUCTURE MASTER PLAN

EXHIBIT C-2



Quad Knopf

PROPOSED WATER SYSTEM

INFRASTRUCTURE MASTER PLAN

EXHIBIT C-3

APPENDIX D

SANITARY SEWER MAPS

URBAN AREA BOUNDARY

ROAD 156

AVENUE 280

AVENUE 288

STATE HIGHWAY 198

WWTP

CITY LIMITS

FARMERSVILLE BLVD

ROAD 184

FUTURE SPORTS COMPLEX 88 ACRES

ROAD 168

MARINETTE AVENUE

LEGEND

- EXISTING 6"
- EXISTING 8"
- EXISTING 10"
- EXISTING 12"

N

1200' 0' 1200'

SCALE: 1"= 1200'

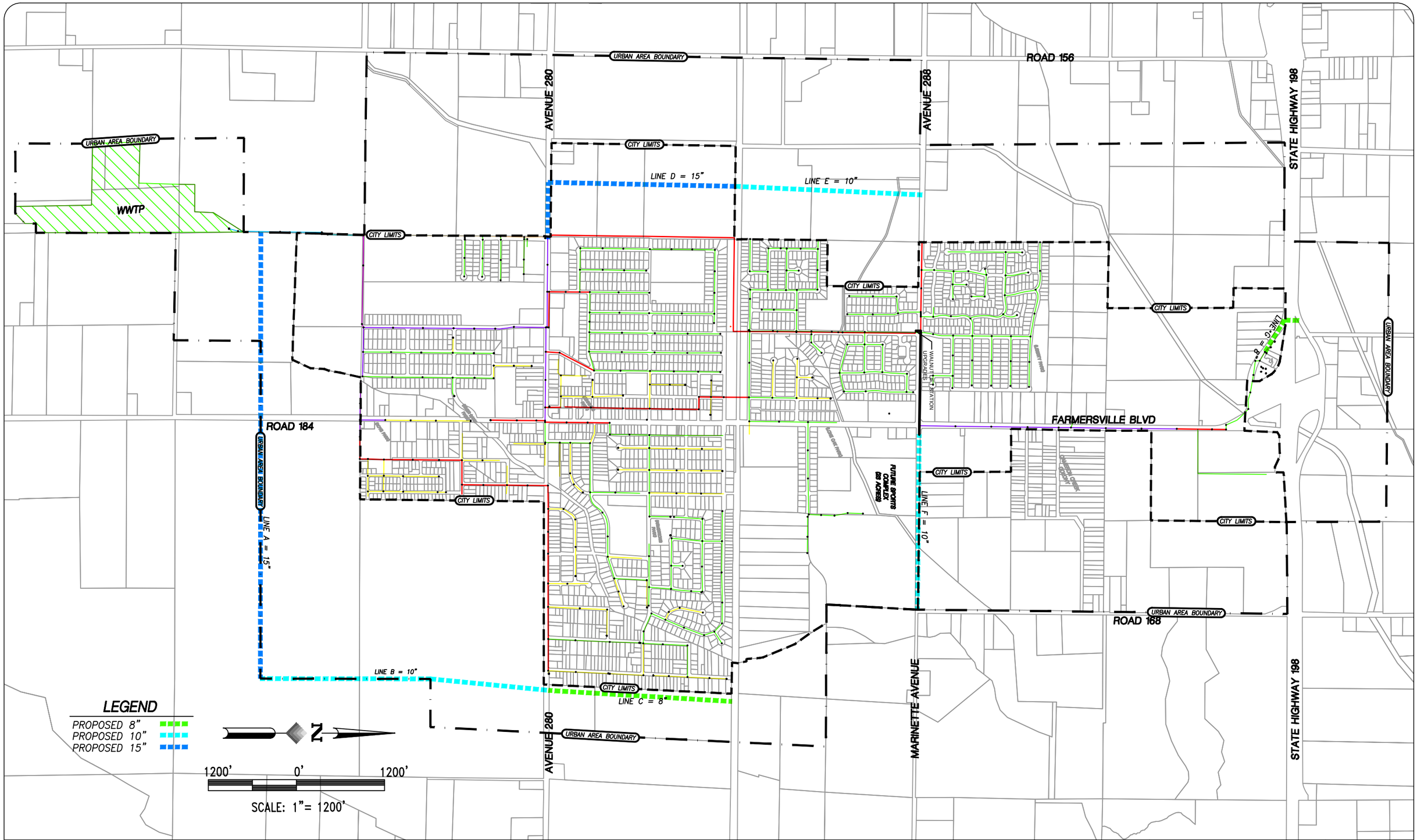
Quad Knopf

CITY OF FARMERSVILLE

EXISTING SANITARY SEWER SYSTEM

INFRASTRUCTURE MASTER PLAN

EXHIBIT D-1

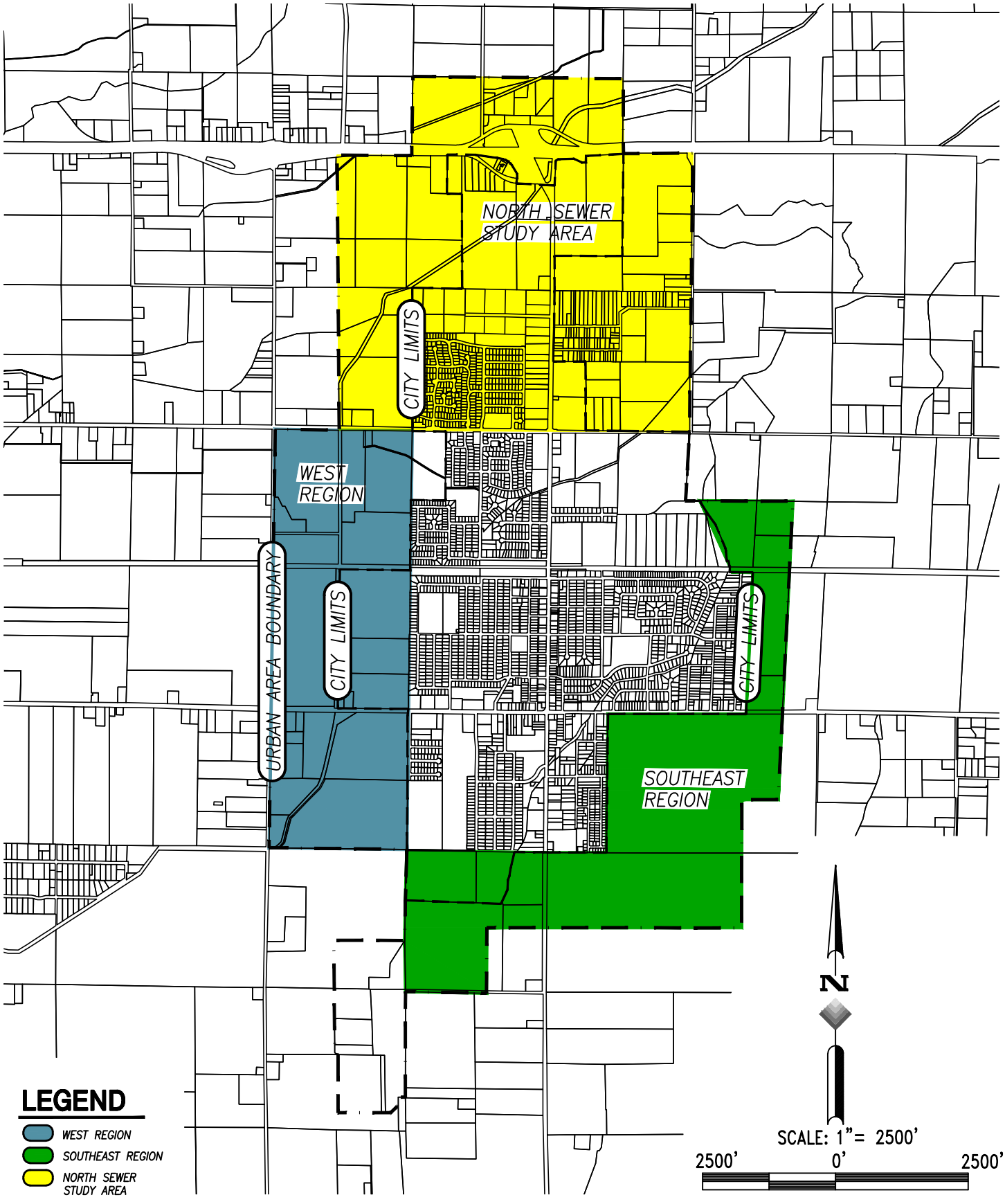


Quad Knopf

PROPOSED SANITARY SEWER SYSTEM

INFRASTRUCTURE MASTER PLAN

EXHIBIT D-2



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DWG. NAME:	F110131-EXHIBIT D-3.dwg
SCALE:	AS SHOWN
SHEET NO.:	1 OF 1

EXHIBIT D-3

SEWER STUDY AREAS

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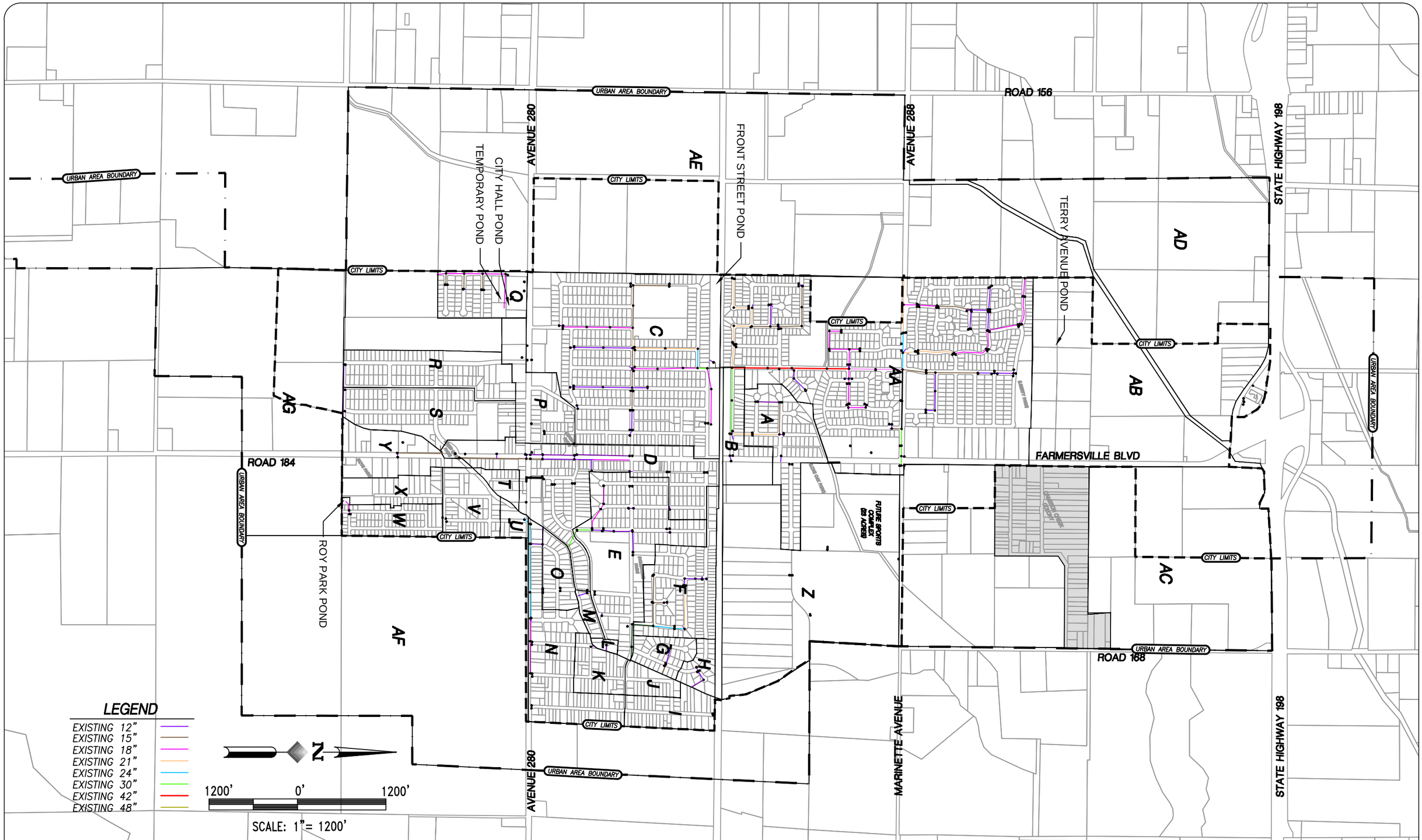
DRW BY: M.GAINES | CHK BY: DJ

APPENDIX E

STORM DRAIN MAPS AND REFERENCES



Quad Knopf

EXISTING STORM DRAIN SYSTEM

INFRASTRUCTURE MASTER PLAN

EXHIBIT E-1

FILE NAME: L:\Projects\2011\F110131\ACAD\Exhibits\11x17\F110131–SDMP11X17.dwg – LAST SAVE: 11/13/2012 2:24:54 PM PDT – BY: David Jacobs

URBAN AREA BOUNDARY
AVENUE 280
CITY HALL POND
TEMPORARY POND
CITY LIMITS
FRONT STREET POND
AVENUE 288
6TH AVENUE
STATE HIGHWAY 198
TERRY AVENUE POND
AD
AB
AE
C
AA
A
B
AG
R
S
P
Q
Y
X
W
V
U
T
D
E
O
M
L
N
K
G
F
H
J
I
Z
AC
AF
ROAD 184
ROY PARK POND
FUTURE SPORTS COMPLEX (60 ACRES)
FARMERSVILLE BLVD
ROAD 168
MARINETTE AVENUE

LEGEND

- PROPOSED 12"
- PROPOSED 24"
- PROPOSED 36"
- PROPOSED 42"
- PROPOSED POND

N

1200' 0' 1200'

SCALE: 1"= 1200'

Quad Knopf

CITY OF FARMERSVILLE

PROPOSED STORM DRAIN SYSTEM

INFRASTRUCTURE MASTER PLAN

EXHIBIT E-2

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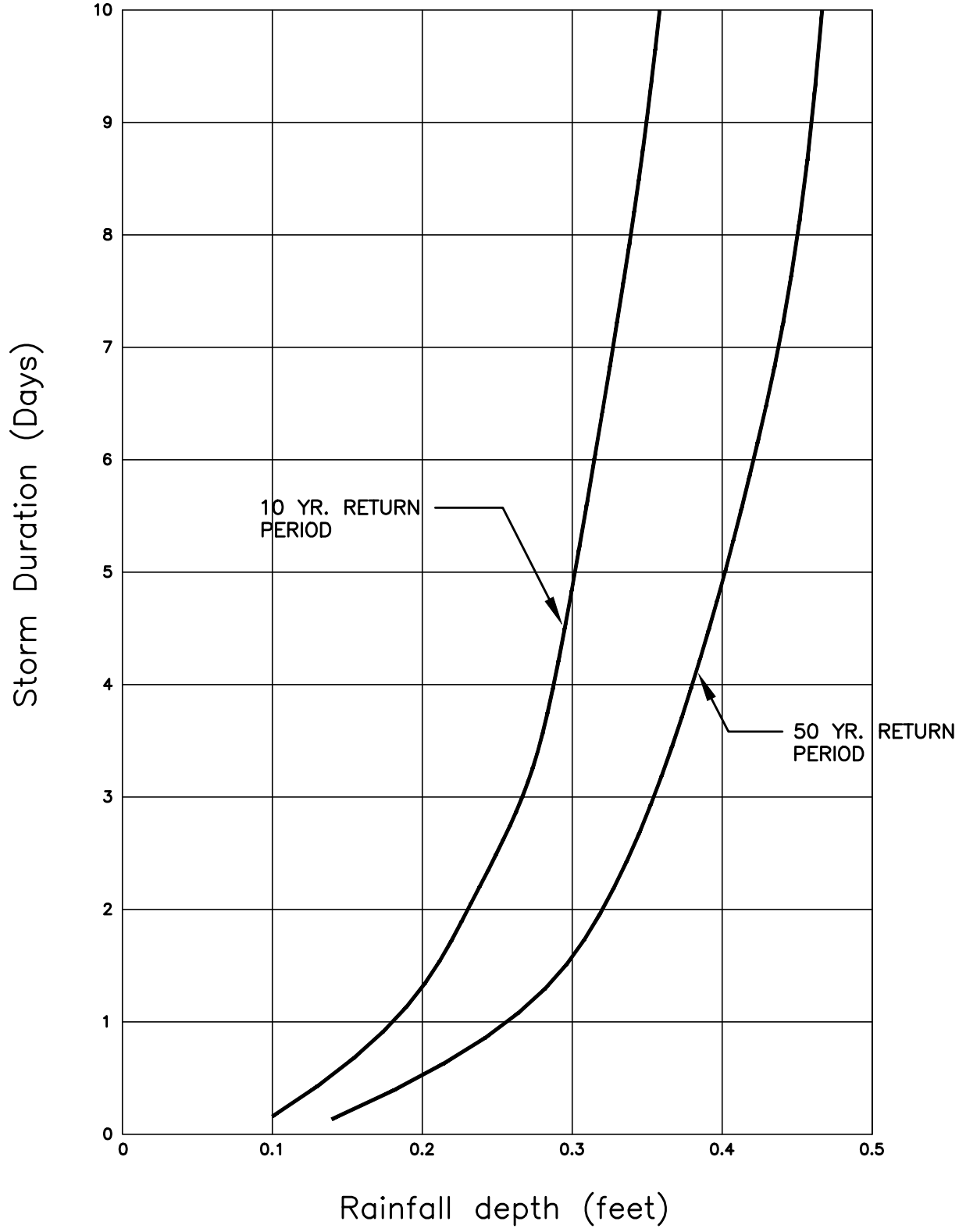

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DWG. NAME:	APPENDIX E DRAWING.DWG
SCALE:	NTS
SHEET NO.:	E-3

EXHIBIT E-3

RAINFALL DEPTH CURVES

PREPARED BY:
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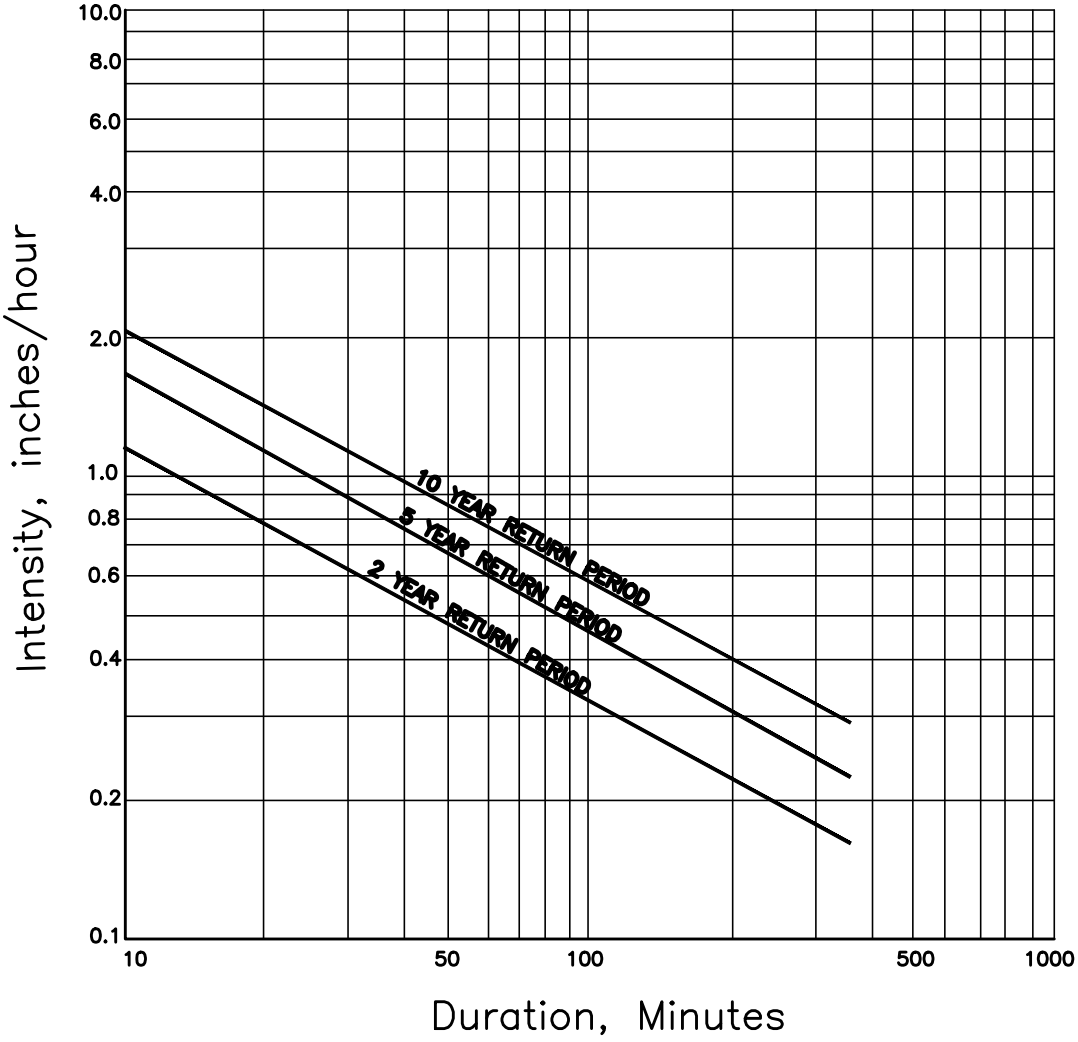
FAX: (559) 733-7821

DRW BY: | CHK BY:



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JOB NO.	F110131
DWG. NAME:	APPENDIX E DRAWING.DWG
SCALE:	NTS
SHEET NO.:	E-4

EXHIBIT E-4

RAINFALL INTENSITY CHART

PREPARED BY:
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FAX: (559) 733-7821

DRW BY: | CHK BY:

Peak Storm Run-off - *Rational Method Q=CIA where:*

Q = Peak Flow rate in cubic feet per second
C = Coefficient of Runoff (see below)
I = Rainfall intensity in inches/hr (see Exhibit D-4)
A = Drainage area in acres

Pipeline Capacity - *Manning Equation* $Q = (1.49/n)A(r)^{\frac{2}{3}}(s)^{\frac{1}{2}}$ *where:*

Q = Flow rate in cubic feet per second
A = Cross-sectional area of pipe in square feet
r = Hydraulic radius
s = Slope in feet per foot
n = Friction-loss coefficient = 0.013

Rainfall Intensity Duration Chart *(see Exhibit E-4)*

Two-year Return Period

Detention Basins

Rainfalll Depth - 10-year Return Period with 18" freeboard below lowest grate
or
50-year Return Period with HWL at lowest TC (whichever creates largest pond)

Duration Days - To be determined based on discharge criteria (see Exhibit E-3)

Retention Basins

Rainfalll Depth - 10-year Return/10-day duration Period with 18" freeboard below lowest grate
or
50-year Return Period/10-day duration with HWL at lowest TC
(whichever creates largest pond)

Coefficient of Runoff *(minimum)*

Parks/Open Areas	*0.10*
Residential	
Low Density (Single Family)	*0.30*
Medium Density (Duplex, ect)	*0.40*
High Density (Apartments)	*0.50*
Commercial/Industrial/Office	*0.80*

Lot to Street Time *= 20 min. (Residential only)*

Gutter Velocity *= 1.5 feet per second*

PLOT DATE:
JOB NO. F110131
DWG. NAME: APPENDIX E DRAWING.DWG
SCALE: NTS
SHEET NO.: E-5

EXHIBIT E-5

STORM DRAIN DESIGN CRITERIA

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TEL: (559) 733-0440
FAX: (559) 733-7821

DRW BY:
CHK BY:

APPENDIX F

COMMENTS CARDS RECEIVED

Farmersville Infrastructure Master Plan
Comment Form

(Plan Maestro Comprensivo Infraestructural)

Please give us your comments!

(Por favor dénos sus comentarios!)

Name *(Nombre)*	Mike Santanna		
Address *(Dirección)*			
E-mail *(Correo electrónico)*		**Phone** *(Teléfono)*	

Comments *(Comentario)*

Is there a need to discuss water banking in the Master Plan. Using the storm Ponds to perculate ~~or~~ irrigation water during the summer.

This comment was addressed in Chapter 6 Section 6.2.1. Added language to encourage detention basins be designed to allow for groundwater recharge.

11-7-2012

Farmersville Infrastructure Master Plan
Comment Form

(Plan Maestro Comprensivo Infraestructural)

Please give us your comments!

(Por favor dénos sus comentarios!)

Name *(Nombre)*	Guy Chimin		
Address *(Dirección)*	Cameron Creek		
E-mail *(Correo electrónico)*		**Phone** *(Teléfono)*	

Comments *(Comentario)*

Proposed Collector north of Cameron Creek will not work due to the ~~the~~ ground elevation. Ground is about 6' ~~B~~below the surrounding area.

The master plan does show a collector north of Cameron Creek, however the exact placement is not known at this time. During the development of the surrounding area a location and design will be finalized.

11-7-2012

Farmersville Infrastructure Master Plan
Comment Form

(Plan Maestro Comprensivo Infraestructural)

Please give us your comments!

(Por favor dénos sus comentarios!)

Name *(Nombre)*	Greg Gomez		
Address *(Dirección)*	280 Kirsten		
E-mail *(Correo electrónico)*	GOMEZ.GREGP@Gmail.com	Phone *(Teléfono)*	747-3492

Comments *(Comentario)*

I would like to see a light or three way stop at Freedom & Walnut Traffic at Citrus needs to be two way.

The circulation around the Farmersville School District campus is an ongoing issue that is being addressed by the School District and the City. Long term plans call for a traffic signal at Road 168 and Walnut Avenue that will help with the situation currently at Freedom Drive and Walnut Avenue.

11-7-2012

Farmersville Infrastructure Master Plan
Comment Form

(Plan Maestro Comprensivo Infraestructural)

Please give us your comments!

(Por favor dénos sus comentarios!)

Name *(Nombre)*	ALFredo H GUEVARA		
Address *(Dirección)*	686 W Front		
E-mail *(Correo electrónico)*		Phone *(Teléfono)*	559-747-3501

Comments *(Comentario)*

PLAN de CIRCULACION
Ciudad dibidida POR VIA del TREN
en EXISTENCIA UN CRUCERO NECESITAMOS
POR LO MENOS 2 CRUCEROS MAS
EN LA CIUDAD

Reference: Circulations plan
Currently the city is divided by the train tracks with only one crossing.
We need at least two additional crossings in the city.

Railroad crossing are coved in the report under circulation. Railroad crossings are specifically mentioned in Section 3.4

11-7-2012

Farmersville Infrastructure Master Plan
Comment Form

(Plan Maestro Comprensivo Infraestructural)

Please give us your comments!

(Por favor dénos sus comentarios!)

Name *(Nombre)*	ALFredo H GUEVARA		
Address *(Dirección)*	680 W FRONT ST		
E-mail *(Correo electrónico)*		Phone *(Teléfono)*	559-747-3501

Comments *(Comentario)* FRONT ST AREA (C)

que solucion sele bA~~HA~~den AL PROBLEMA de desCARGE del AGUAS GRIS QUE CAUSA problema de SALUD

STORM DRAIN SYSTEM

#2 PEPER & Oakview – segundo problema

Reference: Storm Drain System

What solution will be given to the problem of gray water that is causing the health problems at Front Street and drain ditch, and also at Peper and Oakview.

The gray water issue has to do with the flat slope on the irrigation channel. It also is a maintenance issue that will need to be addressed by the Irrigation Company and City staff.

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Name *(Nombre)*	Maria		
Address *(Dirección)*	[redacted]		
E-mail *(Correo electrónico)*		Phone *(Teléfono)*	592-3080

Comments *(Comentario)*

Corner of Oakview and Ash there is a bad sewer smell around once a month.

There is an existing issue with rags in the Oakview Avenue lift station. This is an ongoing maintenance issue and is being handled by the Public Works staff.

11-7-2012