

# REPORT TO CITY OF VISALIA PLANNING COMMISSION



**HEARING DATE:** March 24, 2013

**PROJECT PLANNER:** Paul Bernal, Principal Planner  
(559) 713-4025

**SUBJECT:** **Lowery Ranch Tentative Subdivision Map 5550:** is a request by Hyde Commercial/4Creeks, to subdivide 72.5 acres into a 219 lot single-family residential subdivision with 2 remainders and 12 out-lots. The project will include the construction of 219 single-family residential homes on 40.5 acres while the remaining 31.9 acres will remain undeveloped. The entire site is zoned R-1-6 (Single-Family Residential, 6,000 square foot minimum site area per lot).

**LOCATION:** The site is located on the west side of North Demaree Street between Riverway Avenue the Modoc Ditch to the south (APN: 077-060-009, 077-060-022 & 077-060-024).

## STAFF RECOMMENDATION

### Lowery Ranch Tentative Subdivision Map No. 5550

Staff recommends approval of Lowery Ranch Tentative Subdivision Map No. 5550, as conditioned, based on the findings and conditions in Resolution No. 2013-60. Staff's recommendation is based on the conclusion that the request is consistent with the Visalia General Plan, Zoning and Subdivision Ordinances.

## RECOMMENDED MOTION

I move to adopt Resolution No. 2013-60, approving Lowery Ranch Tentative Subdivision No. 5550.

## PROJECT DESCRIPTION

Lowery Ranch Tentative Subdivision Map No. 5550 is a request to subdivide 72.5 acres into a 219 lot single-family residential subdivision with 12 out-lots and two remainder lots (see Exhibit "A"). The 219 single-family residential lots plus 12 out-lots are proposed to be developed on 40.5 acres while the remaining 31.9 acres will remain undeveloped (see Exhibit "B"). The 12 out-lots will be used to establish landscaping lots along the major streets (Demaree and Shannon Parkway), and a pedestrian trail located along the north side of the Modoc Ditch canal, immediately adjacent to the future Sedona Avenue street alignment. The project will also include undergrounding the temporary branch of the Modoc Ditch located along Riverway Avenue. The entire project will be constructed over five phases as depicted on Exhibit "C" and is zoned R-1-6 (Single-Family Residential, 6,000 square foot minimum site area per lot).

This project also includes the construction of streets, extension of sewer lines and laterals, future connection to the storm drainage system and extension of other utilities and services (electricity, gas, and water). Curb and gutter exist along the west side of the subdivision frontage and the construction of sidewalk along Demaree Street will be required with the first phase of this development. The project will also require the future signalization of the Demaree/Shannon Ranch intersection. To facilitate storm water discharge, passive storm drainage basin will be incorporated onsite.

The site will require grading and removal of agricultural related uses currently on-site. Furthermore, Valley Oak trees onsite are identified to be removed. The removal of the valley oak trees is discussed in detail in the "Valley Oak Tree" section of this report.

Although the proposed subdivision is not a part of the Shannon Ranch development, the developer is continuing the street design elements found along Shannon Parkway including the median island landscaping theme and the modified streetlights as depicted on Exhibit "D".

## **BACKGROUND INFORMATION**

General Plan Land Use Designation:	Residential Low Density
Zoning:	R-1-6 (Single-family Residential, 6,000 square foot minimum lot size)
Surrounding Zoning and Land Use:	North: Riverway Avenue / R-1-6 (Single-Family Residential 6,000 sq. ft. min. site area) / – Wild Horse Ranch Subdivision South: Q-P (Quasi-Public) & R-1-6 (Single-Family Residential 6,000 sq. ft. min. site area) / – Avalon Subdivision & Modoc / Riggin Drainage Basin East: Q-P (Quasi-Public) & R-1-6 (Single-Family Residential 6,000 sq. ft. min. site area) / – Shannon Ranch Subdivision West: R-1-6 (Single-Family Residential 6,000 sq. ft. min. site area) – Agricultural Crops
Environmental Review:	Negative Declaration No. 2014-07
Special Districts:	None
Site Plan Review:	SPR No. 2013-089

### **RELATED PROJECTS**

Shannon Ranch 2 Tentative Subdivision Map No. 5458 was a request by Centex to divide 159 acres into 454 single-family lots for the Shannon Ranch Subdivision located on the north of Riggin Avenue between County Center and Deamree Street. This project is directly east of the subject site and was approved by Planning Commission on September 13, 2004.

## **PROJECT EVALUATION**

Staff recommends approval of Lowery Ranch Tentative Subdivision Map based on the project's consistency with the Land Use Element of the General Plan and the Zoning and Subdivision Ordinance policies for approval of the tentative subdivision map.

### **Current General Plan Consistency**

Compatibility with the surrounding area is required by the General Plan in the decision to approve the proposed subdivision. The project is located in the northwest quadrant of Visalia among existing residential neighborhoods. The parcel to be subdivided is surrounded by single-family residential neighborhoods to the north, south, and east. Staff finds that the proposed tentative subdivision map is compatible with the surrounding area and Low Density Residential land use designation.

The General Plan also emphasizes compatibility with surrounding areas. Properties abutting the project site are in active agricultural production and staff recognizes the importance of protecting farmlands from urban development. Therefore, staff has included Condition No. 12, which requires the developer to have future homeowners in the Lowery Ranch subdivision sign and acknowledge the "Right to Farm" Act. This informs future residential owners that the surrounding farming operations are protected and cannot be declared a nuisance if operating in a manner consistent with proper and accepted customs and standards.

### **Street Improvements and Intersection Signalization**

The adjacent roadways along the project site will be improved to accommodate the new residential development. Demaree Street is a north/south arterial roadway that is designed for two through lanes in each direction with a dedicated left turn lane. Shannon Parkway, although not the designated "mid-block" collector, functions as a collector status roadway through the project area based on the Shannon Parkway design, which includes the construction of a median island. Riverway Avenue along the north boundary of the subdivision will be designed to function as a local street.

Demaree Street across the project frontage is currently only developed with curb and gutter. Based on the Phasing Plan provided by the applicant, the construction of sidewalks across the entire project frontage along Demaree Street shall be installed with Phase 1. Staff is requesting Condition No. 6 be adopted requiring the construction of the sidewalk along Demaree Street with Phase 1.

Other improvements along the major streets will include the installation of landscaping and the construction of block walls along Demaree Street and Shannon Parkway. Staff is also requesting the Planning Commission adopt Condition No. 7 requiring the construction of a block wall along the lots backing onto Riverway Avenue. The construction of the block wall will mirror the Wild Horse Ranch development directly to the north of the Lowery Ranch Subdivision.

To address traffic concerns, a Traffic Impact Study (see Negative Declaration No. 2014-07) was prepared for the project by 4Creeks, dated November 18, 2013. The TIS studied key roadways and intersections near the project site. The analysis considered existing roadway conditions and year 2035 base conditions, with and without the project conditions. The analysis identified recommended roadway and intersection improvements near the project to ensure that the project and roadways near the subdivision operate at acceptable Level of Service (LOS) "D" conditions or better through year 2023.

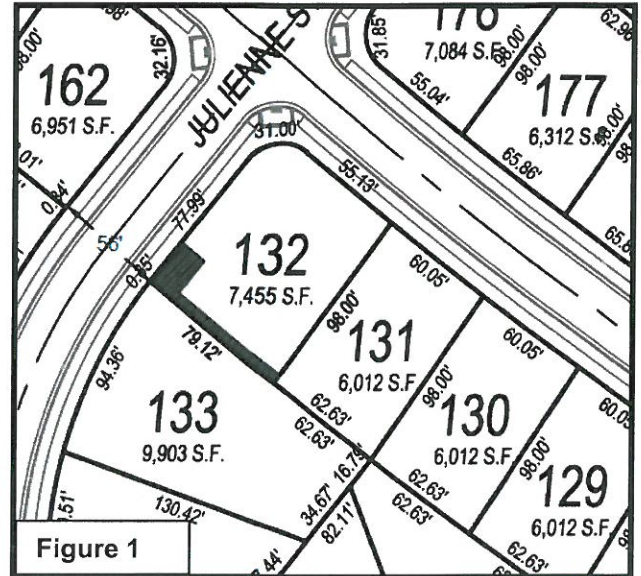
Among the recommended improvement measures in the Analysis were measures that address existing roadway conditions where operating conditions are below acceptable standards. The intersection of Demaree Street and Shannon Parkway is recommended for the installation of traffic signals for all northbound / southbound and eastbound / westbound traffic. This intersection is noted by the Report to operate at LOS "F" conditions during the AM/PM peak hours. Based on the Traffic Study, staff has included Condition No. 8 requiring that the Demaree Street and Shannon Parkway intersection be improved to accommodate signalization when warranted. This includes having signalization improvement plans finalized and having the utility underground work complete to facilitate the installation of traffic signals with little interruption to the roadway when the traffic lights are warranted.



improvements include the construction of curb, gutter, curb return and sidewalk. The requirement to install these improvements is included as Condition No. 10. The requirement to construct these improvements will ensure the provision of a safe and improved path of travel for pedestrians walking along the north side of Riverway Avenue, including the residents of the Wild Horse Subdivision.

### **Proposed Lots**

The proposed subdivision will consist of 219 residential lots and 12 lettered out-lots. The residential lots conform to standard single-family residential standards for lot dimensions. The lots will all be required to meet R-1-6 zone setback standards. Staff requests Condition No. 5 that all setbacks are measured from the inside face of the block wall and that a “no build area” be established for the five reverse corner lots. This “no build area” on the reverse corner lots, as shown in Figure 1 and Exhibit “A”, includes a 15 foot by 25-foot section near the outside-rear corner of the lots as well as the five-foot setback along the rear property line. Condition 5 also requires that no structures shall be erected within these areas on lots 93, 94, 124, 132, and 151, as shown in the site plan in Exhibit “A”, and per Zoning Ordinance Section 17.12.100.A.



### **Valley Oak Trees**

The City has a municipal ordinance in place to protect valley oak trees. All existing valley oak trees on the project site will be under the jurisdiction of this ordinance. Any oak trees to be removed from the site are subject to the jurisdiction of the municipal ordinance. The applicant provided an Oak Tree evaluation of four Valley Oak trees located onsite (see Exhibit “A”). The Oak Tree evaluation, which was reviewed by the City’s Arborist, concluded that three of the valley oak trees should be removed due to the trees being dead or in very poor health (i.e., Trees No. 1-3).

Per Section 12.24 of the Visalia Oak Tree ordinance, trees determined to be dead or in poor health may be removed if they are deemed detrimental to the public’s safety and welfare. The removal of dead or unhealthy valley oak trees is a less than significant impact and reduces the exposure of unhealthy and unstable trees that can be a detriment to the public’s safety and welfare. The remaining valley oak tree (i.e., Tree No. 4) shall be protected as stated in the Oak Tree evaluation. Staff recommends Condition No. 11 be adopted requiring the developer to comply with the recommendations identified in the Oak Tree evaluation dated November 18, 2013 (see Exhibit “E”).

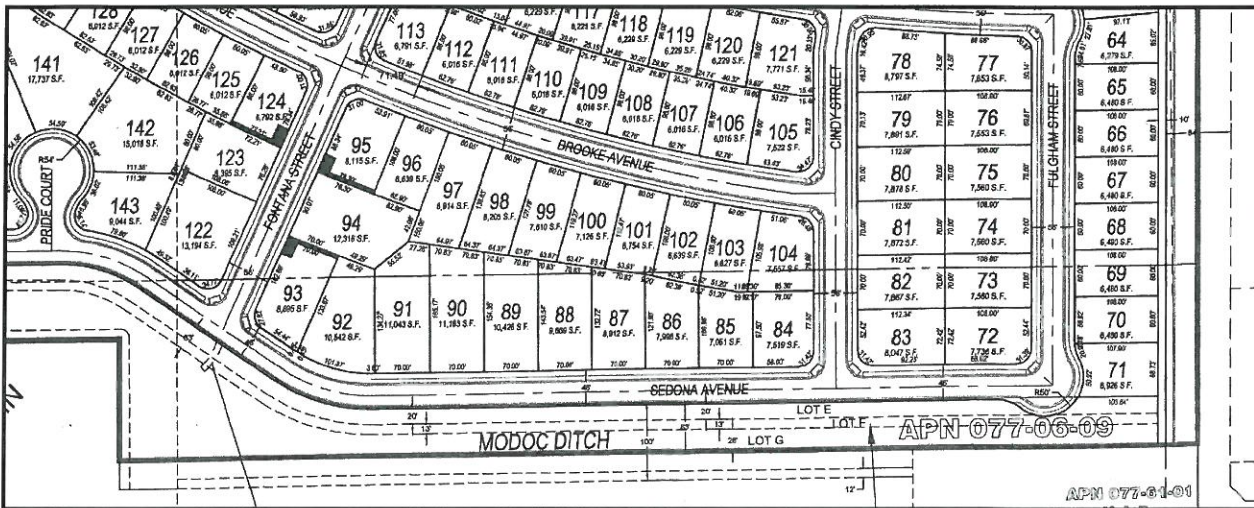
### **Landscape and Lighting Assessment District**

All lots identified by an alphanumeric letter on this proposed subdivision are designated for landscaping, pocket park and a portion of the Modoc Trail. The formation of a Landscape and Lighting Assessment District will be required for the long-term maintenance of the local streets, streetlights, landscaping, block walls and trail system.

## Correspondence Received

Staff has received two items of correspondence regarding the project. On March 12, 2014, the Visalia Unified School District (VUSD) provided a letter stating its ability to provide school facilities to the student population anticipated to be generated by the project.

The second item of correspondence is from a resident of the Avalon tract, adjacent to the south. The resident requests that the project be conditioned to add a second (eastern) pedestrian bridge connecting the project to the southern side of Modoc Ditch. The resident points out that their development already has two pedestrian access points to the south side of Modoc Ditch. This portion of the project is in Phase IV, which is the final phase of the project.



There are presently no conditions of approval requiring construction of the bridge shown on the tentative subdivision map. However, the project is required to pay \$2,213.30 per acre to the Waterways acquisition fund. These funds are typically used to fund and implement the Citywide trail master plan. Consequently, the improvements shown would ultimately be developed at City expense, either as part of the Trail master plan implementation at an unspecified future time, or as a reimbursable expense to the developer of Phase IV. Further, the applicant has expressed that the single bridge location may be considered adequate for pedestrian connectivity to the project since the surrounding roads with sidewalks will ultimately cross Modoc Ditch at points to the east and west of the bridge shown on the tentative map.

Staff recommends that the single bridge be determined to be acceptable for the project design. This recommendation is based on the facts noted above, particularly with regard to the costs of either or both pedestrian bridges being borne by the Waterway trail fund which may have higher priorities for commitment of limited funds at the time this section of trail is a candidate for improvement.

## Environmental Review

An Initial Study was prepared for this project, consistent with the California Environmental Quality Act (CEQA). The Initial Study disclosed that environmental impacts are determined to be not significant. Therefore, staff recommends that Negative Declaration No. 2014-07 be adopted for this project as part of Resolution No. 2013-60.

## **RECOMMENDED FINDINGS**

### **Lowery Ranch Tentative Subdivision Map No. 5550**

1. That the proposed tentative subdivision map is consistent with the policies and intent of the General Plan, Zoning Ordinance, and Subdivision Ordinance.
2. That the proposed location of the tentative subdivision map and the conditions under which it would be built or maintained will not be detrimental to the public health, safety, or welfare, nor materially injurious to properties or improvements in the vicinity.
3. That the requirement for construction of curb, gutter, sidewalk, and curb returns for the portion of the project depicted as the "Remainder 2" lot is necessary for the public health and safety.
4. That the proposed tentative subdivision map is compatible with adjacent land uses.
5. That the density requirements of the underlying R-1-6 Zone District is met.
6. That an Initial Study was prepared for this project, consistent with CEQA, which disclosed that environmental impacts are determined to be not significant and that Negative Declaration No. 2014-07, is hereby adopted.

## **RECOMMENDED CONDITIONS**

### **Lowery Ranch Tentative Subdivision Map No. 5550**

1. That the project be developed consistent with the comments and conditions of the Site Plan Review No. 2013-089.
2. That the Lowery Ranch Tentative Subdivision Map be prepared in substantial compliance with Exhibit "A".
3. That the project shall be developed per the Phasing Plan depicted on Exhibit "C".
4. That the setbacks for the single-family residential lots shall comply with the R-1-6 (Single-Family Residential 6,000 sq. ft. min. site area) standards for the front, side, street side yard and rear yard setbacks.
5. That no structures are to be within the "no build" areas on lots 93, 95, 124, 132, and 151 as shown on Exhibit "A" of the Lowery Ranch Subdivision.
6. That the sidewalk shall be constructed along the entire Demaree Street frontage with the development of Phase 1 of the Lowery Ranch Subdivision development.
7. A block wall is required and shall be constructed along the rear property lines of Lots 1 through 5, and Lots 27 through 37.
8. That the Demaree Street and Shannon Parkway intersection shall have signalization improvement plans finalized and approved by the City Engineer prior to final map recording, and all utility underground work, including traffic signal pedestals and light poles be installed with the first phase of development of the Lowery Ranch Subdivision.
9. That the temporary onsite storm water retention basin shall be constructed to incorporate passive park elements. These elements shall include a maximum basin depth of 4' with 10:1 side slopes, street trees along the frontage of the basin, and be minimally landscaped to provide a passive play area. The use of interior dry wells in the basin is permitted to

minimize basin area. The maintenance of the passive park and dry well(s) will be included within the landscape & lighting assessment district.

10. The construction of curb, gutter, curb return and sidewalk is required along the Remainder abutting Riverway Avenue, and shall be installed with Phase 1 of the Lowery Ranch Subdivision.
11. That the three Valley Oak Trees identified in the Valley Oak Tree Evaluation, Exhibit "E", shall be removed subject to the issuance of a Valley Oak Tree Removal Permit. The remaining Valley Oak Trees identified as Oak Tree 4 shall be properly maintained, trimmed and watered as stated in the evaluation. Development around the Valley Oak Trees is subject to the City's Standard Specification for Building Around Valley Oak Trees. Any Valley Oak Tree identified for tree trimming shall be subject to a Valley Oak Tree Trimming Permit.
12. That the developer shall inform and have future home owners of the Lowery Ranch subdivision sign and acknowledge the "Right to Farm" Act. This informs future residential owners that the surrounding farming operations are protected and cannot be declared a nuisance if operating in a manner consistent with proper and accepted customs and standards.
13. That all applicable federal, state, regional, and city policies and ordinances be met.
14. That the applicant submit to the City of Visalia a signed receipt and acceptance of conditions from the applicant and property owner, stating that they understand and agree to all the conditions of the Lowery Ranch Tentative Subdivision Map No. 5550.

#### **APPEAL INFORMATION**

According to the City of Visalia Zoning Ordinance Section 17.02.145 and Subdivision Ordinance Section 16.28.080, an appeal to the City Council may be submitted within ten days following the date of a decision by the Planning Commission. An appeal with applicable fees shall be in writing and shall be filed with the City Clerk at 425 East Oak Avenue, Suite 301, Visalia, CA 93291. The appeal shall specify errors or abuses of discretion by the Planning Commission, or decisions not supported by the evidence in the record. The appeal form can be found on the City's website [www.ci.visalia.ca.us](http://www.ci.visalia.ca.us) or from the City Clerk.

#### **Attachments:**

- Related Plans and Policies
- Resolution No. 2013-60 – Lowery Ranch Tentative Subdivision Map No. 5550
- Exhibit "A" – Lowery Ranch Tentative Subdivision Map
- Exhibit "B" – Large Lowery Ranch Tentative Subdivision Map including Remainders
- Exhibit "C" – Phasing Plan
- Exhibit "D" – Lowery Ranch Street Cross Sections & Street Light Detail
- Exhibit "E" – Oak Tree Evaluation dated November 18, 2013
- Negative Declaration No. 2014-07
- Transportation Impact Analysis Report dated November 18, 2013
- Greenhouse Gas Analysis Report dated November 18, 2013
- Site Plan Review Comments
- General Plan Land Use Map



- Zoning Map
- Aerial Maps
- Vicinity Map
- Correspondence Received

## RELATED PLANS AND POLICIES

**General Plan and Zoning:** The following General Plan and Zoning Ordinance policies apply to the proposed project:

**General Plan Land Use Policy:**

4.1.18 Continue to encourage comprehensively planned Low Density Residential development (up to 21 persons/acre - 2 to 10 dwelling units net acre). Low density developments in excess of 7 units per acre shall only be permitted in the Northeast Specific Plan Area, for selected infill parcels as may be designated by the City Council upon recommendation of the Planning Commission, and in other specific plan areas where standards are established for lot coverage, where it will promote the fulfillment of unmet housing needs for low or moderate income households according to the Housing Element. Usage of duplex or halfplex units shall be encouraged to increase overall densities where they area made to be compatible with the overall residential development.

The Zoning Ordinance shall be amended to permit the use of 5,000 square foot lots, and include development criteria and a review process for them to be integrated with 6,000 square foot lots. The criteria shall include development standards which may include provisions for minimum lot width, setbacks, lot coverage, building mass and other development standards.

The Zoning Ordinance shall be amended to include a definition of "infill parcels" and a process and criteria to permit the use of 5,000 square foot lots on these designated parcels.

### Zoning Ordinance Section for R-1-6 Zone

#### Chapter 17.12

#### R-1 SINGLE-FAMILY RESIDENTIAL ZONE

##### 17.12.010 Purpose and intent.

In the R-1 single-family residential zone, the purpose and intent is to provide living area within the city where development is limited to low density concentrations of one-family dwellings where regulations are designed to accomplish the following: to promote and encourage a suitable environment for family life; to provide space for community facilities needed to compliment urban residential areas and for institutions which require a residential environment; to minimize traffic congestion and to avoid an overload of utilities designed to service only low density residential use. (Ord. 9717 § 2 (part), 1997: prior code § 7270)

##### 17.12.020 Permitted uses.

In the R-1 single-family residential zone, permitted uses include:

- A. One-family dwellings;
- B. Raising of fruit and nut trees, vegetables and horticultural specialties;
- C. Accessory structures located on the same site with a permitted use including private garages and carports, one guest house, storehouses, garden structures, green houses, recreation room and hobby shops;
- D. Swimming pools used solely by persons resident on the site and their guests; provided, that no swimming pool or accessory mechanical equipment shall be located in a required front yard or in a required side yard;
- E. Temporary subdivision sales offices;
- F. Licensed day care for a maximum of fourteen (14) children in addition to the residing family;
- G. Twenty-four (24) hour residential care facilities or foster homes, for a maximum of six individuals in addition to the residing family;
- H. Signs subject to the provisions of Chapter 17.48,
- I. The keeping of household pets, subject to the definition of household pets set forth in Section 17.04.030;
- J. Second dwelling units as specified in Sections 17.12.140 through 17.12.200;

- K. Adult day care up to twelve (12) persons in addition to the residing family;
- L. Other uses similar in nature and intensity as determined by the city planner;
- M. Single-family residential subdivisions with mixed lot size, subject to the provisions of Sections 17.12.210 through 17.12.240;
- N. Legally existing multiple family units, and expansion or reconstruction as provided in Section 17.12.070. (Ord. 9717 § 2 (part), 1997: Ord. 9605 § 30 (part), 1996: prior code § 7271)

**17.12.030 Accessory uses.**

In the R-1 single-family residential zone, accessory uses include:

- A. Home occupations subject to the provisions of Section 17.32.030;
- B. Accessory buildings subject to the provisions of Section 17.12.100B. (Ord. 2001-13 § 4 (part), 2001: Ord. 9717 § 2 (part), 1997: prior code § 7272)

**17.12.040 Conditional uses.**

In the R-1 single-family residential zone, the following conditional uses may be permitted in accordance with the provisions of Chapter 17.38:

- A. Planned unit development subject to the provisions of Chapter 17.26;
- B. Public and quasi-public uses of an educational or religious type including public and parochial elementary schools, junior high schools, high schools and colleges; nursery schools, licensed day care facilities for more than fourteen (14) children; churches, parsonages and other religious institutions;
- C. Public and private charitable institutions, general hospitals, sanitariums, nursing and convalescent homes; not including specialized hospitals, sanitariums, or nursing, rest and convalescent homes including care for acute psychiatric, drug addiction or alcoholism cases;
- D. Public uses of an administrative, recreational, public service or cultural type including city, county, state or federal administrative centers and courts, libraries, museums, art galleries, police and fire stations, ambulance service and other public building, structures and facilities; public playgrounds, parks and community centers;
- E. Electric distribution substations;
- F. Gas regulator stations;
- G. Public service pumping stations, i.e., community water service wells;
- H. Communications equipment buildings;
- I. Planned neighborhood commercial center subject to the provisions of Chapter 17.26;
- J. Residential development specifically designed for senior housing;
- K. Mobile home parks in conformance with Section 17.32.040;
- L. Developments with modified residential standards in the R-1-6 zone in conformance with Chapter 17.30, Article 6;
- M. Residential developments utilizing private streets in which the net lot area (lot area not including street area) meets or exceeds the site area prescribed by this article and in which the private streets are designed and constructed to meet or exceed public street standards;
- N. Adult day care in excess of twelve (12) persons;
- O. Duplexes on corner lots;
- P. Twenty-four (24) hour residential care facilities or foster homes for more than six individuals in addition to the residing family;
- Q. Residential structures and accessory buildings totaling more than ten thousand (10,000) square feet;
- R. Other uses similar in nature and intensity as determined by the city planner. (Ord. 2001-13 § 4 (part), 2001: Ord. 2000-02 § 1 (part), 2000: amended during 10/97 supplement; Ord. 9717 § 2 (part), 1997: Ord. 9605 § 30 (part), 1996: prior code § 7273)

**17.12.050 Site area.**

In the R-1 single-family residential zone, the minimum site area shall be as follows:

Zone	Permitted or Conditional Use
R-1-6	6,000 square feet
R-1-12.5	12,500 square feet

R-1-20 20,000 square feet

- A. Each site shall have not less than forty (40) feet of frontage on the public street. The minimum width shall be as follows:

Zone	Interior Lot	Corner Lot
R-1-6	60 feet	70 feet
R-1-12.5	90 feet	100 feet
R-1-20	100 feet	110 feet

- B. Minimum width for corner lot on a side on cul-de-sac shall be eighty (80) feet. (Ord. 9717 § 2 (part), 1997: prior code § 7274)

**17.12.060 One dwelling unit per site.**

In the R-1 single-family residential zone, not more than one dwelling unit shall be located on each site. (Ord. 9717 § 2 (part), 1997: prior code § 7275)

**17.12.070 Replacement and expansion of legally existing multiple family units.**

In the R-1 single-family residential zone, in accordance with Sections 17.10.020, 17.12.020 and 17.14.030, legally existing multiple family units may be expanded or replaced if destroyed by fire or other disaster subject to the following criteria:

- A. A planned development permit as provided in Chapter 17.28 is required for all expansions or replacements.
- B. Replacement/expansion of unit(s) shall be designed and constructed in an architectural style compatible with the existing single-family units in the neighborhood. Review of elevations for replacement/expansion shall occur through the site plan review process. Appeals to architectural requirements of the site plan review committee shall be subject to the appeals process set forth in Chapter 17.32, Article 5.
- C. Setbacks and related development standards shall be consistent with existing single-family units in the neighborhood.
- D. Parking requirements set forth in Section 17.34.020 and landscaping requirements shall meet current city standards and shall apply to the entire site(s), not just the replacement unit(s) or expanded area, which may result in the reduction of the number of units on the site.
- E. The number of multiple family units on the site shall not be increased.
- F. All rights established under Sections 17.10.020, 17.12.020, 17.12.070 and 17.14.030 shall be null and void one hundred eighty (180) days after the date that the unit(s) are destroyed (or rendered uninhabitable), unless a building permit has been obtained and diligent pursuit of construction has commenced. The approval of a planned development permit does not constitute compliance with this requirement. (Ord. 9717 § 2 (part), 1997: prior code § 7276)

**17.12.080 Front yard.**

**In the R-1 single-family residential zone:**

- A. The minimum front yard shall be as follows:

Zone	Minimum Front Yard
R-1-6	25 feet
R-1-12.5	30 feet
R-1-20	35 feet

- B. On a be no less than twenty (20) feet, with an average of twenty-five (25) foot setback. (Ord. 2001-13 site situated between sites improved with buildings, the minimum front yard may be the average depth of the front yards on the improved site adjoining the side lines of the site but need not exceed the minimum front yard specified above.
- C. On cul-de-sac and knuckle lots with a front lot line of which all or a portion is curvilinear, the front yard setback shall § 4 (part), 2001: Ord. 9717 § 2 (part), 1997: prior code § 7277)

### **17.12.090 Side yards.**

In the R-1 single-family residential zone:

- A. The minimum side yard shall be five feet in the R-1-6 and R-1-12.5 zone subject to the exception that on the street side of a corner lot the side yard shall be not less than ten feet.
- B. The minimum side yard shall be ten feet in the R-1-20 zone subject to the exception that on the street side of a corner lot the side yard shall be not less than twenty (20) feet.
- C. On a reversed corner lot the side yard adjoining the street shall be not less than ten feet.
- D. On corner lots, all garage doors shall be a minimum of twenty-two (22) feet from the nearest public improvement or sidewalk.
- E. Side yard requirements may be zero feet on one side of a lot if two or more consecutive lots are approved for a zero lot line development by the site plan review committee.
- F. The placement of any mechanical equipment, including but not limited to, pool/spa equipment and evaporative coolers shall not be permitted in the five foot side yard within the buildable area of the lot, or within five feet of rear/side property lines that are adjacent to the required side yard on adjoining lots. This provision shall not apply to street side yards on corner lots, nor shall it prohibit the surface mounting of utility meters and/or the placement of fixtures and utility lines as approved by the building and planning divisions. (Ord. 2001-13 § 4 (part), 2001: Ord. 9717 § 2 (part), 1997: prior code § 7278)

### **17.12.100 Rear yard.**

In the R-1 single-family residential zone, the minimum yard shall be twenty-five (25) feet, subject to the following exceptions:

- A. On a corner or reverse corner lot the rear yard shall be twenty-five (25) feet on the narrow side or twenty (20) feet on the long side of the lot. The decision as to whether the short side or long side is used as the rear yard area shall be left to the applicant's discretion as long as a minimum area of one thousand five hundred (1,500) square feet of usable rear yard area is maintained. The remaining side yard to be a minimum of five feet.
- B. Accessory structures not exceeding twelve (12) feet may be located in the required rear yard but not closer than three feet to any lot line provided that not more than twenty (20) percent of the area of the required rear yard shall be covered by structures enclosed on more than one side and not more than forty (40) percent may be covered by structures enclosed on only one side. On a reverse corner lot an accessory structure shall not be located closer to the rear property line than the required side yard on the adjoining key lot. An accessory structure shall not be closer to a side property line adjoining key lot and not closer to a side property line adjoining the street than the required front yard on the adjoining key lot.
- C. Main structures may encroach up to five feet into a required rear yard area provided that such encroachment does not exceed one story and that a usable, open, rear yard area of at least one thousand five hundred (1,500) square feet shall be maintained. Such encroachment and rear yard area shall be approved by the city planner prior to issuing building permits. (Ord. 2001-13 § 4 (part), 2001: Ord. 9717 § 2 (part), 1997: Ord. 9605 § 30 (part), 1996: prior code § 7279)

### **17.12.110 Height of structures.**

In the R-1 single-family residential zone, the maximum height of a permitted use shall be thirty (30) feet, with the exception of structures specified in Section 17.12100B. (Ord. 9717 § 2 (part), 1997: prior code § 7280)

### **17.12.120 Off-street parking.**

In the R-1 single-family residential zone, subject to the provisions of Chapter 17.34. (Ord. 9717 § 2 (part), 1997: prior code § 7281)

**17.12.130 Fences, walls and hedges.**

In the R-1 single-family residential zone, fences, walls and hedges are subject to the provisions of Section 17.36.030. (Ord. 9717 § 2 (part), 1997: prior code § 7282)

# LOWREY RANCH TENTATIVE SUBDIVISION MAP

A PORTION OF THE 1/4 SECTION 14, TOWNSHIP 14 SOUTH, RANGE 24 EAST, 4108 & M.  
IN THE CITY OF VISALIA, COUNTY OF TULARE, STATE OF CALIFORNIA.

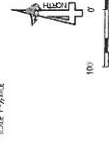
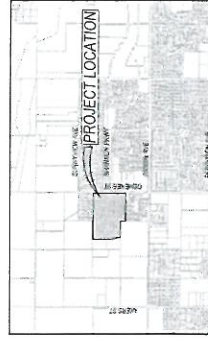
APN: 017-068-006, 017-990-022, 017-060-024  
 GROSS ACREAGE: 10.46 AC  
 FLOOD ZONE: X  
 ZONE: R-1-2  
 ZONING (EXISTING): R-1-6  
 ZONING (PROPOSED): R-1-6  
 ELECTRICITY: SOUTHERN CALIFORNIA EDISON  
 WATER: CALIFORNIA WATER SERVICE  
 SEWER: CITY OF VISALIA  
 TELEPHONE: AIRT  
 REFUSE: CITY OF VISALIA  
 NATURAL GAS: SOUTHERN CALIFORNIA GAS  
 RISK FACTOR: NONE  
 PROPOSED USE: SINGLE FAMILY RESIDENTIAL  
 PROPOSED LOTS: 219 S.F. UNITS IN PHASES 1 - 5  
 SINGLE FAMILY DENSITY: 219 S.F. UNITS / 10.46 AC  
 NET ACREAGE: 40.55 AC  
 TOTAL UNITS: 219 UNITS  
 S.F. NET DENSITY: 5.40 UNITS/AC

○ - TYPICAL VALLEY OAK TREE LOCATION

AN OAK TREE EVALUATION COMPLETED BY HALVEYS TREE SERVICE  
 ON NOVEMBER 13, 2013 HAD THE FOLLOWING RESULTS:  
 - OAK TREE 2: DETERMINED HEALTHY AND WILL REMAIN  
 - OAK TREE 1, 3, AND 4: DETERMINED UNHEALTHY AND WILL BE  
 REMOVED

LOTS 112, 113, 116, 137, AND 183: IDENTIFIED AS KEY LOTS - NO BUILD  
 AREAS SHOWN IN HATCH

LOT DEDICATIONS/ACQUISITION LEGEND:  
 LOT A, B, C, D, E, H, I, J, AND K: DEDICATED TO CITY OF VISALIA FOR  
 A LANDSCAPE AND LIGHTING DISTRICT.  
 LOT F AND M: TO BE PURCHASED BY THE CITY OF VISALIA  
 WATERWAY ACQUISITION FUND.  
 LOT G: TO BE DEDICATED TO MODOC DITCH COMPANY



PREPARED BY:  
**4CREKS**  
 201 L. WALKER, E.T.A.  
 1000 N. WASHINGTON  
 VISALIA, CALIFORNIA 93277  
 PHONE: 559.233.4444  
 FAX: 559.233.4443

WATT GRAHAM  
 HYDE COMMERCIAL  
 3330 W. MINERAL KING  
 SUITE F  
 VISALIA, CA 93291



WILD HORSE  
SUBDIVISION

CITY LIMIT LINE

REMANDER LOT  
FUTURE DEVELOPMENT

Exhibit "A"

NOV. 2013

# LOWREY RANCH TENTATIVE SUBDIVISION MAP

A PORTION OF THE SE 1/4 OF SECTION 14, TOWNSHIP 13 SOUTH, RANGE 28 EAST, AND B. & M. IN THE CITY OF VISALIA, COUNTY OF CALIFORNIA.

APN 017065009, 017066022, 017066024  
 GROSS ACREAGE: 72.54 AC  
 FLOOD ZONE: ZONE X - 02  
 ZONING EXISTING: R-16  
 ZONING PROPOSED: SOUTHERN CALIFORNIA EDISON  
 ELECTRICITY: CALIFORNIA WATER SERVICE  
 WATER: CITY OF VISALIA  
 SEWER: CITY OF VISALIA  
 TELEPHONE: SOUTHERN CALIFORNIA GAS  
 NATURAL GAS: SOUTHERN CALIFORNIA GAS  
 EXISTING USE: AGRICULTURE  
 PROPOSED USE: SINGLE FAMILY RESIDENTIAL

PROPOSED LOTS: 219 S.F. UNITS IN PHASES 1 - 5  
 SINGLE FAMILY DENSITY: NET ACREAGE: 40.55 AC  
 TOTAL UNITS: 219 UNITS  
 S.F. NET DENSITY: 5.40 UNITS/AC

○ - TYPICAL VALLEY OAK TREE LOCATION

AN OAK TREE EVALUATION COMPLETED BY HALSEY'S TREE SERVICE ON NOVEMBER 18, 2013 HAD THE FOLLOWING RESULTS:  
 - OAK TREE 2: DETERMINED HEALTHY AND WILL REMAIN  
 - OAK TREE 1, 3, AND 4: DETERMINED UNHEALTHY AND WILL BE REMOVED

LOTS 112, 113, 116, 137, AND 183: IDENTIFIED AS KEY LOTS. NO BUILD AREAS SHOWN IN PHOTO

LOT DEDICATIONS/ACQUISITION LEGEND:

LOT A, B, C, D, E, I, J, AND K: DEDICATED TO CITY OF VISALIA FOR A LANDSCAPE AND LIGHTING DISTRICT.  
 LOT F AND M: TO BE PURCHASED BY THE CITY OF VISALIA WATERWAY ACQUISITION FUND  
 LOT G: TO BE DEDICATED TO MODOC DITCH COMPANY

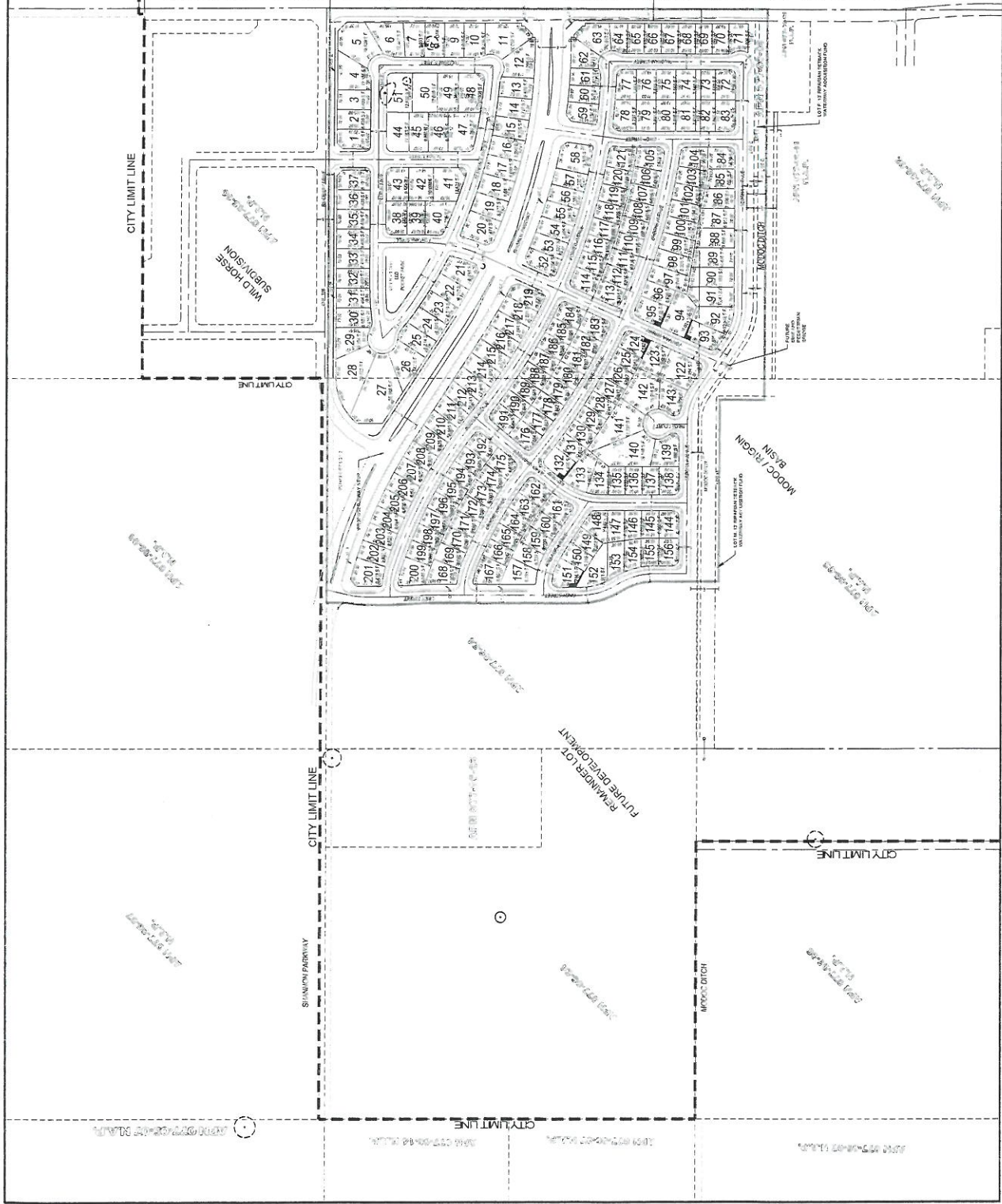


VICINITY MAP

SCALE 1" = 100'



PREPARED BY:  
 4CREEPS  
 MATT GRAHAM  
 PROJECT MANAGER  
 2330 W. MINERAL KING  
 VISALIA, CA 93281  
 PHONE: 559.233.1111  
 FAX: 559.233.1112

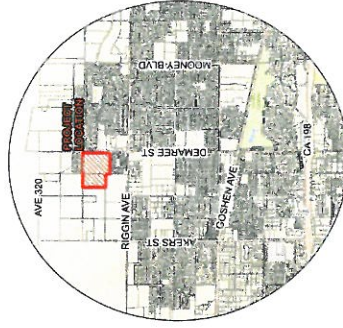




# TLOWERY RANCH

## TENTATIVE SUBDIVISION MAP PHASING PLAN

PHASE 1: 51 LOTS  
PHASE 2: 37 LOTS  
PHASE 3: 39 LOTS  
PHASE 4: 50 LOTS  
PHASE 5: 42 LOTS  
TOTAL: 219 LOTS



VICINITY MAP



PREPARED BY  
**4CREBS**  
2025 N. MARKET, STE. 4  
PO BOX 1961  
VISALIA, CA 93278  
TEL: 559.739.2000  
FAX: 559.739.2075

PROJECT BY  
**MATT GRAHAM**  
MATT GRAHAM REAL ESTATE  
3330 W. MINERAL KING  
VISALIA, CA 93291

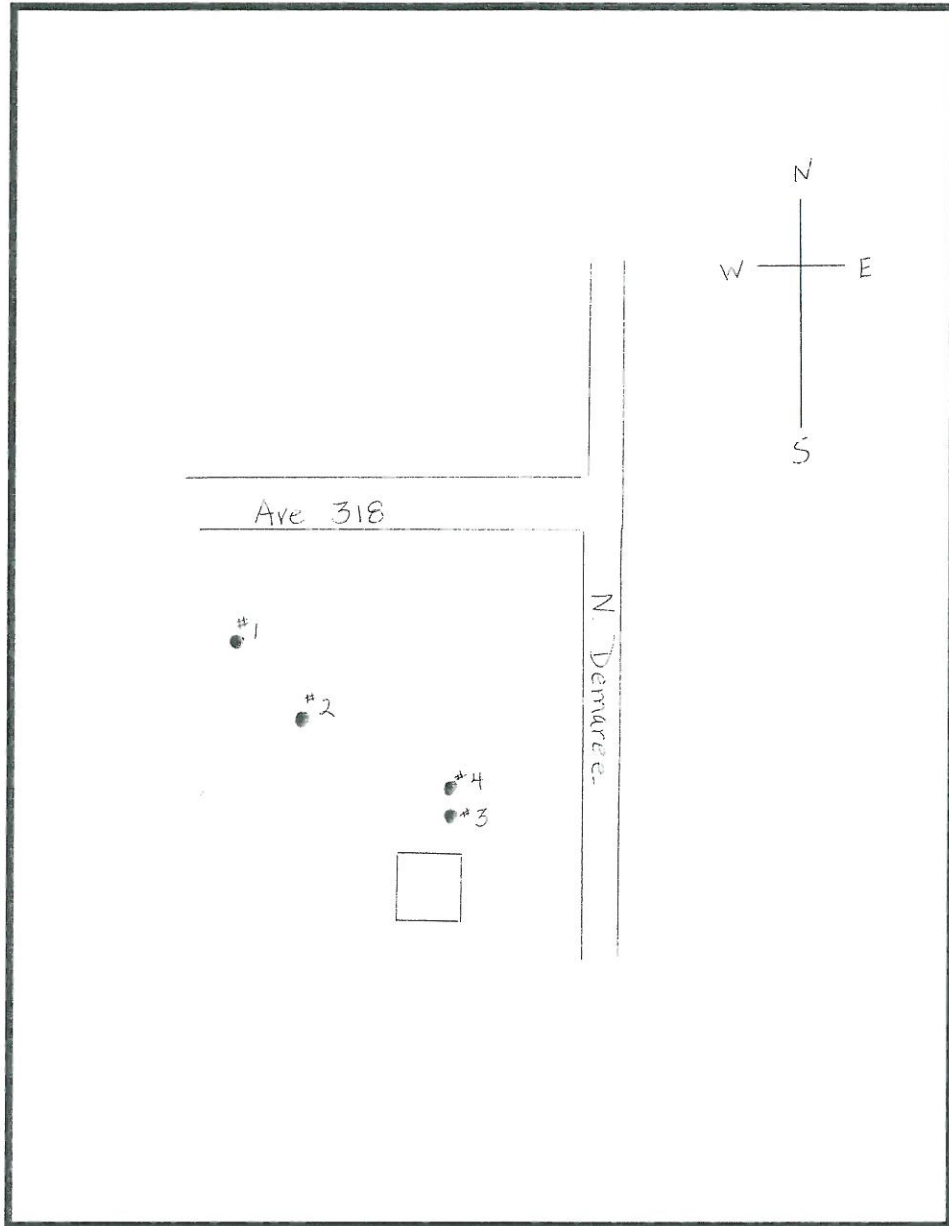




# LOWERY RANCH SUBDIVISION

## OAK TREE EVALUATION

CONDUCTED BY HALSEYS TREE SERVICE ON NOVEMBER 18, 2013



4CREEKS

# HALSEYS TREE SERVICE

"Quality Isn't Expensive...It's Priceless"

## Estimate

31048 Rd 160 Visalia, Ca. 93292 \*License #778845 \*Insured Workers Comp.9023011-12  
Certified Arborist #WE-5787A Phone (559) 733-8713

Nov. 18, 2013

**CUSTOMER:** Four Creeks, Inc.

**SUBJECT:** In-depth visual examination, root crown excavation, core drilling with the resistograph, photos taken and a written report prepared with recommendations.

**LOCATION:** The trees are located in a vacant field @ the s/w corner of N. Demaree and Ave. 318 in Visalia.

Subject is one of 4 Valley Oak (*Quercus lobata*) trees to be evaluated at this site. This will be **tree # 1** as indicated on the attached map. It is at the west end of the lot.

This tree is estimated to be between 180 and 250 years old. It is approximately 51 feet high, with a canopy width of about 47 feet and a DBH of 62 inches.

Overall condition of the tree is **VERY POOR.**

On Nov. 13, 2013, I performed a complete evaluation of the tree in question. The results of that evaluation are as follows:



**STRUCTURE:** The tree exhibits a lean to the south at a ratio of 90 /10. There are conks \*(fruiting bodies) caused by internal decay, about 10 feet up on the north side of the trunk. The tree has had many past failures. These failures have left 3 large wounds below the main fork. The largest of these wounds is 36 inches in diameter.

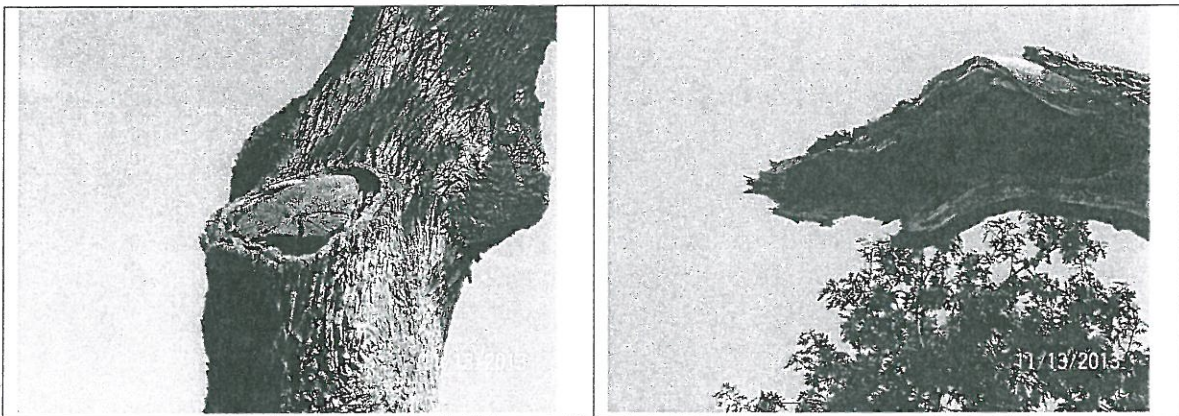
\*Dead foliage can be seen in this picture.

None of these wounds have healed over.  
Over the last 5-6 years, the tree has lost at least 10 large branches. All of these old wounds show significant decay ranging from 25-80%.

\*The old wounds from past failures can be seen in the photo to the right as well as the photo on the previous page.



**CANOPY:** The canopy has very little remaining foliage. Only 4 branches show sparse growth at their tips. There are large DEAD stubs throughout the entire canopy, as can be seen in the photo above.



\*Photo shows an old cut, which was done to clean up a limb failure. This cut has not healed over. On the right is an old failure that was not cleaned up. It also has not healed.



**ROOT CROWN:** I performed a complete root crown excavation. The main buttress roots were exposed for examination. Three of the main buttress roots tested 60-85% hollow using the resistograph.

The center of the tree is mostly hollow, although I wasn't able to get completely to the center due to the large girth of the trunk.

**RECOMMENDATIONS:** This tree is unsafe and is declining quickly. I am recommending **REMOVAL.**

Steve Halsey  
Certified Arborist WE-5787A  
Halseys Tree Service  
(559) 733-8713

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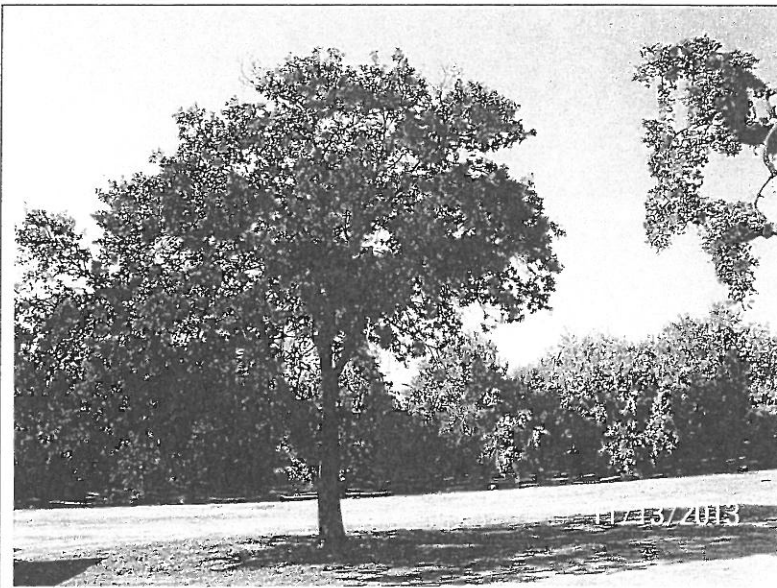
**LOCATION:** The trees are located in a vacant field @ the s/w corner of N. Demaree and Ave. 318 in Visalia.

Subject is one of 4 Valley Oak (*Quercus lobata*) trees to be evaluated at this site. This will be **tree # 2** as indicated on the attached map.

This tree is estimated to be between 30 and 50 years old. It is approximately 29 feet high, with a canopy width of about 34 feet and a DBH of 16 inches.

Overall condition of the tree is **FAIR.**

On Nov. 13, 2013, I performed a complete evaluation of the tree in question. The results of that evaluation are as follows:



**STRUCTURE:** This tree has co-dominant stems starting at 5 feet high. These co-dominant stems have bark inclusion in them. There are 3 main forks, the center one of which has 2 main forks. All of these forks exhibit bark inclusion.

**CANOPY:** The canopy is healthy although, growing very slowly. The tree is suffering from water shortage. There is small dead wood throughout the canopy and only 8-12 inches of new shoot tip growth.



**ROOT CROWN:** I performed a complete root crown excavation. The root crown is healthy. I saw no evidence of any disease or pests. There was no armillaria or woodborers present.



**RECOMMENDATIONS:** This tree is in FAIR condition overall and only needs to be **TRIMMED** and have a better water source.

Steve Halsey  
Certified Arborist WE-5787A  
Halseys Tree Service  
(559) 733-8713

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Nov. 18, 2013

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**SUBJECT:** In-depth visual examination, root crown excavation, core drilling with the resistograph, photos taken and a written report prepared with recommendations.

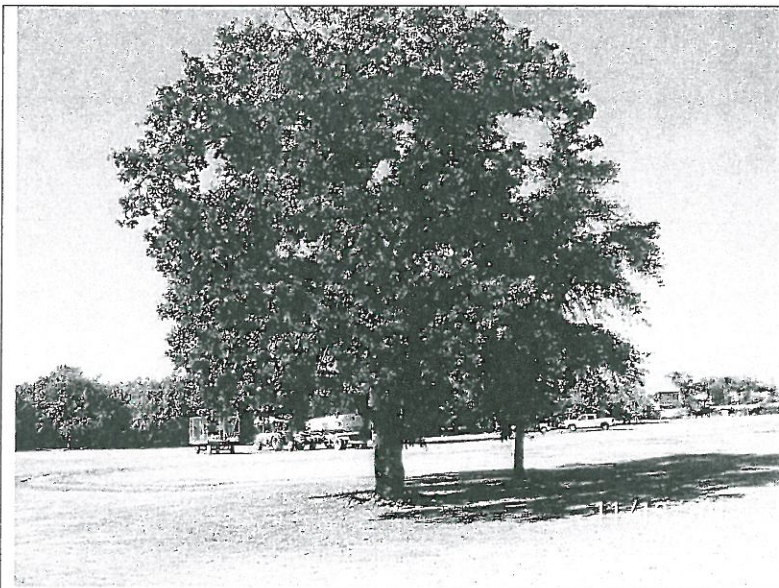
**LOCATION:** The trees are located in a vacant field @ the s/w corner of N. Demaree and Ave. 318 in Visalia.

Subject is one of 4 Valley Oak (*Quercus lobata*) trees to be evaluated at this site. This will be **tree # 3** as indicated on the attached map. It stands 100 feet north of the house @ the s/e side of the lot.

This tree is estimated to be between 30 and 60 years old. It is approximately 35 feet high, with a canopy width of about 39 feet and a DBH of 23 inches.

Overall condition of the tree is **FAIR.**


On Nov. 13, 2013, I performed a complete evaluation of the tree in question. The results of that evaluation are as follows:



**STRUCTURE:** Tree #3 is the front tree in this picture. It has 3 equally sized stems starting at waist height. There is severe bark inclusion in the main fork, an inherent structural defect which cannot be fixed by pruning practices. There is an extreme infestation of woodborers all up and down the eastern stems as well as on the trunk below. I observed 23 borer exit holes.

--	--

**CANOPY:** The canopy is mostly healthy although, showing very slow growth, probably due to the borer infestation. There is only 6-10 inches of new shoot tip growth.

	<p><b>ROOT CROWN:</b> I excavated the root crown and examined the buttress roots. I found no armillaria. There were 5 borer holes underground. The borers are severe and have done a lot of damage to the tree.</p>

**RECOMMENDATIONS:** This tree is in FAIR condition overall, however, due to its health and structural instability \*(heavy bark inclusion) in the main fork, I am recommending **REMOVAL.**

Steve Halsey  
 Certified Arborist WE-5787A  
 Halseys Tree Service  
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Certified Arborist #WE-5787A Phone (559) 733-8713

Nov. 18, 2013

**CUSTOMER:** Four Creeks, Inc.

**SUBJECT:** In-depth visual examination, root crown excavation, photos taken and a written report prepared with recommendations.

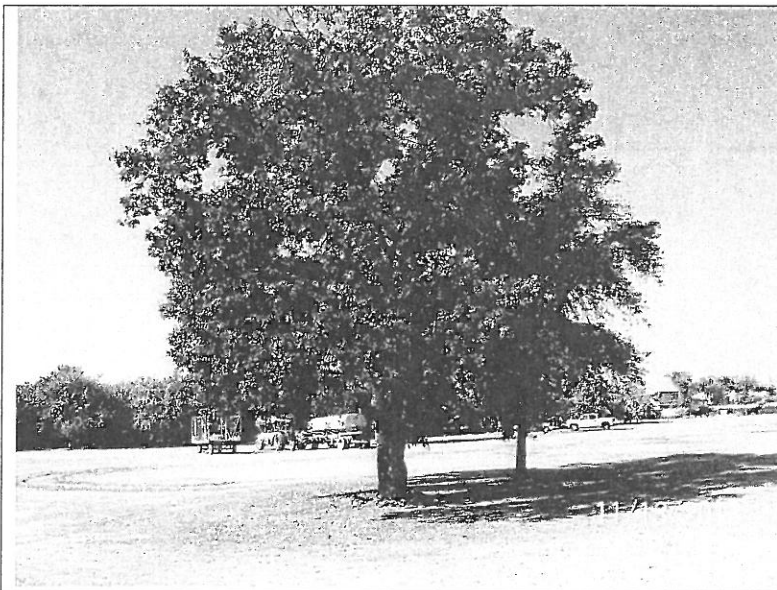
**LOCATION:** The trees are located in a vacant field @ the s/w corner of N. Demaree and Ave. 318 in Visalia.

Subject is one of 4 Valley Oak (*Quercus lobata*) trees to be evaluated at this site. This will be **tree # 4** as indicated on the attached map. It stands 15 feet north of tree #3.

This tree is estimated to be between 20 and 40 years old. It is approximately 30 feet high, with a canopy width of about 17 feet and a DBH of 11 inches.

Overall condition of the tree is **POOR.**

On Nov. 13, 2013, I performed a complete evaluation of the tree in question. The results of that evaluation are as follows:



**STRUCTURE:** Tree #4 is the small tree located behind tree #3 in this photo.

It is a single stem tree up until 12 feet above ground level, where it splits into 2 equal sides.

It has a slight lean to the east.

**CANOPY:** The tree is infested with woodborers. They are destroying the cambium on the east and west sides of the trunk starting at ground level and moving upwards to about head high. The tree exhibits a lot of bleeding sap on its west side. There is a lot of dead wood throughout the canopy and it is in general decline due to the damage from the borers.

**ROOT CROWN:** The root crown was excavated completely. It has a 6 inch scar at ground level. The borers more than likely got their start in the decay which has formed in and around this old wound.

**RECOMMENDATIONS:** This tree is in POOR condition overall. It has a lot of damage to its cambium, \*(The cambium is a very thin layer of tissue that is responsible for new cell growth. It makes the trunk, branches and roots grow larger in diameter.) Once the cambium is destroyed, it cannot recover. Without the cambium functioning properly, the tree cannot grow and therefore, goes into a decline that eventually leads to its death.

It is for this reason, that I am recommending **REMOVAL**.

Steve Halsey  
Certified Arborist WE-5787A  
Halseys Tree Service  
(559) 733-8713

CITY OF VISALIA  
315 E. ACEQUIA STREET  
VISALIA, CA 93291

**NOTICE OF A PROPOSED  
NEGATIVE DECLARATION**

Project Title: Lowery Ranch Tentative Subdivision Map No. 5550

Project Description: **Lowery Ranch Tentative Subdivision Map No. 5550** is a request by Hyde Commercial/4Creeks, to subdivide 72.5 acres into a 219 lot single-family residential subdivision with 2 remainders and 12 out-lots. The project will include the construction of 219 single-family residential homes on 40.5 acres while the remaining 31.9 acres will remain undeveloped. The entire project will be constructed over five phases. The entire site is zoned R-1-6 (Single-Family Residential, 6,000 square foot minimum site area per lot). The 12 Landscaping and Lighting Outlots will be used for a pocket park, landscaping along the major streets and the development of a portion of the Modoc pedestrian trail.

This project also includes construction of streets, extension of sewer lines and laterals, future connection to the storm drainage system and extension of other utilities and services (electricity, gas, water). Curb, gutter, are installed along the subdivision frontage but the project will be required to construct sidewalk along Demaree Street with the first phase of this development. The project will also require the future signalization of the Demaree/Shannon Ranch intersection. To facilitate storm water discharge, a temporary storm drainage basin will be located in the southwest area of the subdivision near the Modoc Basin.

The site will require grading and removal of agricultural related uses currently on-site. Furthermore, there are four Valley Oak trees onsite. The Valley Oak Tree Evaluation identifies three oak trees to be removed and the fourth tree shall be protected, preserved and incorporated into the overall design of the subdivision.

Although the proposed subdivision is not a part of the Shannon Ranch development, the developer is continuing the street design elements found along Shannon Parkway including the median island with landscaping and the modified street lights.

Project Location: The site is located on the west side of North Demaree Street between Riverway Avenue the Modoc Ditch to the south (APN: 077-060-009, 077-060-022 & 077-060-024).

Contact Person: Paul Bernal, Senior Planner

Phone: (559) 713-4025

Time and Place of Public Hearing: A public hearing will be held before the Planning Commission on March 24, 2014 at 7:00 p.m. in the City Hall Council Chambers located at 707 W. Acequia Avenue, Visalia, California.

Pursuant to City Ordinance No. 2388, the Environmental Coordinator of the City of Visalia has reviewed the proposed project described herein and has found that the project will not result in any significant effect upon the environment because of the reasons listed below:

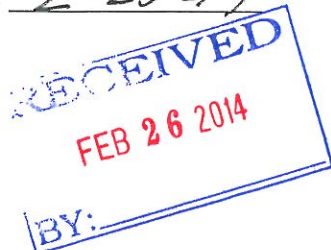
Reasons for Negative Declaration: Initial Study No. 2014-07 has not identified any significant, adverse environmental impact(s) that may occur because of the project. Copies of the initial study and other documents relating to the subject project may be examined by interested parties at the Planning Division in City Hall East, at 315 East Acequia Avenue, Visalia, CA.

Comments on this proposed Negative Declaration will be accepted from February 26, 2014 to March 18, 2014.

Date: 2-25-14

Signed: \_\_\_\_\_

Paul Scheibel, AICP  
Environmental Coordinator  
City of Visalia



CITY OF VISALIA  
315 E. ACEQUIA STREET  
VISALIA, CA 93291

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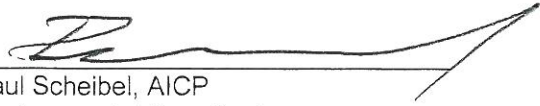
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Comments on this proposed Negative Declaration will be accepted from February 26, 2014 to March 18, 2014.

Date: 2-25-14

Signed: \_\_\_\_\_

  
Paul Scheibel, AICP  
Environmental Coordinator  
City of Visalia

## NEGATIVE DECLARATION

### **Project Title:** Lowery Ranch Tentative Subdivision Map No. 5550

**Project Description:** Lowery Ranch Tentative Subdivision Map No. 5550 is a request by Hyde Commercial/4Creeks, to subdivide 72.5 acres into a 219 lot single-family residential subdivision with 2 remainders and 12 out-lots. The project will include the construction of 219 single-family residential homes on 40.5 acres while the remaining 31.9 acres will remain undeveloped. The entire project will be constructed over five phases. The entire site is zoned R-1-6 (Single-Family Residential, 6,000 square foot minimum site area per lot). The 12 Landscaping and Lighting Outlots will be used for a pocket park, landscaping along the major streets and the development of a portion of the Modoc pedestrian trail.

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**Project Location:** The site is located on the west side of North Demaree Street between Riverway Avenue the the Modoc Ditch to the south (APN: 077-060-009, 077-060-022 & 077-060-024).

**Project Facts:** Refer to Initial Study for project facts, plans and policies, and discussion of environmental effects.

#### **Attachments:**

Initial Study	(X)
Environmental Checklist	(X)
Maps	(X)
Mitigation Measures	( )
Traffic Impact Study	(X)
Biotic Survey	( )
Greenhouse Gas Analysis	(X)

#### **DECLARATION OF NO SIGNIFICANT EFFECT:**

This project will not have a significant effect on the environment for the following reasons:

- (a) The project does not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.
- (b) The project does not have the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- (c) The project does not have environmental effects which are individually limited but cumulatively considerable. Cumulatively considerable means that the incremental effects of an individual



project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

- (d) The environmental effects of the project will not cause substantial adverse effects on human beings, either directly or indirectly.

This Negative Declaration has been prepared by the City of Visalia Planning Division in accordance with the California Environmental Quality Act of 1970, as amended. A copy may be obtained from the City of Visalia Planning Division Staff during normal business hours.

APPROVED  
Paul Scheibel, AICP  
Environmental Coordinator

By: 

Date Approved: February 26, 2014

Review Period: 20 days

## INITIAL STUDY

### I. GENERAL

**A. Description of the Project: Lowery Ranch Tentative Subdivision Map No. 5550** is a request by Hyde Commercial/4Creeks, to subdivide 72.5 acres into a 219 lot single-family residential subdivision with 2 remainders and 12 out-lots. The project will include the construction of 219 single-family residential homes on 40.5 acres while the remaining 31.9 acres will remain undeveloped. The entire project will be constructed over five phases. The entire site is zoned R-1-6 (Single-Family Residential, 6,000 square foot minimum site area per lot). The 12 Landscaping and Lighting Outlots will be used for a pocket park, landscaping along the major streets and the development of a portion of the Modoc pedestrian trail.

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The site will require grading and removal of agricultural related uses currently on-site. Furthermore, there are four Valley Oak trees onsite. The Valley Oak Tree Evaluation identifies three oak trees to be removed and the fourth tree shall be protected, preserved and incorporated into the overall design of the subdivision.

Although the proposed subdivision is not a part of the Shannon Ranch development, the developer is continuing the street design elements found along Shannon Parkway including the median island with landscaping and the modified street lights.

### **B. Identification of the Environmental Setting:**

The project is located west side of North Demaree Street and is surrounded on three sides by urban development. The project site is in agriculture production with row crops currently taking place on the site. The site is bounded by Riverway Avenue to north, Demaree Street to the east, and the Modoc Ditch Irrigation canal to the south. The surrounding zoning and land uses are as follows:

The surrounding uses, Zoning, and General Plan are as follows:

North:	Riverway Avenue & Wild Horse Ranch Subdivision / R-1-6 (Single-Family Residential 6,000 sq. ft. min. site area) / Residential Low Density
South:	Modoc Ditch & Avalon Subdivision / R-1-6 (Single-Family Residential 6,000 sq. ft. min. site area) / Residential Low Density
East:	Demaree Street & Shannon Ranch Subdivision / R-1-6 (Single-Family Residential 6,000 sq. ft. min. site area) / Residential Low Density
West:	Agricultural Crops / R-1-6 (Single-Family Residential 6,000 sq. ft. min. site area) / Residential Low Density

Fire and police protection services, street maintenance of public streets, refuse collection, and wastewater treatment will be provided by the City of Visalia upon the development of the area.

**C. Plans and Policies:** The General Plan Land Use Element (LUE) designates the site as Residential Low Density. The site is zoned R-1-6 (Single-family Residential, 6,000 square foot lot size). The proposed project is consistent with the Land Use Element of the General Plan 4.1.3 for planned unit residential developments and the standards for single-family residential subdivisions pursuant to the Visalia Municipal Code 17.26.

## **II. ENVIRONMENTAL IMPACTS**

No significant adverse environmental impacts have been identified for this project. The City of Visalia Land Use Element and Zoning Ordinance contain land use mitigation measures that are designed to reduce/eliminate impacts to a level of non-significance.

## **III. MITIGATION MEASURES**

There are no mitigation measures for this project. The City of Visalia Zoning Ordinance contains guidelines, criteria, and requirements for the mitigation of potential impacts related to light/glare, visibility screening, noise, and traffic/parking to eliminate and/or reduce potential impacts to a level of non-significance.

## **IV. PROJECT COMPATIBILITY WITH EXISTING ZONES AND PLANS**

The project is compatible with the General Plan and Zoning Ordinance as the project relates to surrounding properties.

## **V. SUPPORTING DOCUMENTATION**

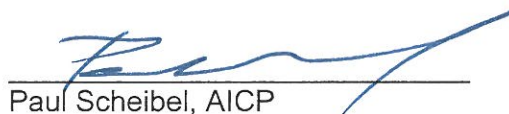
The following documents are hereby incorporated into this Negative Declaration and Initial Study by reference:

- City of Visalia General Plan Land Use Element. City of Visalia. September 1991, revised June 1996.
- City of Visalia General Plan Land Use Element Final Environmental Impact Report (SCH EIR No. 90020160). City of Visalia, September 3, 1991.
- Visalia City Council Resolution 91-105 (Certifying the EIR for the City of Visalia General Plan Land Use Element Update), passed and adopted September 3, 1991.
- City of Visalia General Plan Circulation Element. City of Visalia. April 2001.
- City of Visalia General Plan Circulation Element Final Environmental Impact Report (SCH EIR No. 95032056). VRPA Technologies, February 26, 2001.
- Visalia City Council Resolution 2001-19 (Certifying the EIR for the City of Visalia General Plan Circulation Element Update), passed and adopted April 2, 2001.
- City of Visalia General Plan Conservation, Open Space, Recreation & Parks Element. City of Visalia. June 1989.
- Visalia Municipal Code, Title 17 (Zoning Ordinance)
- California Environmental Quality Act Guidelines
- City of Visalia Storm Water Master Plan. Boyle Engineering Corporation, September 1994.
- City of Visalia Sanitary Sewer Master Plan. City of Visalia, 1994.
- Lowery Ranch Subdivision Oak Tree Evaluation Report, November 18, 2013, Halsey's Tree Service
- Lowery Ranch Traffic Impact Analysis Report in the City of Visalia, Final Report. November 18, 2013, 4Creeks, Inc.
- Greenhouse Gas Analysis Report Lowery Ranch Subdivision Map City of Visalia, November 12, 2013, 4Creeks, Inc.

## **VI. NAME OF PERSON WHO PREPARED INITIAL STUDY**



Paul Bernal  
Principal Planner



Paul Scheibel, AICP  
Environmental Coordinator

**INITIAL STUDY  
 ENVIRONMENTAL CHECKLIST**

<b>Name of Proposal</b>	Lowery Ranch Tentative Subdivision Map No. 5550		
<b>NAME OF PROPONENT:</b>	Hyde Commercial Real Estate	<b>NAME OF AGENT:</b>	4Creeks, Inc. – David Duda
<b>Address of Proponent:</b>	3330 W. Mineral King Ave., Suite F Visalia, CA 93291	<b>Address of Agent:</b>	2929 W. Main St., Suite A Visalia, CA 93291
<b>Telephone Number:</b>	(559) 739-9900	<b>Telephone Number:</b>	(559) 802-3052
<b>Date of Review</b>	February 26, 2014	<b>Lead Agency:</b>	City of Visalia

The following checklist is used to determine if the proposed project could potentially have a significant effect on the environment. Explanations and information regarding each question follow the checklist.

1 = No Impact                      2 = Less Than Significant Impact  
 3 = Less Than Significant Impact with Mitigation Incorporated                      4 = Potentially Significant Impact

**I. AESTHETICS**

Would the project:

- 2 a) Have a substantial adverse effect on a scenic vista?
- 1 b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
- 2 c) Substantially degrade the existing visual character or quality of the site and its surroundings?
- 2 d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?

**II. AGRICULTURAL RESOURCES**

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

- 2 a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use?
- 1 b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?
- 1 c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?
- 1 d) Result in the loss of forest land or conversion of forest land to non-forest use?
- 1 e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use?

**III. AIR QUALITY**

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

- 2 a) Conflict with or obstruct implementation of the applicable air quality plan?
- 2 b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
- 2 c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?
- 1 d) Expose sensitive receptors to substantial pollutant concentrations?
- 1 e) Create objectionable odors affecting a substantial number of people?

**IV. BIOLOGICAL RESOURCES**

Would the project:

- 1 a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?
- 2 b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?
- 1 c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?
- 2 d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

- 2 e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- 1 f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

#### V. CULTURAL RESOURCES

Would the project:

- 1 a) Cause a substantial adverse change in the significance of a historical resource as defined in Public Resources Code Section 15064.5?
- 1 b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Public Resources Code Section 15064.5?
- 1 c) Directly or indirectly destroy a unique paleontological resource or site, or unique geologic feature?
- 1 d) Disturb any human remains, including those interred outside of formal cemeteries?

#### VI. GEOLOGY AND SOILS

Would the project:

- a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - 1 i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?
  - 1 ii) Strong seismic ground shaking?
  - 1 iii) Seismic-related ground failure, including liquefaction?
  - 1 iv) Landslides?
- 1 b) Result in substantial soil erosion or loss of topsoil?
- 1 c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?
- 1 d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?
- 1 e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

#### VII. GREENHOUSE GAS EMISSIONS

Would the project:

- 2 a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?
- 2 b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

#### VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

- 1 a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

- 1 b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?
- 1 c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?
- 1 d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?
- 1 e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?
- 1 f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?
- 1 g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?
- 1 h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

#### IX. HYDROLOGY AND WATER QUALITY

Would the project:

- 2 a) Violate any water quality standards of waste discharge requirements?
- 2 b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?
- 2 c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
- 2 d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?
- 2 e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- 1 f) Otherwise substantially degrade water quality?
- 2 g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?
- 1 h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?
- 2 i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?
- 1 j) Inundation by seiche, tsunami, or mudflow?

**X. LAND USE AND PLANNING**

Would the project:

- 1 a) Physically divide an established community?
- 1 b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?
- 1 c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

**XI. MINERAL RESOURCES**

Would the project:

- 1 a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?
- 1 b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

**XII. NOISE**

Would the project:

- 2 a) Cause exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- 1 b) Cause exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?
- 2 c) Cause a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
- 1 d) Cause a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?
- 1 e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?
- 1 f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

**XIII. POPULATION AND HOUSING**

Would the project:

- 2 a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?
- 1 b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?
- 1 c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

**XIV. PUBLIC SERVICES**

Would the project:

- 1 a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically

altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

- 1 i) Fire protection?
- 1 ii) Police protection?
- 2 iii) Schools?
- 1 iv) Parks?
- 1 v) Other public facilities?

**XV. RECREATION**

Would the project:

- 1 a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?
- 1 b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

**XVI. TRANSPORTATION / TRAFFIC**

Would the project:

- 1 a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?
- 2 b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?
- 1 c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?
- 1 d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?
- 1 e) Result in inadequate emergency access?
- 1 f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

**XVII. UTILITIES AND SERVICE SYSTEMS**

Would the project:

- 1 a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?
- 2 b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?
- 2 c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?
- 1 d) Have sufficient water supplies available to service the project from existing entitlements and resources, or are new or expanded entitlements needed?

- 1 e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?
- 1 f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?
- 1 g) Comply with federal, state, and local statutes and regulations related to solid waste?

**XVIII. MANDATORY FINDINGS OF SIGNIFICANCE**

Would the project:

- 2 a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?
- 2 b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?
- 2 c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Note: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21080(c), 21080.1, 21080.3, 21083, 21083.05, 21083.3, 21093, 21094, 21095, and 21151, Public Resources Code; *Sundstrom v. County of Mendocino*, (1988) 202 Cal.App.3d 296; *Leonoff v. Monterey Board of Supervisors*, (1990) 222 Cal.App.3d 1337; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109; *San Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656.

Revised 2009

## DISCUSSION OF ENVIRONMENTAL EVALUATION

### I. AESTHETICS

- a. The proposed project is new subdivided residential construction which will meet City standards for setbacks, landscaping and height restrictions.

This project will not adversely affect the view of any scenic vistas. The Sierra Nevada mountain range may be considered a scenic vista and the view will not be adversely impacted by the project.

- b. There are no scenic resources on the site.
- c. The proposed project includes residential development that will be aesthetically consistent with surrounding development and with General Plan policies. Furthermore, the City has development standards related to landscaping and other amenities that will ensure that the visual character of the area is enhanced and not degraded. Thus, the project would not substantially degrade the existing visual character of the site and its surroundings.
- d. The project will create new sources of light that are typical of residential development. The City has development standards that require that light be directed and/or shielded so it does not fall upon adjacent properties.

### II. AGRICULTURAL RESOURCES

- a. The project site is not zoned for agricultural use. Agricultural uses are still occurring onsite but will cease once the project is approved. The project is bordered by agricultural development to the west and urban development to the north, east, and south. The project does involve conversion of farmland but the land has been designated for urban development.
- b. The project will not conflict with an existing zoning for agricultural use, as there are no properties in the project area with an Agriculture zoning. There are no known Williamson Act contracts on any properties within the project area.
- c. There is no forest or timber land currently located on the site.
- d. There is no forest or timber land currently located on the site.
- e. The project will not involve any changes that would promote or result in the conversion of farmland to non-agriculture use. The property within the project area is currently designated for an urban, rather than agricultural, land use. Properties that are vacant may develop in a way that is consistent with their zoning and land use designated at any time.

### III. AIR QUALITY

- a. The project site is located in an area that is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The project in itself does not disrupt implementation of the San Joaquin Regional Air Quality

Management Plan, and will therefore be a less than significant impact.

- b. The project could result in short-term air quality impacts related to dust generation and exhaust due to construction and grading activities. The project is required to adhere to requirements administered by the SJVAPCD to reduce emissions to a level of compliance consistent with the District's grading regulations. Compliance with the SJVAPCD's rules and regulations will reduce potential impacts associated with air quality standard violations to a less than significant level.

In addition, development of the project will be subject to the SJVAPCD Indirect Source Review (Rule 9510) procedures that became effective on March 1, 2006. The Applicant will be required to obtain permits demonstrating compliance with Rule 9510, or payment of mitigation fees to the SJVAPCD.

- c. The San Joaquin Valley region is at non-attainment for air quality. This site was evaluated in the EIR for the City of Visalia Land Use Element Update for conversion into urban development. The City adopted urban development boundaries as mitigation measures for air quality.

The project could result in short-term air quality impacts related to dust generation and exhaust due to construction and grading activities. The project is required to adhere to requirements administered by the SJVAPCD to reduce emissions to a level of compliance consistent with the District's grading regulations. Compliance with the SJVAPCD's rules and regulations will reduce potential impacts associated with air quality standard violations to a less than significant level.

In addition, development of the project will be subject to the SJVAPCD Indirect Source Review (Rule 9510) procedures that became effective on March 1, 2006. The Applicant will be required to obtain permits demonstrating compliance with Rule 9510, or payment of mitigation fees to the SJVAPCD.

- d. Residences located near the proposed project may be exposed to pollutant concentrations due to construction activities. The use of construction equipment will be temporary and is subject to SJVAPCD rules and regulations. The impact is considered as less than significant.
- e. The proposed project will not involve the generation of objectionable odors that would affect a substantial number of people.

### IV. BIOLOGICAL RESOURCES

- a. As described in the Identification of the Environmental Setting contained within the Initial Study, the project site has been in agricultural production and cultivation. Agricultural related uses still remain to the west but the site adjacent to urban development to the north, east and south. This area has been designated for future development including the construction of a major



collector, (Shannon Parkway) that bisects the subdivision in an east / west orientation.

City-wide biological resources were evaluated in the EIR for the City of Visalia Land Use Element Update for conversion to urban use. In addition, staff had conducted an on-site visit to the site in February 2014 to observe biological conditions and did not observe any evidence or symptoms that would suggest the presence of a sensitive, candidate, or special species.

In conclusion, the site has no known species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service. The project would therefore not have a substantial adverse effect on a sensitive, candidate, or special species.

- b. The project is not located within or adjacent to an identified sensitive riparian habitat or other natural community.
- c. The project is not located within or adjacent to federally protected wetlands as defined by Section 404 of the Clean Water Act.
- d. This development would not act as a barrier to animal movement. This site was evaluated in the General Plan EIR for the City of Visalia Land Use Element Update for conversion to urban use.
- e. The City has a municipal ordinance in place to protect valley oak trees. All existing valley oak trees on the project site will be under the jurisdiction of this ordinance. Any oak trees to be removed from the site are subject to the jurisdiction of the municipal ordinance. The applicant has provided an Oak Tree elevation of four valley oak trees that are located on the project site. The Oak Tree evaluation was reviewed by the City's Arborist and concluded that three of the valley oak trees are to be removed due to the trees being dead or in very poor health.

Per the Visalia Oak Tree ordinance, trees determined to be dead or in poor health, may be removed if they are deemed to be detrimental to the public's safety and welfare. The project must adhere to the mitigation procedures listed in section 12.24.035 of the Visalia Municipal Code.

Based on the information contained in the Valley Oak Tree Evaluation, oak tree removal has been deemed necessary and meets the requirements as determined in the Visalia Municipal Code. The removal of these dead or unhealthy trees is a less than significant impact on the local ordinance protecting the valley oak trees.

- f. There are no local or regional habitat conservation plans for the area.

#### V. CULTURAL RESOURCES

- a. There are no known historical resources located within the project area. If some potentially historical or cultural resource is unearthed during development all work should cease until a qualified professional archaeologist can evaluate the finding and make necessary mitigation recommendations.

- b. There are no known archaeological resources located within the project area. If some archaeological resource is unearthed during development all work should cease until a qualified professional archaeologist can evaluate the finding and make necessary mitigation recommendations.
- c. There are no known unique paleontological resources or geologic features located within the project area.
- d. There are no known human remains buried in the project vicinity. If human remains are unearthed during development all work should cease until the proper authorities are notified and a qualified professional archaeologist can evaluate the finding and make any necessary mitigation recommendations.

#### VI. GEOLOGY AND SOILS

- a. The State Geologist has not issued an Alquist-Priolo Earthquake Fault Map for Tulare County. The project area is not located on or near any known earthquake fault lines. Therefore, the project will not expose people or structures to potential substantial adverse impacts involving earthquakes.
- b. The development of this site will require movement of topsoil. Existing City Engineering Division standards require that a grading and drainage plan be submitted for review to the City to ensure that off- and on-site improvements will be designed to meet City standards.
- c. The project area is relatively flat and the underlying soil is not known to be unstable. Soils in the Visalia area have few limitations with regard to development. Due to low clay content and limited topographic relief, soils in the Visalia area have low expansion characteristics.
- d. Due to low clay content, soils in the Visalia area have an expansion index of 0-20, which is defined as very low potential expansion.
- e. The project does not involve the use of septic tanks or alternative waste water disposal systems since sanitary sewer lines are used for the disposal of waste water at this location.

#### VII. GREENHOUSE GAS EMISSIONS

- a. The project is expected to generate Greenhouse Gas (GHG) emissions in the short-term as a result of the construction of residences within the subdivision lot and long-term as a result of day-to-day operation of the proposed residences. Estimated GHG emissions calculations are contained within the California Emissions Estimator Model (CalEEMod) report prepared for the project by 4Creeks, Inc., dated November 12, 2013.

AB 32 outlines a scoping plan, which entails reducing the projected GHG emissions by 29% from the business as usual operational emissions. According to the report, the construction of the project would generate a total of 1,229 metric tons of carbon dioxide equivalents (MTCO<sub>2e</sub>). However, because the construction is taking place prior to the year 2020, when the state is required to reduce its emissions levels to the levels of 1990, the short-term emissions from construction can be deemed as less than significant.

When applying the 29% reduction technique to the operational long-term GHG emissions, the project must operate within regulations as enacted in AB 32 and

standard measures required by California Code, the City of Visalia, and the San Joaquin Valley Air Pollution Control District (SJVAPCD). These measures, including green building standards, increased energy efficiency standards, pedestrian infrastructure, wood burning prohibitions, and water conservation can reduce the significance threshold from 1,229 MTCO<sub>2e</sub> with business as usual to 827 MTCO<sub>2e</sub>. This constitutes a 32% reduction which is under the threshold of significance for GHG emissions.

A 14% reduction from business as usual is achieved through reduction in electricity and natural gas emissions because of compliance with the 2013 Title 24 energy efficiency standards and the implementation of electricity standards with the renewable portfolio standard.

A 17% reduction from business as usual is achieved through wood burning device prohibition and California building standards that require electrical outlets to be provided on the exterior of dwelling units to discourage the use of polluting landscaping equipment.

Mobile emissions were reduced by 27% due to close proximity to retail uses (reduced vehicle trips), improved walkability design and pedestrian network, and improved transit accessibility (stop located on Demaree Street near Village at Willow Creek Shopping Center).

When analyzing the project operational greenhouse gases (as shown in the 4Creeks CalEEMod report, Table 17) the business as usual emissions estimates from natural gas (412.98 MTCO<sub>2e</sub>), energy (450.99 MTCO<sub>2e</sub>), mobile (284.68 MTCO<sub>2e</sub>), waste (31.49 MTCO<sub>2e</sub>), water (47.43 MTCO<sub>2e</sub>), and Landscaping (1.62 MTCO<sub>2e</sub>) add up to a total 1,229.19 MTCO<sub>2e</sub>. The project operational greenhouse gases including the regulation and standard measures that are applied to this project, reduce impacts in the natural gas (412.98 MTCO<sub>2e</sub>), energy (360.79 MTCO<sub>2e</sub>), mobile (2.40 MTCO<sub>2e</sub>), waste (25.79 MTCO<sub>2e</sub>), water (23.71 MTCO<sub>2e</sub>), and Landscaping (1.52 MTCO<sub>2e</sub>) which adds up to a reduced 827.19 MTCO<sub>2e</sub> which accounts for a 32.70% reduction, which is greater than the 29% reduction as required per AB 32.

This 32.70% reduction is within the significance threshold of GHG emissions from business as usual and meets the 29% reduction technique. Therefore, the long-term operational GHG emissions of the project are at a less than significant level. These measures are represented in the CalEEMod as mitigation measures; however, they are not considered mitigation under the California Environmental Quality Act because they arise as a result of the projects location and regulation requirements of state, regional, and local governments. The impact is considered marginal based on ongoing Federal and State-wide efforts to minimize emissions and the project-specific regulations discussed below.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) has released a document entitled *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*, which provides draft guidance for the determination of significant effects.

Greenhouse Gas emissions associated with new projects are found to have a cumulative effect rather than a direct impact on climate change. Because climate change is a

global phenomenon, a direct impact cannot be associated for an individual land development project.

The California Global Warming Solutions Act of 2006, also known as Assembly Bill 32 or AB 32, required that the California Air Resources Board (CARB) design and implement emission limits, regulations, and other measures designed to reduce GHG to 1990 levels by 2020 representing a 29% reduction. Following this reduction target set in CARB's AB 32 Scoping Plan, the District evaluates GHG emission significance and finds that a project can avoid a significant impact by either:

- Using any combination of District approved GHG emission reduction measures to meet Best Performance Standards,
- Complying with an approved GHG plan or mitigation program, or
- Reducing GHG emissions by 29% from Business-As-Usual levels.

The proposed project will utilize a combination of District approved measures and existing State, Regional, and City regulations that will reduce the significance of the impact of GHG emissions.

The following regulations already in effect will assist in reducing the cumulative impact associated with GHG emissions:

- Compliance with the California Building Code of 2013 including Title 24 requirements,
- Compliance with the City of Visalia's water efficient landscape standards,
- Applicability of the SJVAPCD's Indirect Source Rule 9510 to the project,
- Compliance with the City of Visalia Development Standards (Chapter 17.30 of the Municipal Code), which requires the placement of parking lot shade trees and street trees along public streets;

The project will also be in compliance with certain measures approved by the SJVAPCD that are designated as an effective means of reducing the project's GHG emissions to meet Best Performance Standards and would provide a reduction of GHG emissions.

The following SJVAPCD-approved measures are presently incorporated into the site's environs:

- Proximity to existing Class I and Class II bicycle lanes located on Demaree Street;
- Transit service within 500 feet of subdivision;
- Proximity of suburban mixed uses (residential development, retail development, park and open space) within ½ mile;
- Installation of Low Flow Bathroom Fixtures;
- Use of Low VOC Paint;
- Water Efficient Landscaping.

- b. The State of California has enacted the Global Warming Solutions Act of 2006 (AB 32), which included provisions for reducing the GHG emission levels to 1990 "baseline" levels by 2020.

The proposed project will not impede the State's ability to meet the GHG emission reduction targets under AB 32. Current and probable future state and local GHG reduction measures will continue to reduce the project's contribution to climate change. As a result, the project will not contribute significantly, either individually or cumulatively, to GAG emissions.

#### VIII. HAZARDS AND HAZARDOUS MATERIALS

- a. No hazardous materials are anticipated with the project.
- b. Construction activities associated with development of the project may include maintenance of on-site construction equipment which could lead to minor fuel and oil spills. The use and handling of any hazardous materials during construction activities would occur in accordance with applicable federal, state, regional, and local laws. Therefore, impacts are considered to be less than significant.
- c. There is one school site located within one-half mile from the project site (Shannon Ranch Elementary). However, there is no reasonably foreseeable condition or incident involving the project that could affect existing or proposed school sites or areas within one-quarter mile of school sites.
- d. The project area does not include any sites listed as hazardous materials sites pursuant to Government Code Section 65692.5.
- e. The City's adopted Airport Master Plan shows the project area is located outside of all Airport Zones. There are no restrictions for the proposed project related to Airport Zone requirements.  
  
The project area is not located within 2 miles of a public airport.
- f. The project area is not within the vicinity of any private airstrip.
- g. The project will not interfere with the implementation of any adopted emergency response plan or evacuation plan.
- h. There are no wild lands within or near the project area.

#### IX. HYDROLOGY AND WATER QUALITY

- a. The project will not violate any water quality standards of waste discharge requirements. The site is a proposed residential development, which will meet the City's improvement standards for directing storm water runoff to the existing City storm water drainage system; consistent with the City's adopted City Storm Drain Master Plan.
- b. The project will not substantially deplete groundwater supplies in the project vicinity. The project site will be served by a water lateral for domestic, irrigation, and fire protection use.
- c. The project will not result in substantial erosion on- or off-site.
- d. The project will not substantially alter the existing drainage pattern of the site or area, alter the course of a stream or

river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

- e. The project will not create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff. The site is a proposed residential development which will meet the City's improvement standards for directing storm water runoff to the existing City storm water drainage system, consistent with the City's adopted City Storm Drain Master Plan.
- f. There are no reasonably foreseeable reasons why the project would result in the degradation of water quality.
- g. The project area is located within Zone X02, which indicates an area that is not within flood hazard area.
- h. The project area is located within Zone X02, which indicates an area that is not within flood hazard area.
- i. The project would not expose people or structures to risks from failure of levee or dam. The project is located downstream from the Terminus Dam; in the case of dam failure, there will be 4 hours of warning to evacuate the site.
- j. Seiche and tsunami impacts do not occur in the Visalia area. The site is relatively flat, which will contribute to the lack of impacts by mudflow occurrence.

#### X. LAND USE AND PLANNING

- a. The project will not physically divide an established community. The proposed project is to be developed on land designated for residential development. The project site is surrounded on three sides by urban development is bordered by a major arterial roadway, Demaree Street, to the east and will be bisected by Shannon Parkway. Although the project is not part of the Shannon Ranch development located directly to the east, the proposed Lowery Ranch subdivision is intended to carry the same thematic design theme found throughout the Shannon Ranch development. Such design elements include the median island landscape along Shannon Parkway, and the modified street light standards.
- b. The project does not conflict with any land use plan, policy or regulation of the City of Visalia. The project seeks to create a single subdivision in the single-family residential zone. The project will also be developed to meet the density requirements as outlined in the General Plan.

The site is within the current Urban Development Boundary (129,000 Population) of the City of Visalia. The City of Visalia designates the area for urban development. This site was evaluated in the EIR for the City of Visalia Land Use Element Update for conversion to urban use. The City adopted urban development boundaries as mitigation measures for conversion to urban development.

- c. The project does not conflict with any applicable habitat conservation plan or natural community conservation plan as it is located on a vacant dirt lot with no significant natural habitat present.

**XI. MINERAL RESOURCES**

- a. No mineral areas of regional or statewide importance exist within the Visalia area.
- b. There are no mineral resource recovery sites delineated in the Visalia area.

**XII. NOISE**

- a. The project will result in noise generation typical of urban development, but not in excess of standards established in the City of Visalia's General Plan or Noise Ordinance. Traffic and related noise impacts from the proposed project will occur along Demaree Street, an existing arterial roadway, and the future Shannon Parkway roadway alignment that bisects the project site. The City's standards for setbacks and/or construction of walls along major streets will reduce noise levels to a level that is less than significant. Noise levels will also increase temporarily during the construction of the project but shall remain within the noise limits and restricted to the allowed hours of construction defined by the City of Visalia Noise Ordinance. Temporary increase in ambient noise levels is considered to be less than significant.
- b. Ground-borne vibration or ground-borne noise levels may occur as part of construction activities associated with the project. Construction activities will be temporary and will not expose persons to such vibration or noise levels for an extended period of time; thus the impacts will be less than significant. There are no existing uses near the project area that create ground-borne vibration or ground-borne noise levels.
- c. Ambient noise levels will increase beyond current levels as a result of the project, however these levels will be typical of noise levels associated with urban development and not in excess of standards established in the City of Visalia's General Plan or Noise Ordinance. The City's standards for setbacks and/or construction of walls along major streets and adjacent to residential uses reduce noise levels to a level that is less than significant. Noise associated with the establishment of new urban uses was previously evaluated with the General Plan for the conversion of land to urban uses.
- d. Noise levels will increase during the construction of the project but shall remain within the limits defined by the City of Visalia Noise Ordinance. Temporary increase in ambient noise levels is considered to be less than significant.
- e. The project area is not within 2 miles of a public airport. The project will not expose people residing or working in the project area to excessive noise levels.
- f. There is no private airstrip near the project area.

**XIII. POPULATION AND HOUSING**

- a. The project will not directly induce substantial population growth that is in excess of that planned in the General Plan.
- b. Development of the site will not displace any housing on the site.
- c. Development of the site will not displace any people on the site.

**XIV. PUBLIC SERVICES**

- a.
  - i. Current fire protection facilities are located at the Visalia Station 55 and can adequately serve the site without a need for alteration. Impact fees will be paid to mitigate the project's proportionate impact on these facilities.
  - ii. Current police protection facilities can adequately serve the site without a need for alteration. Impact fees will be paid to mitigate the project's proportionate impact on these facilities.
  - iii. The project will generate new students for which existing schools in the area may accommodate. In addition, to address direct impacts, the project will be required to pay residential impact fees. These fees are considered to be conclusive mitigation for direct impacts. The project includes residential units that will create a need for park facilities.
  - iv. Other public facilities can adequately serve the site without a need for alteration.

**XV. RECREATION**

- a. The project will directly generate new residents and will therefore directly increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. Residential developments will pay impact fees to mitigate impacts.
- b. The proposed project does not include recreational facilities or require the construction or expansion of recreational facilities within the area that might have an adverse physical effect on the environment.

**XVI. TRANSPORTATION AND TRAFFIC**

- a. Development and operation of the project is not anticipated to conflict with applicable plans, ordinances, or policies establishing measures of effectiveness of the City's circulation system. The project will result in an increase in traffic levels on arterial and collector roadways, although the City of Visalia's Circulation Element has been prepared to address this increase in traffic.
- b. Development of the site will result in increased traffic in the area, but will not cause a substantial increase in traffic on the city's existing circulation pattern. This site was evaluated in the EIR for the City of Visalia Land Use Element Update for urban use.

A Traffic Impact Analysis Report was conducted for the project by 4Creeks, Inc., dated November 18, 2013, which studied key roadways and intersections in the vicinity of the project site. The analysis considered existing roadway conditions and year 2023 base conditions, with and without the project conditions. The analysis identified recommended roadway and intersection improvements to the vicinity of the project to ensure that the project will operate at acceptable LOS "D" conditions or better through 2023.

Among the recommended improvement measures in the Analysis were measures that address existing roadway conditions where operating conditions are below acceptable standards.

The intersection of Demaree Street and Shannon Parkway

is recommended for the installation of traffic signals for all northbound / southbound and eastbound / westbound traffic. This intersection is noted by the Report to currently operate at LOS "F" conditions during the AM/PM peak hours. Based on the Traffic Study, staff will require that the intersection of Demaree Street and Shannon Parkway be improved to accommodate signalization when warranted. This will include having signalization improvement plans finalized and having the utility underground work complete to facilitate the installation of traffic signals with little interruption to the roadway when the traffic lights are warranted.

- c. The project will not result in nor require a need to change air traffic patterns.
- d. There are no planned designs that are considered hazardous.
- e. The project will not result in inadequate emergency access.
- f. The project will not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

**XVII. UTILITIES AND SERVICE SYSTEMS**

- a. The project will be connecting to existing City sanitary sewer lines, consistent with the City Sewer Master Plan. The Visalia wastewater treatment plant has a current rated capacity of 22 million gallons per day, but currently treats an average daily maximum month flow of 12.5 million gallons per day. With the completed project, the plant has more than sufficient capacity to accommodate impacts associated with the proposed project. The proposed project will therefore not cause significant environmental impacts.
- b. The project will not result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- c. The project site will be required to install storm drainage lines and will retain storm water run-off onsite. Retention

of onsite storm water runoff will be accomplished with installation of a retention basin located at the southeast corner of the project site. The onsite basin will accommodate water runoff for the entire subdivision until a master regional basin is established for this future growth area. These improvements will not cause significant environmental impacts.

- d. California Water Service Company has determined that there are sufficient water supplies to support the site, and that service can be extended to the site.
- e. The City has determined that there is adequate capacity existing to serve the site's projected wastewater treatment demands at the City wastewater treatment plant.
- f. Current solid waste disposal facilities can adequately serve the site without a need for alteration.
- g. The project will be able to meet the applicable regulations for solid waste. Removal of debris from construction will be subject to the City's waste disposal requirements.

**XVIII. MANDATORY FINDINGS OF SIGNIFICANCE**

- a. The project will not affect the habitat of a fish or wildlife species or a plant or animal community. This site was evaluated in the EIR for the City of Visalia Land Use Element Update for conversion to urban use. The City adopted mitigation measures for conversion to urban development. Where effects were still determined to be significant a statement of overriding considerations was made.
- b. This site was evaluated in the EIR for the City of Visalia Land Use Element Update for the area's conversion to urban use. The City adopted mitigation measures for conversion to urban development. Where effects were still determined to be significant a statement of overriding considerations was made.
- c. This site was evaluated in the EIR for the City of Visalia Land Use Element Update for conversion to urban use. The City adopted mitigation measures for conversion to urban development. Where effects were still determined to be significant a statement of overriding considerations was made.

## DETERMINATION OF REQUIRED ENVIRONMENTAL DOCUMENT

On the basis of this initial evaluation:

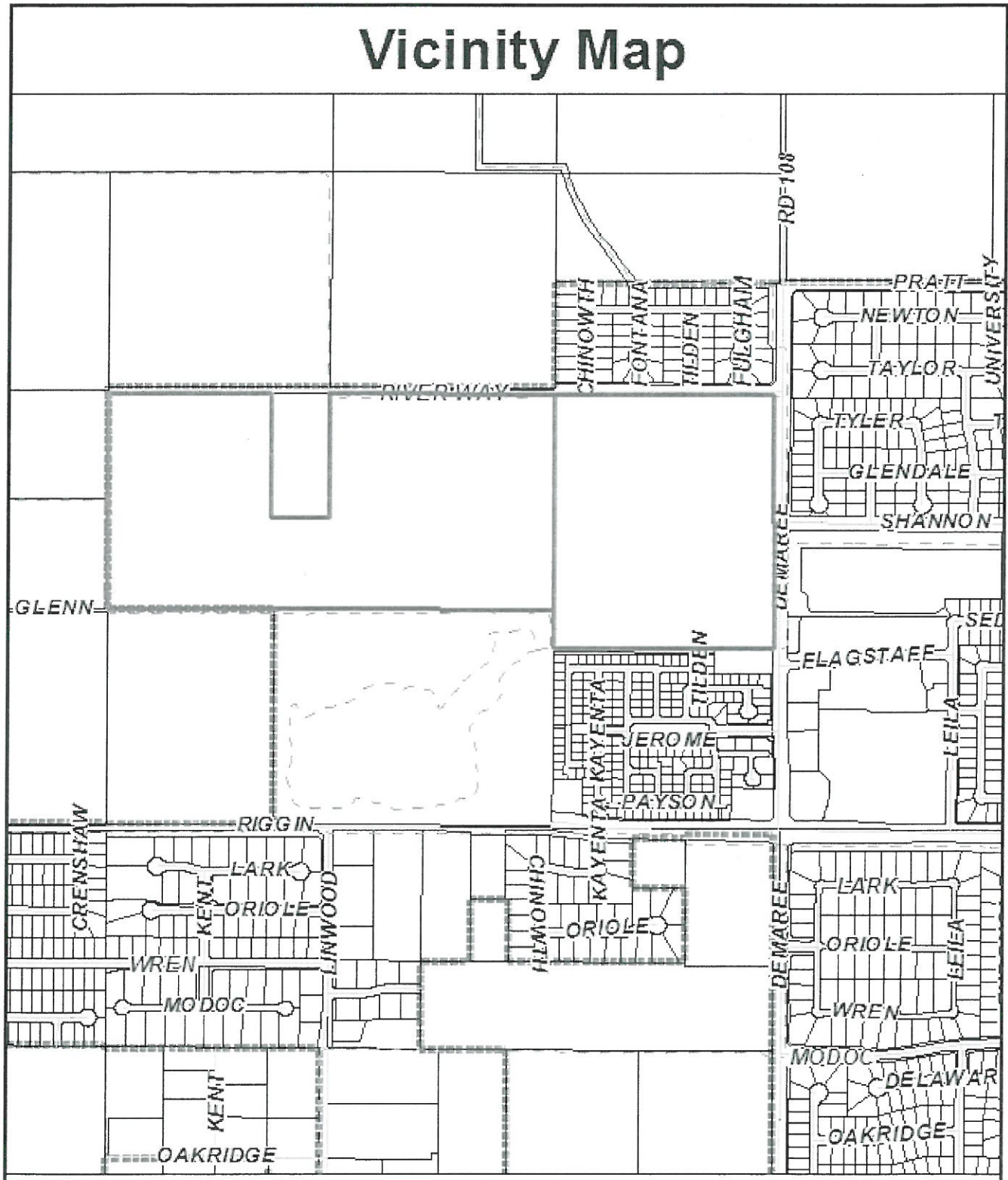
- I find that the proposed project **COULD NOT** have a significant effect on the environment. **A NEGATIVE DECLARATION WILL BE PREPARED.**
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on the attached sheet have been added to the project. **A MITIGATED NEGATIVE DECLARATION WILL BE PREPARED.**
- I find the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.
- I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.
- I find that as a result of the proposed project no new effects could occur, or new mitigation measures would be required that have not been addressed within the scope of the Program Environmental Impact Report (SCH No. 90020160). The Environmental Impact Report prepared for the City of Visalia Land Use Element (Amendment No. 90-04) was certified by Resolution NO. 91-105 adopted on September 3, 1991. **THE PROGRAM ENVIRONMENTAL IMPACT REPORT WILL BE UTILIZED.**

\_\_\_\_\_  
Paul Scheibel, AICP  
Environmental Coordinator

February 26, 2014  
Date

Environmental Document No. 2014-07 for the Lowery Ranch Subdivision

# Vicinity Map



# LOWREY RANCH TENTATIVE SUBDIVISION MAP

A PORTION OF THE SE 1/4 OF SECTION 14, T17N-R14E-S08N IN SUDEN RANGE 26 EAST, M.D.B. & M. IN THE CITY OF VISALIA, COUNTY OF TULARE, STATE OF CALIFORNIA.

APN: 077-06-09, 077-06-22  
 GROSS ACREAGE: -72.54 AC  
 FLOOD ZONE: F-16  
 ZONING (PROPOSED): R-16  
 SOUTHERN CALIFORNIA EDISON CALIFORNIA WATER SERVICE  
 CITY OF VISALIA  
 WATER: AT&T  
 TELEPHONE: CITY OF VISALIA  
 REFUSE: SOUTHERN CALIFORNIA GAS  
 NATURAL GAS: AGRICULTURE  
 EXISTING USE: SINGLE FAMILY RESIDENTIAL  
 PROPOSED USE: SINGLE FAMILY RESIDENTIAL  
 PROPOSED LOTS: 219 S.F. UNITS IN PHASES 1-5  
 SINGLE FAMILY DENSITY: NET ACREAGE: 40.55 AC  
 TOTAL UNITS: 219 UNITS  
 S.F. NET DENSITY: 5.40 UNITS/AC

○ TYPICAL VALLEY OAK TREE LOCATION

AN OAK TREE EVALUATION COMPLETED BY MALVEY'S TREE SERVICE ON NOVEMBER 18, 2013 HAD THE FOLLOWING RESULTS:  
 - OAK TREE 2: DETERMINED HEALTHY AND WILL REMAIN  
 - OAK TREE 1, 3, AND 4: DETERMINED UNHEALTHY AND WILL BE REMOVED

LOTS 112, 113, 116, 137, AND 187: IDENTIFIED AS KEY LOTS - NO BUILD AREA SHOWN IN HATCH

LOT DEDICATIONS/ACQUISITION LEGEND:

LOT A, B, C, D, E, H, I, J, AND K: DEDICATED TO CITY OF VISALIA FOR A LANDSCAPE AND LIGHTING DISTRICT.

LOT F AND M: TO BE PURCHASED BY THE CITY OF VISALIA WATERWAY ACQUISITION FUND

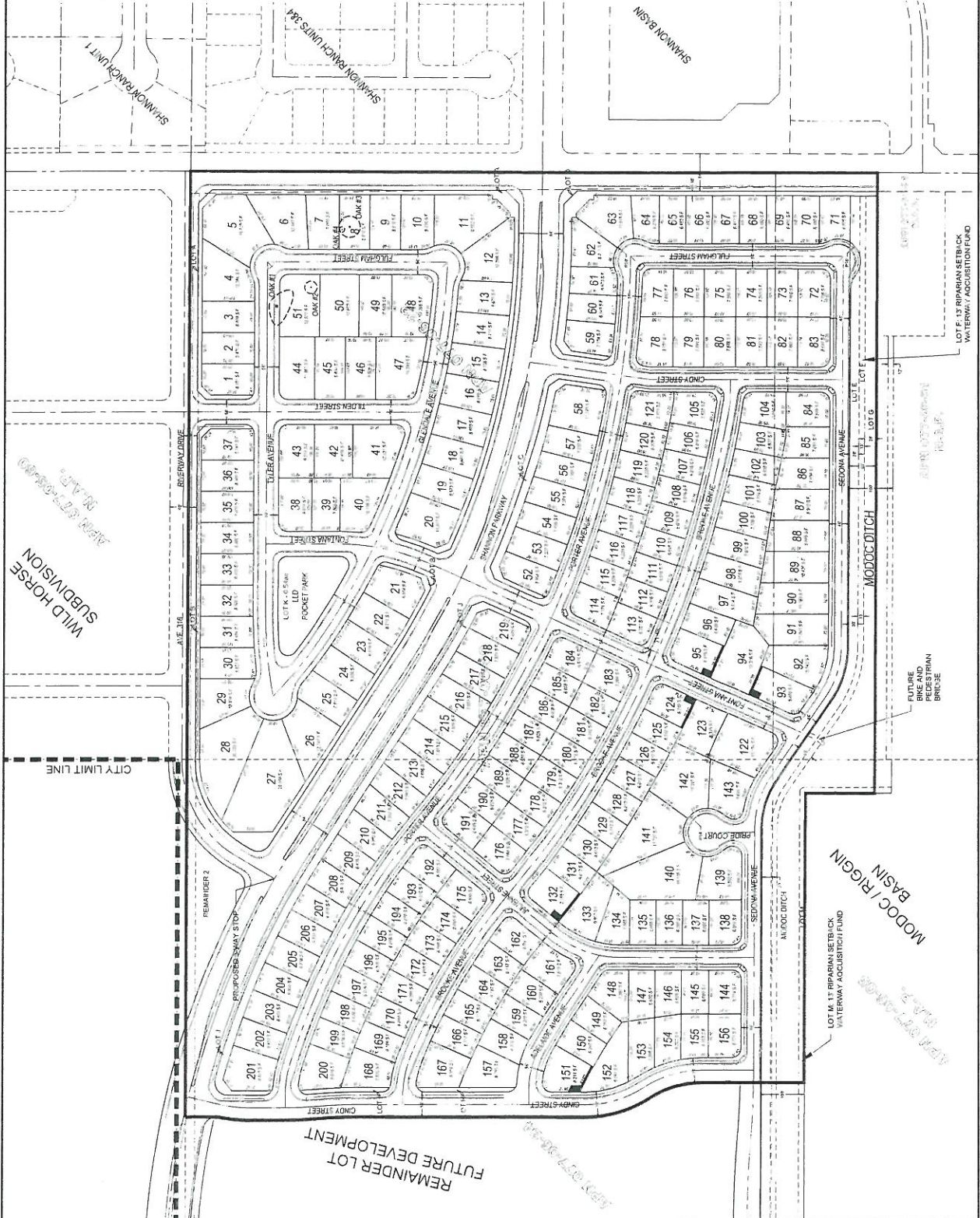
LOT G: TO BE DEDICATED TO MODDOC DITCH COMPANY



SCALE: 1" = 100'



PREPARED BY:  
 MATT GRAHAM  
 CIVIL ENGINEER  
 3300 W. MINERAL KING  
 VISALIA, CA 93231  
 (559) 238-7255



WILD HORSE SUBDIVISION  
 REMAINDER LOT FUTURE DEVELOPMENT

MODDOC BASIN  
 MODDOC RIGGIN

LOT M: 13 RIPARIAN SETBACK WATERWAY ACQUISITION FUND

LOT F: 13 RIPARIAN SETBACK WATERWAY ACQUISITION FUND

LOT G: TO BE DEDICATED TO MODDOC DITCH COMPANY



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## Owner

Matt Graham  
3330 W Mineral King  
Suite F  
Visalia, CA 93291

**Traffic Impact Study Preparation Date:**  
11/18/2013

## Prepared By:

4CREEKS, INC.  
2929 W. MAIN ST., Suite A  
VISALIA, CA 93291  
(559) 802-3052



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**APPENDIX C TRAFFIC SIGNAL WARRANT ANALYSIS**

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**APPENDIX E 2015 PLUS PROJECT (PHASES 1-2) CONDITIONS LOS CALCULATIONS**

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**APPENDIX I MITIGATED 2018 PLUS PROJECT (PHASES 1-5) CONDITIONS LOS CALCULATIONS**

**APPENDIX J 2023 PLUS PROJECT (PHASES 1-5) CONDITIONS LOS CALCULATIONS**

**APPENDIX K MITIGATED 2023 PLUS PROJECT (PHASES 1-5) CONDITIONS LOS CALCULATIONS**

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## SECTION 1: EXECUTIVE SUMMARY

### 1.1 ANALYSIS METHODOLOGY

This Traffic Impact Study (TIS) provides an analysis of the surrounding roadway system and the effects of the proposed Lowrey Ranch Project on the existing and planned infrastructure. The Project is a 219 unit single-family residential development, located west of Demaree Street, south of Riverway Drive in Visalia, CA. Figure 1 shows the Project area. This TIS has been prepared in consultation with City of Visalia<sup>1</sup> staff. All of the analysis methodologies and assumptions are discussed further in Appendix A.

#### 1.1.1 ANALYSIS LOCATIONS

The following study intersections were identified by the City of Visalia for analysis:

1. Shannon Parkway at Riverway Drive (future)
2. Riverway Drive at Demaree Street
3. Shannon Parkway at Demaree Street
4. Riggin Avenue at Demaree Street

Shannon Parkway is currently not constructed west of Demaree Street and will be constructed by the project and realigned to the Riverway Drive alignment. Other than this construction, no significant improvements to the study intersections and roadway system are assumed in this analysis. When a roadway or intersection is identified as operating below the City's LOS standard, improvements are recommended based on the Circulation Element, Capital Improvement Plan (CIP), and Transportation Impact Fee (TIF) Program.

#### 1.1.2 ANALYSIS TIME PERIODS AND SCENARIOS

The following study time periods were analyzed and chosen for inclusion in this analysis:

- AM Peak Hour (between 7-9 AM)
- PM Peak Hour (between 4-6 PM)

The following analysis scenarios were determined based on City of Visalia recommendations, and the most recent Tulare County Association of Governments (TCAG) traffic models:

- Existing
- Phase 1 Opening Day Plus Project (2014)
- Phase 2 Opening Day Plus Project (2015)
- Phase 3 Opening Day Plus Project (2016)
- Phase 4 Opening Day Plus Project 2017)
- Phase 5 Opening Day Plus Project (2018)
- 5-Year (Phases 1-5) Plus Project (2023)

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<sup>1</sup> Leslie Blair, Civil Engineer, City of Visalia, Email comments on proposed scope of work, 9/26/13.

According to the City of Visalia's TIS Guidelines, the Project's trip generation requires a Category 2 TIS, which includes analysis of Opening year (by Project Phase) and 5 years in the future.

### 1.1.3 THRESHOLDS OF SIGNIFICANCE

The City of Visalia has adopted a level of service standard of "D" in the Circulation Element.

## 1.2 ANALYSIS SUMMARY

Tables 1 and 2 show the levels of service (LOS) for the study intersections for the various scenarios. Intersections with movements currently or projected to operate below the City of Visalia's adopted level of service standards are shown shaded in Tables 1 and 2. The two-way stop controlled (TWSC) intersection levels of service are representative of the intersection's approach with the worst LOS and delay. The signalized and all-way stop controlled (AWSC) intersection levels of service are representative of the whole intersection. Individual intersection movements or approaches at signalized and AWSC intersections may operate above or below the intersection level of service or delay shown in this report.

**Table 1: Existing Level of Service Summary**

Intersection	Existing	
	LOS (AM/PM)	Delay <sup>1</sup> (AM/PM)
Shannon Parkway at Riverway Drive	n/a	n/a
Riverway Drive at Demaree Street	B/B	10.1/10.1
Shannon Parkway at Demaree Street	B/B	14.1/12.6
Riggin Avenue at Demaree Street	C/C	22.4/27.9

<sup>1</sup> average seconds of delay per vehicle  
 n/a = not applicable, does not exist

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### 1.3 RECOMMENDED IMPROVEMENTS

In order to mitigate the intersections currently or projected to operate below the adopted LOS standard(s) and/or meet the Eight-Hour Traffic Signal Warrant, the following improvements are recommended:

#### **2018 Plus Project (Phases 1-5)**

- Shannon Parkway at Demaree Street
  - Install a traffic signal
  - Stripe separate left-turn lanes for all legs
  - Provide protected left-turn phasing for all approaches

Installation of a traffic signal at this intersection is planned by the City of Visalia as a part of the TIF/CIP. Table 4 shows the LOS for the study intersections as a result of the proposed improvements.

**Table 4: Mitigated Level of Service Summary**

Intersection	Mitigated 2018 Plus Project		Mitigated 2023 Plus Project	
	LOS (AM/PM)	Delay <sup>1</sup> (AM/PM)	LOS (AM/PM)	Delay <sup>1</sup> (AM/PM)
Shannon Parkway at Demaree Street	C/B	20.1/19.4	C/C	22.4/22.6

<sup>1</sup> average seconds of delay per vehicle

n/a = not applicable, does not exist

### 1.4 PROJECT REQUIREMENTS

The Project will be responsible for paying the City of Visalia's Transportation Impact Fee (TIF) to contribute to citywide transportation improvements. The TIF payment will cover the Project's proportionate share for all identified impacts and required improvements. No improvements are recommended above and beyond already identified improvements for roadway widening and signal installation.

The Project will be required to construct public road frontage as well as all on-site roadways. However, the Project may be eligible for reimbursement for construction of portions of Shannon Parkway through the Project site.



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## SECTION 3: EXISTING CONDITIONS

### 3.1 TRAFFIC VOLUMES

Traffic counts were conducted at all existing study intersections on weekdays during the week of October 6, 2013. The Existing AM peak hour traffic volumes are shown on Figure 4.

### 3.2 OPERATIONAL ANALYSIS

The study intersection lane configurations and intersection controls are shown on Figure 4. Using the Existing traffic volumes and the roadway geometry from Figure 4, the Existing conditions LOS were calculated. Table 6 shows the resulting Existing conditions LOS. The LOS calculations are included in Appendix B.

**Table 6: Existing Conditions Level of Service Summary**

Intersection	LOS (AM/PM)	Delay <sup>1</sup> (AM/PM)
Shannon Parkway at Riverway Drive	n/a	n/a
Riverway Drive at Demaree Street	B/B	10.1/10.1
Shannon Parkway at Demaree Street	B/B	14.1/12.6
Riggin Avenue at Demaree Street	C/C	22.4/27.9

<sup>1</sup> average seconds of delay per vehicle

As shown in Table 6, none of the study intersections currently operate below the City of Visalia's adopted LOS standard.

### 3.3 TRAFFIC SIGNAL WARRANTS

Eight-hour traffic signal warrants were prepared for the unsignalized study intersections. Based on the warrant analysis, a traffic signal is not warranted at the unsignalized intersections. The signal warrant analysis is included in Appendix C.

### 3.4 PEDESTRIAN AND BICYCLE NETWORK

Sidewalks are located along Demaree Street from Pratt Road to Riggin Avenue, with the exception of the Project site frontage. There are no dedicated bicycle facilities in the study area. The Project will construct pedestrian facilities along its frontage.

### 3.5 TRANSIT NETWORK

Visalia Transit operates a fixed routes 7A and 7B, with stops at near the intersection of Riggin Avenue at Demaree Street.

## SECTION 4: PROJECT PHASING CONDITIONS

### 4.1 TRAFFIC VOLUMES

The Project phasing analyses were prepared for each phase of the Project's development, as outlined previously. For purposes of this analysis, each phase of the Project is assumed to be complete after 1 year. Thus, Phase 1 is complete by the end of 2014, Phase 2 by the end of 2015, and so on. 1 Year background growth increments are added based on the TCAG traffic model.

The traffic volumes for each Project phase are shown in Figures 5-9.

### 4.2 OPERATIONAL ANALYSIS

Using the Project phase traffic volumes and the roadway geometry from Figures 5-9, the study intersections' LOS were calculated. Table 7 shows the resulting LOS. The LOS calculations are included in Appendices D through H.

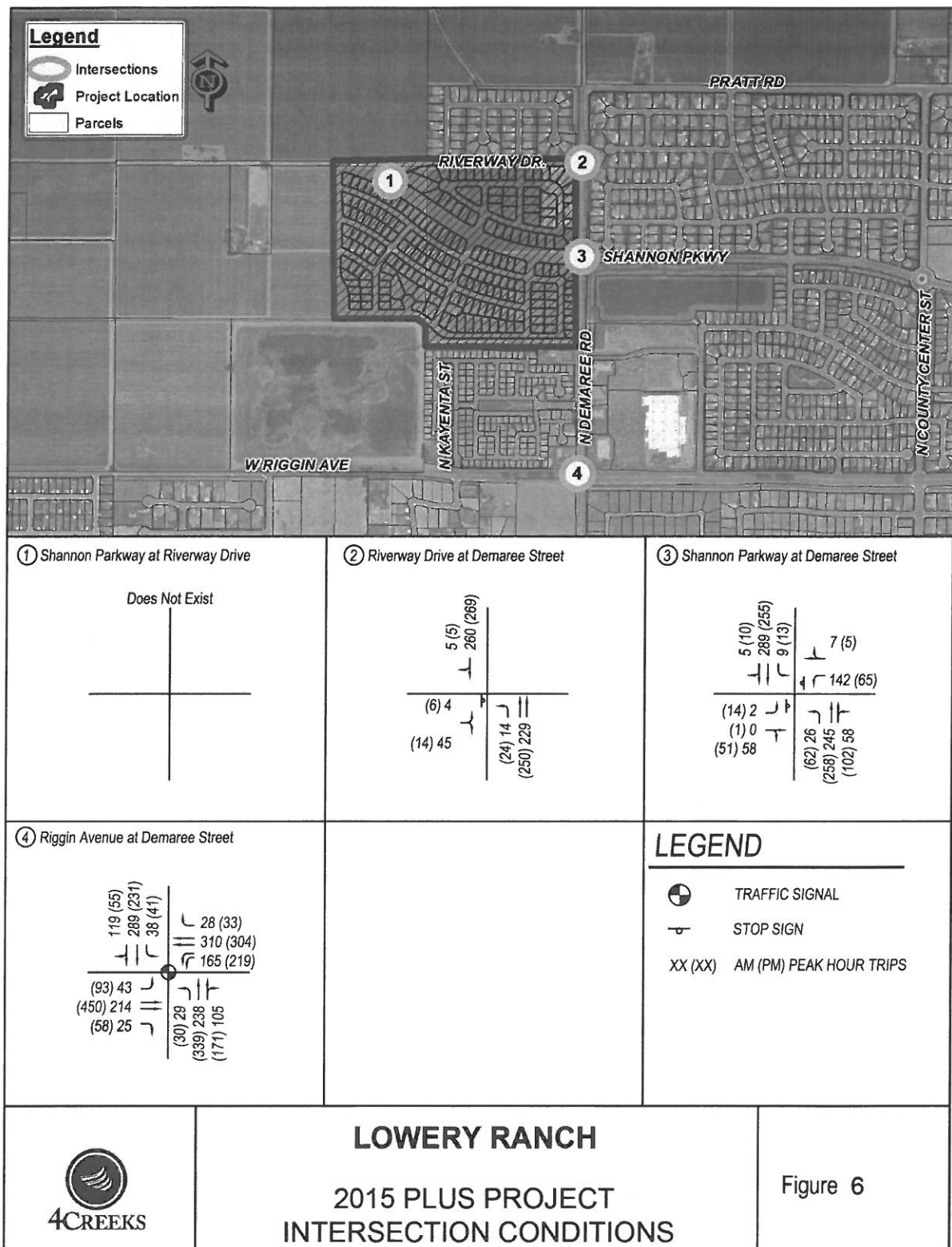
**Table 7: Project Phase Conditions Level of Service Summary**

Intersection	2014 Plus Project (Phase 1)		2015 Plus Project (Phases 1-2)	
	LOS (AM/PM)	Delay <sup>1</sup> (AM/PM)	LOS (AM/PM)	Delay <sup>1</sup> (AM/PM)
Shannon Parkway at Riverway Drive	n/a	n/a	n/a	n/a
Riverway Drive at Demaree Street	B/B	10.3/10.4	B/B	10.5/10.6
Shannon Parkway at Demaree Street	C/C	15.2/15.1	C/C	17.1/17.8
Riggin Avenue at Demaree Street	B/C	18.1/23.5	B/C	18.6/24.8
Intersection	2016 Plus Project (Phases 1-3)		2017 Plus Project (Phases 1-4)	
	LOS (AM/PM)	Delay <sup>1</sup> (AM/PM)	LOS (AM/PM)	Delay <sup>1</sup> (AM/PM)
Shannon Parkway at Riverway Drive	n/a	n/a	n/a	n/a
Riverway Drive at Demaree Street	B/B	10.7/10.8	B/B	10.9/11.1
Shannon Parkway at Demaree Street	C/C	19.5/21.9	C/D	23.2/28.0
Riggin Avenue at Demaree Street	B/C	19.1/27.0	B/C	19.7/30.3
Intersection	2018 Plus Project (Phases 1-5)			
	LOS (AM/PM)		Delay <sup>1</sup> (AM/PM)	
Shannon Parkway at Riverway Drive	A/A		8.5/8.6	
Riverway Drive at Demaree Street	B/B		11.1/11.3	
Shannon Parkway at Demaree Street	D/E		28.3/37.1	
Riggin Avenue at Demaree Street	C/C		20.6/34.1	

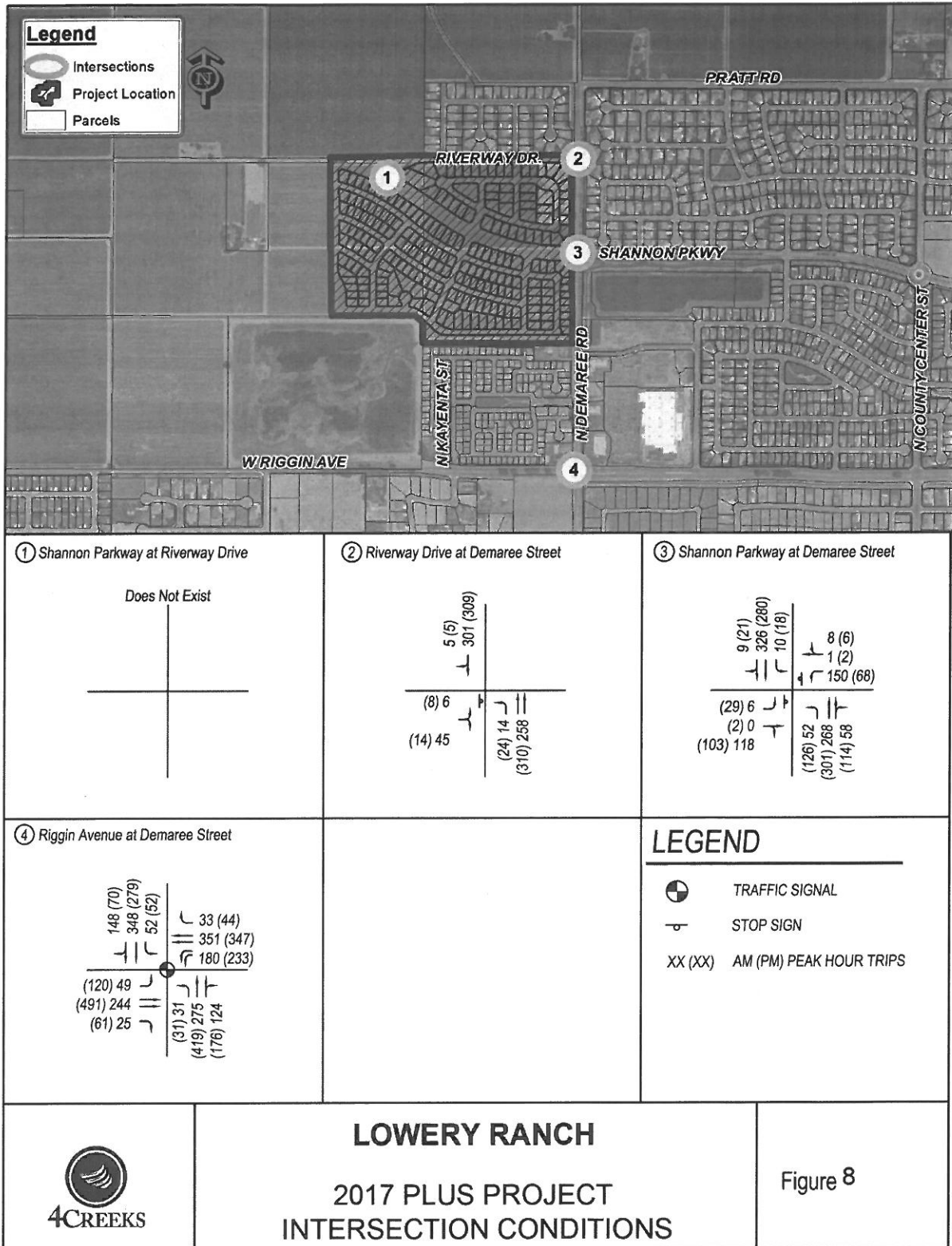
<sup>1</sup> average seconds of delay per vehicle  
n/a = not applicable, does not exist



**FIGURE 6: 2015 PLUS PROJECT CONDITIONS**



**FIGURE 8: 2017 PLUS PROJECT CONDITIONS**



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As shown in Table 7, the following study intersection is projected to operate below the City of Visalia's adopted LOS standard:

**2018 Plus Project (Phases 1-5)**

- Shannon Parkway at Demaree Street – PM Peak Hour

**4.3 TRAFFIC SIGNAL WARRANTS**

Eight-hour traffic signal warrants were prepared for the unsignalized study intersections. Based on the warrant analysis, the following intersections are not projected to meet warrants for a traffic signal:

- Shannon Parkway at Riverway Drive
- Riverway Drive at Demaree Street
- Shannon Parkway at Demaree Street (2014-2017)

However, the intersection of Shannon Parkway at Demaree Street is projected to meet the eight-hour traffic signal warrant in the 2018 Plus Project (Phases 1-5) scenario.

The signal warrant analysis is included in Appendix C.

**4.4 RECOMMENDED IMPROVEMENTS**

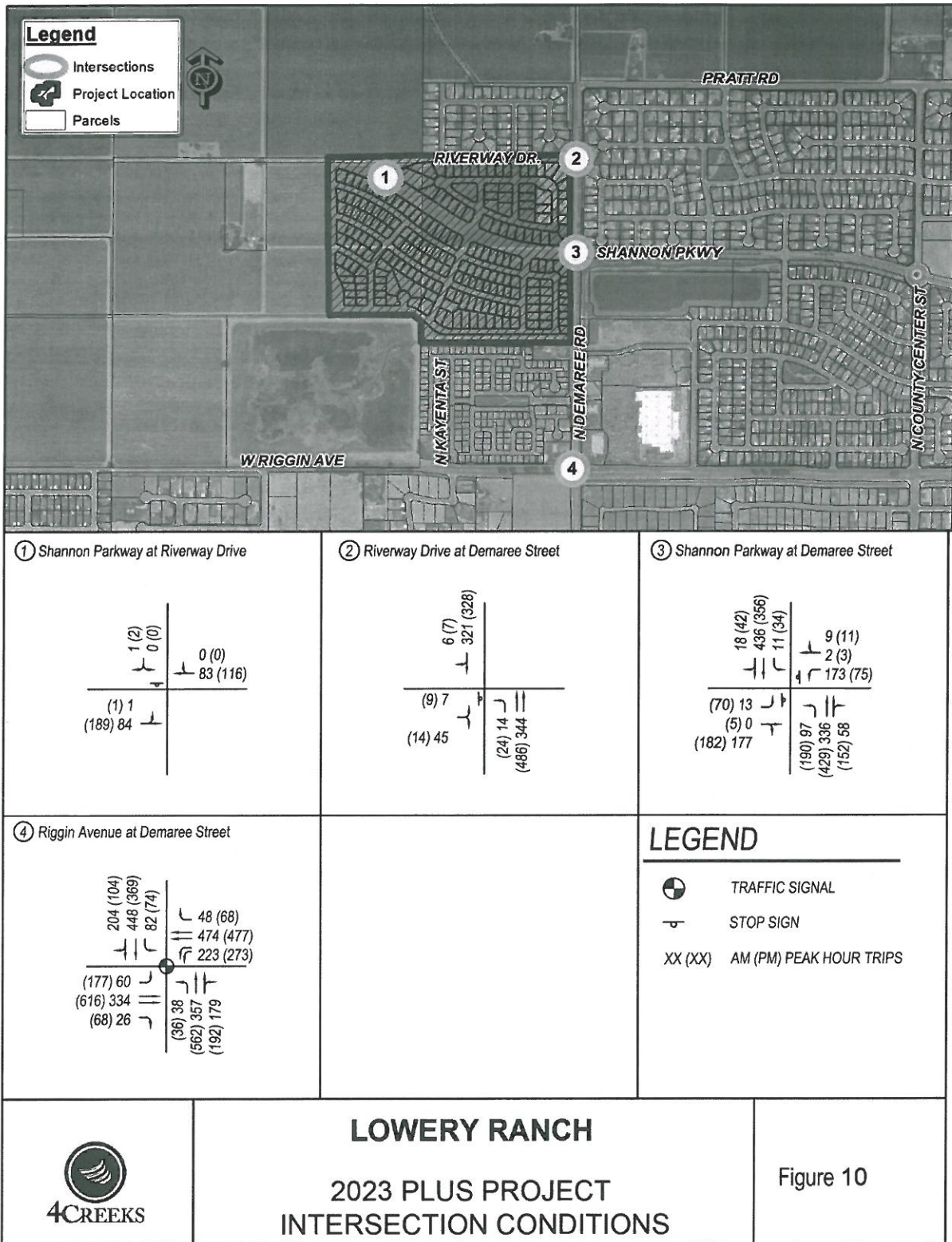
In order to mitigate the intersections projected to operate below the adopted LOS standard or meet the traffic signal warrant, the following improvements are recommended:

**2018 Plus Project (Phases 1-5)**

- Shannon Parkway at Demaree Street
  - Install a traffic signal
  - Stripe separate left-turn lanes for all legs
  - Provide protected left-turn phasing for all approaches

With the recommended improvements, the study intersections are projected to operate at or above the City of Visalia's adopted LOS standard. The LOS calculations are included in Appendix I.

FIGURE 10: 2023 PLUS PROJECT CONDITIONS



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## SECTION 6: CONCLUSIONS AND RECOMMENDATIONS

### 6.1 ANALYSIS SUMMARY

The analysis presented in this report has identified 1 intersection projected to operate below the adopted level of service standard during one or more of the analysis scenarios. In addition, the same intersection is projected to meet the traffic signal warrant during one or more of the analysis scenarios. Recommendations based upon this analysis are presented below.

### 6.2 RECOMMENDED IMPROVEMENTS

Based on the analysis presented in this report the following improvements are recommended in order to mitigate the intersections currently or projected to operate below the adopted LOS standard(s) and/or meet the Eight-Hour Traffic Signal Warrant:

#### ***2018 Plus Project (Phases 1-5)***

- Shannon Parkway at Demaree Street
  - Install a traffic signal
  - Stripe separate left-turn lanes for all legs
  - Provide protected left-turn phasing for all approaches

### 6.3 PROJECT REQUIREMENTS

The Project will be responsible for paying the City of Visalia's Transportation Impact Fee (TIF) to contribute to citywide transportation improvements. The TIF payment will cover the Project's proportionate share for all identified impacts and required improvements. No improvements are recommended above and beyond already identified improvements for roadway widening and signal installation.

The Project will be required to construct public road frontage as well as all on-site roadways. However, the Project may be eligible for reimbursement for construction of portions of Shannon Parkway through the Project site.

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## APPENDIX A: ANALYSIS METHODOLOGY

A variety of data and technical assumptions were developed for this TIS and are defined in this appendix.

### A.1 SOURCES

This report was prepared using information taken from the following sources:

- *2010 Highway Capacity Manual*, Transportation Research Board, 2010.
- *California Manual on Uniform Traffic Control Devices for Streets and Highway*, 2012 Edition, California Department of Transportation, Division of Traffic Operations, January 13, 2012.
- Leslie Blair, Civil Engineer, City of Visalia, in-person and email conversations, September 2013.
- *Guide for the Preparation of Traffic Impact Studies*, State of California Department of Transportation, December, 2002.
- Marvin Demmers, Associate Planner, Tulare County Association of Governments, Phone/Email conversations, September 2013.
- TCAG Traffic Model, Tulare County Association of Governments.
- TurnsW32, Dowling Associates, Inc., 2002.
- Synchro 8.0, Trafficware, 2013.

### A.2 ANALYSIS TIME PERIODS

According to Traffic Impact Analyses for Site Development, the overall purpose of a traffic impact study is to determine the project impacts that are likely to occur to the surrounding street system. In order to accomplish this purpose you need to determine what occurs when the peak of the project generated traffic overlays the peak of the street traffic. Traffic Impact Analyses for Site Development states "the peak periods [of the adjacent street and highway system] are generally the weekday morning (7-9 a.m.) and evening (4-6 p.m.) peak hours, although local area characteristics occasionally result in other peaks (e.g., at major shopping or recreational centers)". The peak hours analyzed in this study were:

- 7:00 to 9:00 AM
- 4:00 to 6:00 PM

These are the standard AM and PM peak hours of the street typically used for study in the City of Visalia.

### A.3 TRAFFIC COUNTS

According to the Caltrans Guide for the Preparation of Traffic Impact Studies, one of the common rules for counting vehicular traffic is:

"Vehicle counts should be conducted on Tuesdays, Wednesdays, or Thursdays during weeks not containing a holiday and conducted in favorable weather conditions."<sup>1</sup>

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<sup>1</sup> *Guide for the Preparation of Traffic Impact Studies*, State of California Department of Transportation, December 2002, page 4.

---

The 2014-2023 analysis scenarios include incremental development of all future growth built into the TCAG traffic model, according to the City of Visalia's latest General Plan and other approved planning documents.

#### **A.5 INTERSECTION ANALYSIS AND VOLUME ADJUSTMENTS**

Heavy vehicle percentages used in the analysis were the greater of either the counted or an urban 2% default. These percentages were used in all scenarios. The urban default peak hour factor of 0.92 was used at all intersection locations in all scenarios.

Left-turns were analyzed as protected, permitted, or split phasing, based on existing operation. Protected lefts are left-turns that are only allowed to go during their protected phase of the signal, and the left-turns are not allowed to go at the same time as the opposing direction through and right-turn movements. Permitted/unprotected lefts are left-turns that are allowed to go at the same time as the opposing direction through and right-turn movements. Split phasing allows left, through, and right-turning movements from only one approach to proceed through the intersection at a time.

Yellow phase signal timings were based on approach speeds according to the *California MUTCD 2012 Edition*, Table 4D-102 (CA). An all-red time of one (1) second was used for all signalized intersections. A default of five (5) seconds of walk-time and eleven (11) seconds of flash/don't walk time with ten (10) pedestrian calls per hour was also used at all signalized intersections as appropriate.

#### **A.6 NETWORK IMPROVEMENTS**

Per discussions with City of Visalia staff, no background roadway and intersection improvements were identified for use in this evaluation. Future mitigations for operational deficiencies defaulted to those improvements identified in the City of Visalia Circulation Element, Capital Improvement Plan (CIP), and Transportation Impact Fee (TIF) Program.

#### **A.7 SIGNAL WARRANT ANALYSIS**

Eight-Hour signal warrants (Warrant 1) were prepared for all unsignalized intersections based on the methodology presented in the *California MUTCD 2012 Edition*, pages 833-834. A copy of this warrant analysis is included in Appendix C. According to the MUTCD, "the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal." Therefore prior to making a final determination on installation of a proposed signal, a thorough engineering investigation, including collision history, should be conducted. Although an intersection may meet the traffic signal warrant, a signal is not recommended unless the intersection also operates (or is projected to operate) below the City's adopted LOS standard.

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**APPENDIX B**

**EXISTING CONDITIONS LOS CALCULATIONS**



Existing AM Peak Hour  
2: Demaree Street & Riverway Drive

Intersection

Intersection Delay, s/veh 1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	44	14	200	218	4
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	48	15	217	237	4

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	388	259	251	0	-	0
Stage 1	249	-	-	-	-	-
Stage 2	139	-	-	-	-	-
Follow-up Headway	3.519	3.319	2.218	-	-	-
Pot Capacity-1 Maneuver	602	779	1314	-	-	-
Stage 1	792	-	-	-	-	-
Stage 2	874	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	585	766	1303	-	-	-
Mov Capacity-2 Maneuver	639	-	-	-	-	-
Stage 1	785	-	-	-	-	-
Stage 2	857	-	-	-	-	-

























Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.5	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1303	-	759	-	-
HCM Lane V/C Ratio	0.012	-	0.066	-	-
HCM Control Delay (s)	7.796	-	10.1	-	-
HCM Lane LOS	A		B		
HCM 95th %tile Q(veh)	0.035	-	0.211	-	-

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

Existing AM Peak Hour  
4: Demaree Street & Riggin Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	38	184	25	151	269	22	27	202	87	26	229	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	2	1	2	2	1	1	2	0	1	2	0
Cap, veh/h	118	993	417	235	1000	420	118	677	282	118	696	266
Arrive On Green	0.07	0.27	0.27	0.07	0.27	0.27	0.07	0.27	0.27	0.07	0.27	0.27
Sat Flow, veh/h	1774	3725	1566	3442	3725	1566	1774	2492	1037	1774	2562	978
Grp Volume(v), veh/h	41	200	27	164	292	24	29	162	153	28	179	168
Grp Sat Flow(s),veh/h/ln	1774	1863	1566	1721	1863	1566	1774	1863	1666	1774	1863	1677
Q Serve(g_s), s	1.3	2.5	0.8	2.8	3.7	0.7	0.9	4.2	4.4	0.9	4.6	4.9
Cycle Q Clear(g_c), s	1.3	2.5	0.8	2.8	3.7	0.7	0.9	4.2	4.4	0.9	4.6	4.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.62	1.00		0.58
Lane Grp Cap(c), veh/h	118	993	417	235	1000	420	118	506	453	118	506	456
V/C Ratio(X)	0.35	0.20	0.06	0.70	0.29	0.06	0.25	0.32	0.34	0.24	0.35	0.37
Avail Cap(c_a), veh/h	118	993	417	235	1000	420	118	506	453	118	506	456
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	26.8	17.0	16.4	27.3	17.4	16.3	26.6	17.4	17.5	26.6	17.6	17.7
Incr Delay (d2), s/veh	7.9	0.5	0.3	15.8	0.7	0.3	4.9	1.7	2.0	4.7	1.9	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.8	1.1	0.3	1.6	1.6	0.3	0.5	1.9	1.9	0.5	2.2	2.1
Lane Grp Delay (d), s/veh	34.6	17.5	16.7	43.1	18.2	16.6	31.4	19.1	19.5	31.2	19.5	20.0
Lane Grp LOS	C	B	B	D	B	B	C	B	B	C	B	B
Approach Vol, veh/h		268			480			344			375	
Approach Delay, s/veh		20.0			26.6			20.3			20.6	
Approach LOS		C			C			C			C	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.9	20.9		9.0	21.0		8.9	21.2		8.9	21.2	
Change Period (Y+Rc), s	4.9	4.9		4.9	4.9		4.9	4.9		4.9	4.9	
Max Green Setting (Gmax), s	4.0	16.0		4.1	16.1		4.0	16.3		4.0	16.3	
Max Q Clear Time (g_c+I1), s	3.3	4.5		4.8	5.7		2.9	6.4		2.9	6.9	
Green Ext Time (p_c), s	0.0	2.3		0.0	2.2		0.0	2.7		0.0	2.6	
Intersection Summary												
HCM 2010 Ctrl Delay				22.4								
HCM 2010 LOS				C								
Notes												

Existing PM Peak Hour  
2: Demaree Street & Riverway Drive

Intersection

Intersection Delay, s/veh 0.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	4	14	23	191	230	3
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	15	25	208	250	3

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	416	272	263	0	-	0
Stage 1	262	-	-	-	-	-
Stage 2	154	-	-	-	-	-
Follow-up Headway	3.519	3.319	2.218	-	-	-
Pot Capacity-1 Maneuver	579	766	1301	-	-	-
Stage 1	781	-	-	-	-	-
Stage 2	859	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	558	753	1290	-	-	-
Mov Capacity-2 Maneuver	620	-	-	-	-	-
Stage 1	774	-	-	-	-	-
Stage 2	835	-	-	-	-	-

























Approach	EB	NB	SB
HCM Control Delay, s	10.1	0.8	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1290	-	719	-	-
HCM Lane V/C Ratio	0.019	-	0.027	-	-
HCM Control Delay (s)	7.846	-	10.1	-	-
HCM Lane LOS	A		B		
HCM 95th %tile Q(veh)	0.059	-	0.084	-	-

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

Existing PM Peak Hour  
4: Demaree Street & Riggin Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	66	408	56	206	261	23	28	260	166	30	184	39
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	2	1	2	2	1	1	2	0	1	2	0
Cap, veh/h	118	993	417	235	1000	420	118	584	360	118	813	167
Arrive On Green	0.07	0.27	0.27	0.07	0.27	0.27	0.07	0.27	0.27	0.07	0.27	0.27
Sat Flow, veh/h	1774	3725	1566	3442	3725	1566	1774	2151	1324	1774	2994	615
Grp Volume(v), veh/h	72	443	61	224	284	25	30	244	219	33	123	119
Grp Sat Flow(s),veh/h/ln	1774	1863	1566	1721	1863	1566	1774	1863	1612	1774	1863	1746
Q Serve(g_s), s	2.4	5.9	1.8	3.9	3.6	0.7	1.0	6.6	6.9	1.1	3.1	3.2
Cycle Q Clear(g_c), s	2.4	5.9	1.8	3.9	3.6	0.7	1.0	6.6	6.9	1.1	3.1	3.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.82	1.00		0.35
Lane Grp Cap(c), veh/h	118	993	417	235	1000	420	118	506	438	118	506	474
V/C Ratio(X)	0.61	0.45	0.15	0.95	0.28	0.06	0.25	0.48	0.50	0.28	0.24	0.25
Avail Cap(c_a), veh/h	118	993	417	235	1000	420	118	506	438	118	506	474
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	18.3	16.8	27.9	17.4	16.3	26.6	18.3	18.4	26.6	17.0	17.1
Incr Delay (d2), s/veh	21.1	1.4	0.7	47.6	0.7	0.3	5.1	3.3	4.0	5.8	1.1	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	1.7	2.6	0.7	3.1	1.6	0.3	0.6	3.2	2.9	0.6	1.4	1.4
Lane Grp Delay (d), s/veh	48.4	19.8	17.5	75.4	18.1	16.6	31.7	21.6	22.5	32.4	18.2	18.4
Lane Grp LOS	D	B	B	E	B	B	C	C	C	C	B	B
Approach Vol, veh/h		576			533			493			275	
Approach Delay, s/veh		23.1			42.1			22.6			20.0	
Approach LOS		C			D			C			B	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.9	20.9		9.0	21.0		8.9	21.2		8.9	21.2	
Change Period (Y+Rc), s	4.9	4.9		4.9	4.9		4.9	4.9		4.9	4.9	
Max Green Setting (Gmax), s	4.0	16.0		4.1	16.1		4.0	16.3		4.0	16.3	
Max Q Clear Time (g_c+l1), s	4.4	7.9		5.9	5.6		3.0	8.9		3.1	5.2	
Green Ext Time (p_c), s	0.0	2.9		0.0	3.4		0.0	2.4		0.0	3.1	
Intersection Summary												
HCM 2010 Ctrl Delay			27.9									
HCM 2010 LOS			C									
Notes												

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**APPENDIX C**

**TRAFFIC SIGNAL WARRANT ANALYSIS**

**WARRANT 1 - Eight-Hour Vehicular Volume**  
Demaree Street @ Riverway Drive  
Lowrey Ranch TIS  
Existing

(Condition A or B or Combination of A & B must be met)      **WARRANT SATISFIED**      YES  **NO**

**Condition A - Minimum Vehicle Volume**      **100% Satisfied**      YES  **NO**   
**80% Satisfied**      YES  **NO**

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)													HOUR
	U	R	U	R										
	1		2 or more		12:00	17:00	7:00	15:00	16:00	8:00	13:00	14:00		
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	<b>420</b> <b>(336)</b>	472	438	415	400	396	350	330	319		
Highest Approaches Minor Street	150 (120)	<b>105</b> <b>(84)</b>	200 (160)	140 (112)	20	20	41	19	23	25	12	21		

**Condition B - Interruption of Continuous Traffic**      **100% Satisfied**      YES  **NO**   
**80% Satisfied**      YES  **NO**

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)													HOUR
	U	R	U	R										
	1		2 or more		12:00	17:00	7:00	15:00	16:00	8:00	13:00	14:00		
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	<b>630</b> <b>(504)</b>	472	438	415	400	396	350	330	319		
Highest Approaches Minor Street	75 (60)	<b>53</b> <b>(42)</b>	100 (80)	70 (56)	20	20	41	19	23	25	12	21		

**Combination of Conditions A & B**      **Satisfied**      YES  **NO**

REQUIREMENT	WARRANT	√	FULFILLED
TWO WARRANTS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME		YES <input type="checkbox"/> <b>NO</b> <input type="checkbox"/>
	AND B. INTERRUPTION OF CONTINUOUS TRAFFIC		
AND AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS.			YES <input type="checkbox"/> <b>NO</b> <input type="checkbox"/>



**WARRANT 1 - Eight-Hour Vehicular Volume**  
**Demaree Street @ Shannon Parkway**  
**Lowrey Ranch TIS**  
**2018 Plus Project Phase 5**

(Condition A or B or Combination of A & B must be met)      **WARRANT SATISFIED**       YES     NO

**Condition A - Minimum Vehicle Volume**      **100% Satisfied**       YES     NO  
**80% Satisfied**       YES     NO

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				17:00	7:00	15:00	16:00	8:00	10:00	14:00	18:00	HOUR
	U	R	U	R									
	1		2 or more										
Both Approaches Major Street	500 (400)	350 (280)	600 (480)	<b>420</b> <b>(336)</b>	938	768	761	737	695	707	611	584	
Highest Approaches Minor Street	150 (120)	<b>105</b> <b>(84)</b>	200 (160)	140 (112)	168	164	161	159	155	108	100	97	

**Condition B - Interruption of Continuous Traffic**      **100% Satisfied**       YES     NO  
**80% Satisfied**       YES     NO

APPROACH LANES	MINIMUM REQUIREMENTS (80% SHOWN IN BRACKETS)				17:00	7:00	15:00	16:00	8:00	10:00	14:00	18:00	HOUR
	U	R	U	R									
	1		2 or more										
Both Approaches Major Street	750 (600)	525 (420)	900 (720)	<b>630</b> <b>(504)</b>	938	768	761	737	695	707	611	584	
Highest Approaches Minor Street	75 (60)	<b>53</b> <b>(42)</b>	100 (80)	70 (56)	168	164	161	159	155	108	100	97	

**Combination of Conditions A & B**      **Satisfied**       YES     NO

REQUIREMENT	WARRANT	✓	FULFILLED
TWO WARRANTS SATISFIED 80%	A. MINIMUM VEHICULAR VOLUME	✓	<input type="checkbox"/> YES    NO
	AND B. INTERRUPTION OF CONTINUOUS TRAFFIC	✓	
AND AN ADEQUATE TRIAL OF OTHER ALTERNATIVES THAT COULD CAUSE LESS DELAY AND INCONVENIENCE TO TRAFFIC HAS FAILED TO SOLVE THE TRAFFIC PROBLEMS.			YES    NO



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**APPENDIX D**

**2014 PLUS PROJECT (PHASE 1) CONDITIONS LOS CALCULATIONS**

2014 Plus Project (Phase 1) AM Peak Hour  
2: Demaree Street & Riverway Drive

Intersection

Intersection Delay, s/veh 1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	45	14	214	239	5
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	49	15	233	260	5

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	420	283	275	0	-	0
Stage 1	273	-	-	-	-	-
Stage 2	147	-	-	-	-	-
Follow-up Headway	3.519	3.319	2.218	-	-	-
Pot Capacity-1 Maneuver	576	755	1288	-	-	-
Stage 1	772	-	-	-	-	-
Stage 2	866	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	560	742	1277	-	-	-
Mov Capacity-2 Maneuver	621	-	-	-	-	-
Stage 1	766	-	-	-	-	-
Stage 2	849	-	-	-	-	-

























Approach	EB	NB	SB
HCM Control Delay, s	10.3	0.5	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1277	-	733	-	-
HCM Lane V/C Ratio	0.012	-	0.071	-	-
HCM Control Delay (s)	7.853	-	10.3	-	-
HCM Lane LOS	A		B		
HCM 95th %tile Q(veh)	0.036	-	0.229	-	-

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2014 Plus Project (Phase 1) AM Peak Hour  
4: Demaree Street & Riggin Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	41	199	25	158	290	25	28	220	96	33	261	105
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	2	1	2	2	1	1	2	0	1	2	0
Cap, veh/h	66	618	258	277	779	326	48	815	343	56	845	331
Arrive On Green	0.04	0.17	0.17	0.08	0.21	0.21	0.03	0.33	0.33	0.03	0.33	0.33
Sat Flow, veh/h	1774	3725	1555	3442	3725	1561	1774	2484	1045	1774	2544	995
Grp Volume(v), veh/h	45	216	27	172	315	27	30	177	166	36	206	192
Grp Sat Flow(s),veh/h/ln	1774	1863	1555	1721	1863	1561	1774	1863	1667	1774	1863	1676
Q Serve(g_s), s	1.2	2.6	0.7	2.4	3.6	0.7	0.8	3.5	3.7	1.0	4.1	4.3
Cycle Q Clear(g_c), s	1.2	2.6	0.7	2.4	3.6	0.7	0.8	3.5	3.7	1.0	4.1	4.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.63	1.00		0.59
Lane Grp Cap(c), veh/h	66	618	258	277	779	326	48	611	547	56	619	557
V/C Ratio(X)	0.68	0.35	0.10	0.62	0.40	0.08	0.62	0.29	0.30	0.64	0.33	0.34
Avail Cap(c_a), veh/h	143	1199	500	284	1207	505	143	611	547	143	619	557
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	18.4	17.6	22.1	17.0	15.8	23.9	12.4	12.5	23.8	12.5	12.5
Incr Delay (d2), s/veh	11.6	0.3	0.2	4.0	0.3	0.1	12.2	1.2	1.4	11.7	1.4	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.7	1.1	0.3	1.1	1.5	0.2	0.5	1.5	1.5	0.6	1.9	1.8
Lane Grp Delay (d), s/veh	35.3	18.7	17.8	26.1	17.3	15.9	36.1	13.6	13.9	35.5	13.9	14.2
Lane Grp LOS	D	B	B	C	B	B	D	B	B	D	B	B
Approach Vol, veh/h		288			514			373			434	
Approach Delay, s/veh		21.2			20.2			15.5			15.8	
Approach LOS		C			C			B			B	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	6.8	13.1		8.9	15.3		6.3	21.2		6.5	21.4	
Change Period (Y+Rc), s	4.9	4.9		4.9	4.9		4.9	4.9		4.9	4.9	
Max Green Setting (Gmax), s	4.0	16.0		4.1	16.1		4.0	16.3		4.0	16.3	
Max Q Clear Time (g_c+1), s	3.2	4.6		4.4	5.6		2.8	5.7		3.0	6.3	
Green Ext Time (p_c), s	0.0	2.5		0.0	2.4		0.0	3.1		0.0	3.0	
Intersection Summary												
HCM 2010 Ctrl Delay			18.1									
HCM 2010 LOS			B									
Notes												

2014 Plus Project (Phase 1) PM Peak Hour  
 1: Shannon Parkway & Riverway Drive

Intersection

Intersection Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	18	10	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	20	11	0	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	11	0	11
Stage 1	-	-	11
Stage 2	-	-	20
Follow-up Headway	2.218	-	3.318
Pot Capacity-1 Maneuver	1608	-	1070
Stage 1	-	-	1012
Stage 2	-	-	1003
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1608	-	1070
Mov Capacity-2 Maneuver	-	-	908
Stage 1	-	-	1012
Stage 2	-	-	1003

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1608	-	-	-	0
HCM Lane V/C Ratio	-	-	-	-	+
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A				A
HCM 95th %tile Q(veh)	0	-	-	-	+

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2014 Plus Project (Phase 1) PM Peak Hour  
3: Demaree Street & Shannon Parkway

Intersection

Intersection Delay, s/veh 2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	1	28	64	0	4	34	236	95	11	243	4
Conflicting Peds, #/hr	0	0	0	10	0	10	0	0	10	10	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	1	30	70	0	4	37	257	103	12	264	4

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	502	734	144	549	684	200	268	0	0	370	0	0
Stage 1	290	290	-	392	392	-	-	-	-	-	-	-
Stage 2	212	444	-	157	292	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	452	346	877	419	370	808	1293	-	-	1185	-	-
Stage 1	694	671	-	604	605	-	-	-	-	-	-	-
Stage 2	770	574	-	829	670	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	433	330	870	385	353	795	1282	-	-	1175	-	-
Mov Capacity-2 Maneuver	433	330	-	385	353	-	-	-	-	-	-	-
Stage 1	674	664	-	582	583	-	-	-	-	-	-	-
Stage 2	737	553	-	784	663	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	15.1	0.7	0.3
HCM LOS	B	C		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1282	-	-	433	772	385	419	1175	-	-
HCM Lane V/C Ratio	0.029	-	-	0.012	0.044	0.12	0.066	0.01	-	-
HCM Control Delay (s)	7.891	-	-	13.4	9.9	15.6	14.2	8.095	-	-
HCM Lane LOS	A			B	A	C	B	A		
HCM 95th %tile Q(veh)	0.089	-	-	0.036	0.138	0.407	0.21	0.031	-	-

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2014 Plus Project (Phase 1) PM Peak Hour  
4: Demaree Street & Riggin Avenue

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Two Way Analysis cannot be performed on Signalized Intersection.

---

2015 Plus Project (Phases 1-2) AM Peak Hour  
1: Shannon Parkway & Riverway Drive

Intersection

Intersection Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	14	16	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	17	0	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	17	0	32
Stage 1	-	-	17
Stage 2	-	-	15
Follow-up Headway	2.218	-	3.518
Pot Capacity-1 Maneuver	1600	-	982
Stage 1	-	-	1006
Stage 2	-	-	1008
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1600	-	982
Mov Capacity-2 Maneuver	-	-	908
Stage 1	-	-	1006
Stage 2	-	-	1008

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1600	-	-	-	0
HCM Lane V/C Ratio	-	-	-	-	+
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A				A
HCM 95th %tile Q(veh)	0	-	-	-	+

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2015 Plus Project (Phases 1-2) AM Peak Hour  
3: Demaree Street & Shannon Parkway

Intersection

Intersection Delay, s/veh 4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	2	0	58	142	0	7	26	245	58	9	289	5
Conflicting Peds, #/hr	0	0	0	10	0	10	0	0	10	10	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	0	63	154	0	8	28	266	63	10	314	5

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	536	732	170	541	703	185	320	0	0	339	0	0
Stage 1	336	336	-	364	364	-	-	-	-	-	-	-
Stage 2	200	396	-	177	339	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	428	347	844	424	360	826	1237	-	-	1217	-	-
Stage 1	652	640	-	627	622	-	-	-	-	-	-	-
Stage 2	783	602	-	808	638	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-		-	-
Mov Capacity-1 Maneuver	411	333	837	376	346	812	1227	-	-	1207	-	-
Mov Capacity-2 Maneuver	411	333	-	376	346	-	-	-	-	-	-	-
Stage 1	637	635	-	608	603	-	-	-	-	-	-	-
Stage 2	752	583	-	735	633	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	17.1	0.6	0.2
HCM LOS	A	C		

Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1227	-	-	411	827	376	404	1207	-	-
HCM Lane V/C Ratio	0.023	-	-	0.004	0.077	0.274	0.146	0.008	-	-
HCM Control Delay (s)	8.003	-	-	13.8	9.7	18.1	15.4	8.007	-	-
HCM Lane LOS	A			B	A	C	C	A		
HCM 95th %tile Q(veh)	0.071	-	-	0.011	0.25	1.095	0.508	0.025	-	-

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined



2015 Plus Project (Phases 1-2) AM Peak Hour  
4: Demaree Street & Riggin Avenue

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Two Way Analysis cannot be performed on Signalized Intersection.

---

2015 Plus Project (Phases 1-2) PM Peak Hour  
 2: Demaree Street & Riverway Drive

Intersection

Intersection Delay, s/veh 0.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	6	14	24	250	269	5
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	15	26	272	292	5

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	493	315	308	0	-	0
Stage 1	305	-	-	-	-	-
Stage 2	188	-	-	-	-	-
Follow-up Headway	3.519	3.319	2.218	-	-	-
Pot Capacity-1 Maneuver	520	725	1253	-	-	-
Stage 1	747	-	-	-	-	-
Stage 2	826	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	501	713	1243	-	-	-
Mov Capacity-2 Maneuver	579	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	802	-	-	-	-	-

























Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.7	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1243	-	667	-	-
HCM Lane V/C Ratio	0.021	-	0.033	-	-
HCM Control Delay (s)	7.958	-	10.6	-	-
HCM Lane LOS	A		B		
HCM 95th %tile Q(veh)	0.064	-	0.101	-	-

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2015 Plus Project (Phases 1-2) PM Peak Hour  
4: Demaree Street & Riggin Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	93	450	58	219	304	33	30	339	171	41	231	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	2	1	2	2	1	1	2	0	1	2	0
Cap, veh/h	129	835	350	261	847	355	51	706	351	64	900	211
Arrive On Green	0.07	0.22	0.22	0.08	0.23	0.23	0.03	0.30	0.30	0.04	0.31	0.31
Sat Flow, veh/h	1774	3725	1562	3442	3725	1562	1774	2343	1164	1774	2915	683
Grp Volume(v), veh/h	101	489	63	238	330	36	33	291	263	45	159	152
Grp Sat Flow(s),veh/h/ln	1774	1863	1562	1721	1863	1562	1774	1863	1644	1774	1863	1734
Q Serve(g_s), s	3.0	6.3	1.8	3.7	4.1	1.0	1.0	7.0	7.2	1.4	3.5	3.6
Cycle Q Clear(g_c), s	3.0	6.3	1.8	3.7	4.1	1.0	1.0	7.0	7.2	1.4	3.5	3.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.71	1.00		0.39
Lane Grp Cap(c), veh/h	129	835	350	261	847	355	51	561	495	64	575	536
V/C Ratio(X)	0.78	0.59	0.18	0.91	0.39	0.10	0.64	0.52	0.53	0.70	0.28	0.28
Avail Cap(c_a), veh/h	134	1102	462	261	1102	462	131	561	495	131	575	536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.7	18.7	17.0	24.8	17.7	16.5	26.0	15.7	15.7	25.8	14.1	14.2
Incr Delay (d2), s/veh	24.7	0.7	0.2	33.5	0.3	0.1	12.7	3.4	4.0	12.7	1.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	2.1	2.6	0.6	2.7	1.7	0.3	0.6	3.3	3.0	0.8	1.6	1.5
Lane Grp Delay (d), s/veh	49.4	19.4	17.2	58.3	18.0	16.6	38.7	19.1	19.7	38.5	15.3	15.5
Lane Grp LOS	D	B	B	E	B	B	D	B	B	D	B	B
Approach Vol, veh/h		653			604			587			356	
Approach Delay, s/veh		23.8			33.8			20.5			18.3	
Approach LOS		C			C			C			B	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	8.8	17.0		9.0	17.2		6.5	21.2		6.9	21.6	
Change Period (Y+Rc), s	4.9	4.9		4.9	4.9		4.9	4.9		4.9	4.9	
Max Green Setting (Gmax), s	4.1	16.0		4.1	16.0		4.0	16.3		4.0	16.3	
Max Q Clear Time (g_c+l1), s	5.0	8.3		5.7	6.1		3.0	9.2		3.4	5.6	
Green Ext Time (p_c), s	0.0	3.1		0.0	3.7		0.0	2.8		0.0	3.7	
Intersection Summary												
HCM 2010 Ctrl Delay			24.8									
HCM 2010 LOS			C									
Notes												

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**APPENDIX F**

**2016 PLUS PROJECT (PHASES 1-3) CONDITIONS LOS CALCULATIONS**

2016 Plus Project (Phases 1-3) AM Peak Hour  
 2: Demaree Street & Riverway Drive

Intersection

Intersection Delay, s/veh 1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	5	45	14	243	280	5
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	49	15	264	304	5

Major/Minor	Minor2	Major1			Major2	
Conflicting Flow All	480	327	320	0	-	0
Stage 1	317	-	-	-	-	-
Stage 2	163	-	-	-	-	-
Follow-up Headway	3.519	3.319	2.218	-	-	-
Pot Capacity-1 Maneuver	530	713	1240	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	850	-	-	-	-	-
Time blocked-Platoon, %				-	-	-
Mov Capacity-1 Maneuver	515	701	1230	-	-	-
Mov Capacity-2 Maneuver	588	-	-	-	-	-
Stage 1	732	-	-	-	-	-
Stage 2	833	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	0.4	0
HCM LOS	B		

Minor Lane / Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1230	-	688	-	-
HCM Lane V/C Ratio	0.012	-	0.079	-	-
HCM Control Delay (s)	7.963	-	10.7	-	-
HCM Lane LOS	A		B		
HCM 95th %tile Q(veh)	0.038	-	0.256	-	-

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2016 Plus Project (Phases 1-3) AM Peak Hour  
4: Demaree Street & Riggin Avenue

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	46	229	25	173	331	30	30	256	115	45	316	133
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	2	1	2	2	1	1	2	0	1	2	0
Cap, veh/h	71	655	274	290	821	344	52	775	339	70	814	337
Arrive On Green	0.04	0.18	0.18	0.08	0.22	0.22	0.03	0.32	0.32	0.04	0.33	0.33
Sat Flow, veh/h	1774	3725	1556	3442	3725	1562	1774	2453	1072	1774	2497	1035
Grp Volume(v), veh/h	50	249	27	188	360	33	33	209	194	49	254	234
Grp Sat Flow(s),veh/h/ln	1774	1863	1556	1721	1863	1562	1774	1863	1662	1774	1863	1669
Q Serve(g_s), s	1.4	3.0	0.7	2.7	4.2	0.9	0.9	4.4	4.6	1.4	5.4	5.6
Cycle Q Clear(g_c), s	1.4	3.0	0.7	2.7	4.2	0.9	0.9	4.4	4.6	1.4	5.4	5.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.65	1.00		0.62
Lane Grp Cap(c), veh/h	71	655	274	290	821	344	52	588	525	70	607	544
V/C Ratio(X)	0.71	0.38	0.10	0.65	0.44	0.10	0.64	0.36	0.37	0.70	0.42	0.43
Avail Cap(c_a), veh/h	139	1170	489	290	1192	500	139	588	525	139	607	544
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.2	18.5	17.6	22.6	17.1	15.8	24.5	13.4	13.5	24.2	13.4	13.5
Incr Delay (d2), s/veh	12.2	0.4	0.2	4.9	0.4	0.1	12.1	1.7	2.0	12.1	2.1	2.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.8	1.3	0.3	1.2	1.7	0.3	0.6	2.0	1.9	0.8	2.5	2.3
Lane Grp Delay (d), s/veh	36.4	18.9	17.8	27.5	17.5	15.9	36.6	15.1	15.5	36.3	15.5	15.9
Lane Grp LOS	D	B	B	C	B	B	D	B	B	D	B	B
Approach Vol, veh/h		326			581			436			537	
Approach Delay, s/veh		21.5			20.7			16.9			17.6	
Approach LOS		C			C			B			B	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	6.9	13.9		9.2	16.1		6.4	21.0		6.9	21.5	
Change Period (Y+Rc), s	4.9	4.9		4.9	4.9		4.9	4.9		4.9	4.9	
Max Green Setting (Gmax), s	4.0	16.0		4.3	16.3		4.0	16.1		4.0	16.1	
Max Q Clear Time (g_c+I1), s	3.4	5.0		4.7	6.2		2.9	6.6		3.4	7.6	
Green Ext Time (p_c), s	0.0	2.9		0.0	2.7		0.0	3.5		0.0	3.3	
Intersection Summary												
HCM 2010 Ctrl Delay			19.1									
HCM 2010 LOS			B									
Notes												

2016 Plus Project (Phases 1-3) PM Peak Hour  
 1: Shannon Parkway & Riverway Drive

Intersection

Intersection Delay, s/veh 0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Vol, veh/h	0	54	31	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	150	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	59	34	0	0	0

Major/Minor	Major1	Major2	Minor2
Conflicting Flow All	34	0	93
Stage 1	-	-	34
Stage 2	-	-	59
Follow-up Headway	2.218	-	3.518
Pot Capacity-1 Maneuver	1578	-	907
Stage 1	-	-	988
Stage 2	-	-	964
Time blocked-Platoon, %	-	-	-
Mov Capacity-1 Maneuver	1578	-	907
Mov Capacity-2 Maneuver	-	-	858
Stage 1	-	-	988
Stage 2	-	-	964

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane / Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1578	-	-	-	0
HCM Lane V/C Ratio	-	-	-	-	+
HCM Control Delay (s)	0	-	-	-	0
HCM Lane-LOS	A				A
HCM 95th %tile Q(veh)	0	-	-	-	+

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined

2016 Plus Project (Phases 1-3) PM Peak Hour  
3: Demaree Street & Shannon Parkway

Intersection

Intersection Delay, s/veh 3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	21	2	75	67	2	5	91	279	108	16	268	14
Conflicting Peds, #/hr	0	0	0	10	0	10	0	0	10	10	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	150	-	-	150	-	-	150	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	23	2	82	73	2	5	99	303	117	17	291	15

Major/Minor	Minor2		Minor1			Major1			Major2			
Conflicting Flow All	695	962	163	752	911	230	307	0	0	431	0	0
Stage 1	334	334	-	570	570	-	-	-	-	-	-	-
Stage 2	361	628	-	182	341	-	-	-	-	-	-	-
Follow-up Headway	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Capacity-1 Maneuver	329	254	853	299	273	772	1250	-	-	1125	-	-
Stage 1	653	642	-	474	504	-	-	-	-	-	-	-
Stage 2	630	474	-	802	637	-	-	-	-	-	-	-
Time blocked-Platoon, %								-	-	-	-	-
Mov Capacity-1 Maneuver	299	228	846	245	245	759	1240	-	-	1116	-	-
Mov Capacity-2 Maneuver	299	228	-	245	245	-	-	-	-	-	-	-
Stage 1	601	632	-	433	460	-	-	-	-	-	-	-
Stage 2	568	433	-	705	627	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12	21.9	1.6	0.4
HCM LOS	B	C		

























Minor Lane / Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1240	-	-	299	695	245	277	1116	-	-
HCM Lane V/C Ratio	0.08	-	-	0.051	0.131	0.198	0.115	0.016	-	-
HCM Control Delay (s)	8.155	-	-	17.7	11	23.3	19.7	8.277	-	-
HCM Lane LOS	A			C	B	C	C	A		
HCM 95th %tile Q(veh)	0.26	-	-	0.16	0.451	0.72	0.385	0.047	-	-

Notes

~ : Volume Exceeds Capacity; \$ : Delay Exceeds 300 Seconds; Error : Computation Not Defined



2017 Plus Project (Phases 1-4) AM Peak Hour  
4: Demaree Street & Riggin Avenue

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	49	244	25	180	351	33	31	275	124	52	348	148
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.99	1.00		0.99	1.00		0.99
Parking Bus Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow veh/h/ln	186.3	186.3	186.3	186.3	186.3	186.3	186.3	186.3	190.0	186.3	186.3	190.0
Lanes	1	2	1	2	2	1	1	2	0	1	2	0
Cap, veh/h	73	672	281	294	837	351	53	760	334	77	806	338
Arrive On Green	0.04	0.18	0.18	0.09	0.22	0.22	0.03	0.31	0.31	0.04	0.32	0.32
Sat Flow, veh/h	1774	3725	1557	3442	3725	1562	1774	2447	1077	1774	2487	1043
Grp Volume(v), veh/h	53	265	27	196	382	36	34	226	208	57	282	257
Grp Sat Flow(s),veh/h/ln	1774	1863	1557	1721	1863	1562	1774	1863	1660	1774	1863	1667
Q Serve(g_s), s	1.5	3.2	0.7	2.8	4.6	0.9	1.0	4.9	5.1	1.6	6.2	6.4
Cycle Q Clear(g_c), s	1.5	3.2	0.7	2.8	4.6	0.9	1.0	4.9	5.1	1.6	6.2	6.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.65	1.00		0.63
Lane Grp Cap(c), veh/h	73	672	281	294	837	351	53	578	516	77	603	540
V/C Ratio(X)	0.72	0.39	0.10	0.67	0.46	0.10	0.64	0.39	0.40	0.74	0.47	0.48
Avail Cap(c_a), veh/h	138	1157	483	294	1186	497	138	578	516	138	603	540
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.4	18.6	17.6	22.9	17.3	15.9	24.7	13.9	14.0	24.4	13.9	13.9
Incr Delay (d2), s/veh	12.6	0.4	0.1	5.6	0.4	0.1	12.2	2.0	2.3	13.1	2.6	3.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back of Q (50%), veh/ln	0.9	1.4	0.3	1.3	1.8	0.3	0.6	2.2	2.1	0.9	2.8	2.6
Lane Grp Delay (d), s/veh	37.1	19.0	17.8	28.5	17.7	16.0	36.9	15.9	16.4	37.5	16.5	16.9
Lane Grp LOS	D	B	B	C	B	B	D	B	B	D	B	B
Approach Vol, veh/h		345			614			468			596	
Approach Delay, s/veh		21.7			21.0			17.6			18.7	
Approach LOS		C			C			B			B	
Timer												
Assigned Phs	7	4		3	8		5	2		1	6	
Phs Duration (G+Y+Rc), s	7.0	14.2		9.3	16.5		6.4	20.9		7.1	21.6	
Change Period (Y+Rc), s	4.9	4.9		4.9	4.9		4.9	4.9		4.9	4.9	
Max Green Setting (Gmax), s	4.0	16.0		4.4	16.4		4.0	16.0		4.0	16.0	
Max Q Clear Time (g_c+l1), s	3.5	5.2		4.8	6.6		3.0	7.1		3.6	8.4	
Green Ext Time (p_c), s	0.0	3.0		0.0	2.9		0.0	3.7		0.0	3.4	
Intersection Summary												
HCM 2010 Ctrl Delay				19.7								
HCM 2010 LOS				B								
Notes												