AGENDA ITEM NO: 1-A-1-2
City Manager: MA

CITY of CLOVIS

REPORT TO THE CITY COUNCIL

TO: Mayor and City Council

FROM: Planning and Development Services

DATE: June 4, 2018

SUBJECT: Consider items associated with approximately 795 acres generally bounded by Nees Avenue on the South, Big Dry Creek on the west, Enterprise Canal on the east, and Shepherd Avenue on the north, commonly referred to as the Dry Creek Preserve. City of Clovis, Applicant.

1. Consider Approval, Res. 18-___, A request to approve an environmental finding of a Mitigated Negative Declaration for the Dry Creek Preserve Master Plan, Annexation Agreement, General Plan Amendment GPA2016-06, Prezone R2016-07, and Vesting Tentative Tract Map TM6154.

2. Consider Approval, Res. 18-___, A request to approve a Master Plan including an Annexation Agreement for Focus Area 7 in the General Plan.

ATTACHMENTS:

Attachment 1:	Draft Resolutions
Attachment 2:	Draft CEQA Initial Study and Mitigated Negative Declaration
Attachment 3:	Master Plan
Attachment 4:	Draft Annexation Agreement
Attachment 5:	Planning Commission Minutes

CONFLICT OF INTEREST

None

RECOMMENDATION

Planning Commission and Staff recommend that the City Council:

- Approve a Mitigated Negative Declaration for the Project; and
- Approve the Draft Dry Creek Preserve Master Plan and Annexation Agreement.

EXECUTIVE SUMMARY

The City is requesting that the City Council consider approval of a Draft Master Plan and Annexation Agreement for Focus Area 7 of the General Plan, also referred to as the Dry Creek Preserve. Focus Area 7 is approximately 795 acres generally bounded by Nees Avenue on the south, Big Dry Creek on the west, Enterprise Canal on the east, and Shepherd Avenue on the north. This area requires a Master Plan prior to urban development within the area. A General Plan Amendment, prezone and vesting tentative tract map has been applied for and will follow upon approval of this Master Plan.

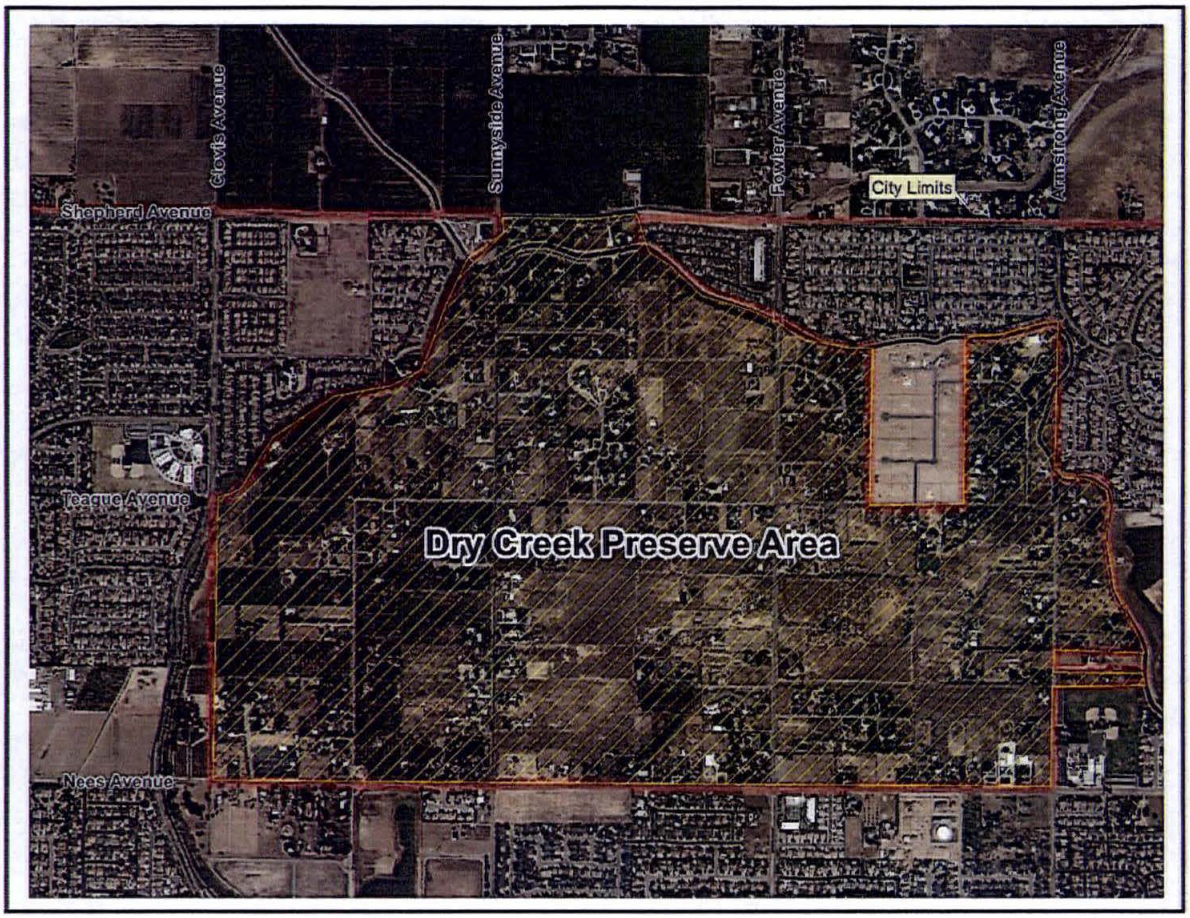
The City Council will consider the Master Plan and if approved, will subsequently consider a General Plan Amendment, Prezone and Vesting Tentative Tract Map for a proposed Woodside Homes development at the northwest corner of Teague and Fowler Avenues. If for some reason, the Master Plan and Annexation Agreements are not approved, or continued to a future meeting, the Woodside Homes project cannot be considered, and/or shall be continued as well.

BACKGROUND

The Clovis General Plan was adopted in 2014 and identified several special study areas requiring further master planning prior to urban development. One of these areas is Focus Area 7, generally bounded by Nees Avenue on the South, Big Dry Creek on the west, Enterprise Canal on the east, and Shepherd Avenue on the north (see Figure below).

Focus Area 7 has been designated Rural Residential prior to the adoption of the Herndon-Shepherd Specific Plan in 1988. During outreach to the County residents with the 1993 General Plan, there was desire to maintain the existing rural lifestyle. The City determined that no planning efforts were desired nor necessary in this area. This determination did not leave this area undevelopable, rather if development was later desired, land use changes and infrastructure needs would be evaluated on a case-by-case basis per the General Plan policies.

During public outreach with the 2014 General Plan, there was still strong desire of many property owners within Focus Area 7 to maintain their lifestyle. However, there were some property owners who understood the development constraints with being left out during the 1993 General Plan. Most of Focus Area 7 is designated Rural Residential in the 2014 Clovis General Plan. Sewer service for Focus Area 7 was not planned for in the 2008 Wastewater Master Plan Update, Phase 2 and prior wastewater master planning efforts. When the City completed the 2014 General Plan, the City did anticipate requests for plan density requests in Focus Area 7 and proposed a margin of 2.5 units per acre to accommodate potential density increases.



Dry Creek Preserve – Focus Area 7

Woodside Project Proposal

In April, 2016, Woodside Homes submitted a General Plan Amendment, annexation, and map for approximately 46 acres at the northwest corner of Teague and Fowler Avenues. Woodside's submittal included 96 lots (later reduced to 95 lots) at a density of 2.3 units per acre (each lot averaging approximately 15,000 sq. ft.). The submittal required a considerable amount of discussion not only with the affected property owners within the annexation boundary, but with the County of Fresno and Fresno Local Agency Formation Commission (LAFCo).

As a requirement of a General Plan Amendment, Woodside Homes organized a neighborhood meeting. The meeting went generally well with some opposition to higher density development. On July 26, 2016, the Planning Commission considered the Project. After considerable testimony, the Commission denied the Mitigated Negative Declaration due to several comments citing deficiencies in the analysis. The Commission also advised the applicant to continue working with the Neighborhood Committee and adjacent property owners.

Woodside Homes held another neighborhood meeting and also reached out to some of the opponents of the project to seek help in understanding the needs of the property owners. On November 17, 2016, the Commission re-considered the proposed Project which now included an abbreviated Master Plan Design Guideline document, as well as a new Mitigated Negative Declaration. Again, there was substantial opposition. The Commission once again denied the Mitigated Negative Declaration. The Commission also asked the applicant to go back and work further with the property owners.

After the Planning Commission meeting of November 17, 2016, staff requested that Woodside Homes prepare a more detailed Master Plan for the entire DCP. The Master Plan Team delivered a new revised Plan to the City at the end of August 2017. Staff had not been involved in the development of the Master Plan over the nine month period and staff, as well as County staff, expressed concerns with the Master Plan. In October, staff met at least weekly, and sometimes more frequently, with the Master Plan Team to address those concerns, and has also had broader meetings that included the County and Annexation Team.

At this point there were differing ideas between the property owners within the Dry Creek Preserve and City staff on some of the main aspects of the Master Plan. Staff made a decision to ask for Council direction moving forward.

City Council Direction

On November 6, 2017, staff presented a policy discussion to the City Council requesting direction to move forward with the Master Plan. Council considered the report and testimony directing staff on a path forward. Council also acknowledged many years of work from Dale Mitchell of the Dry Creek Preserve Neighborhood Committee on a draft specific plan. Their direction was to work with the key property owners on a Master Plan and Annexation Agreement. There was also direction regarding some specific aspects of the properties to be considered as developable within the plan area.

Immediately after the Council meeting, Matt Smith of Woodside Homes and Dale Mitchell agreed to work with staff on the preparation of the Master Plan. The City formed a team including the City Attorney's office and spent many hours over several meetings with Matt and Dale to come up with the plan that everyone felt would be acceptable to the community.

Tom Bell and Marcus DiBuduo, both property owners within the Dry Creek Preserve area, drafted the initial annexation agreement. The final agreement was a result of a lot of time and effort by both Tom and Marcus as well as staff and others within the Dry Creek Preserve. Prior to the November Council meeting, there were still outstanding items that seemed would not be resolved. After Council direction, Tom, Marcus and the City were able to come to a resolution on all outstanding items after many more hours of collaboration. The final result is an agreement that staff and the Dry Creek Preserve

community feel addressed the desires of those land owners who would become City residents upon annexation.

Neighborhood Meetings

Matt Smith of Woodside Homes conducted several community meetings as well as outreach to individual property owners. The community meetings were well attended and were often times contentious. Some of the discussion revolved around concerns of higher densities, urban development standards, traffic throughout the area, and concerns with rural rights as properties are annexed to the City.

After the development of the Draft Master Plan, Annexation Agreement, and revised Woodside map, the City hosted a neighborhood meeting to present each to the community. The meeting was attended by approximately 60 property owners. Most of the comments were positive, and it was evident that the many hours of work on the Master Plan and Annexation Agreement addressed many concerns.

PROPOSAL AND ANALYSIS

Master Plan

The Draft Master Plan began life as two documents. One was the draft provided by Woodside Homes and the other was the Draft Specific Plan developed by Dale Mitchell. The result of combining the two is a Master Plan with an overall vision and intent that preserves the rural lifestyle of the current property owners while providing for limited urban development. The Master Plan also includes an annexation program based on possible development over the next 20 years.

Maintain the Rural Lifestyle

The Draft Master Plan's main goal is to respect the rural lifestyle that has been historically enjoyed by the property owners in the Dry Creek Preserve. The development standards address rural standards upon development, such as limited curbs and gutters, asphalt sidewalks, thematic lighting and branding.

Additionally, if a developer desires to process a General Plan Amendment, the Master Plan limits development to a density of 2.3 units per acre, and only where the project is 10 acres or more. This limitation is an important component to the Master Plan in that it helps mitigate a snowball effect of higher density development across the Dry Creek Preserve. During a City Council meeting on November 6, 2017, staff was provided direction to limit development to the 10 acre project size. The Council also gave direction to allow development adjacent to low density development where the properties were either landlocked by a low density City development and major streets, or are a minimum of 9.5 acres and contiguous to a low density City development.

Properties less than 10 acres may still develop at .5 units per acre per the existing General Plan, either within the County or as a City project.

Some commercial activity exists in the Dry Creek Preserve including agriculture, veterinary service, equestrian, and some hobby farms. Any use commercial activity that is permitted in the County is a permitted use in the Master Plan and may continue operations even after annexation.

Annexation Agreement

Coordination between the respect that the Master Plan provides to existing property owners and the standards defined in the Codes and Policies upon annexation, was a challenging task. The tools to bridge the gap is an Annexation Agreement. This allows the Council to adopt a document that allows for certain rights of a property owner upon annexation while not opposing development and annexations that are consistent with the Master Plan.

Tom Bell, Marcus Dibuduo, Matt Smith, Dale Mitchell, along with City staff spent hours drafting language that would be acceptable to the property owners as well as the City. The result is an agreement that essentially allows a property owner all of their County rights after annexation. Some of the highlighted areas include maintaining their water wells, septic systems, and Fresno Irrigation District water allocation, until such time when they do connect to City water. At the time of connection, the property owner may request to pay a surcharge to maintain their FID allocation even with their home connected to the City system. This allows continued agricultural operations using ground water. Specifics can be found in the Draft Annexation Agreement (see Attachment 4).

After final wording was approved by all negotiating parties and the Agreement presented to the neighborhood at the March 8, 2018 community meeting, the principal negotiator for the residents, Marcus DiBuduo, requested additional changes to the Agreement. Those changes were made and are reflected in Attachment 4. After those changes, Mr. DiBuduo requested additional changes on several different occasions. The City Attorney is preparing a summary of the additional requested changes and the City's response thereto, which will be available on Friday, June 1, 2018. Preliminarily, the City Attorney has determined that changes to the Agreement are either unnecessary or not appropriate. Substantial changes to the Annexation Agreement would require recirculation of the Annexation Agreement to the community and a delay in approval of the Master Plan.

Public Agency Comments

The County of Fresno, Fresno Local Agency Formation Commission, and other agencies potentially affected have been involved with the development of the Master Plan. The coordination between agencies plays an important role as development standards are implemented upon new development. There are still minor details to work out with the County of Fresno in regards to the Annexation Program that will require additional discussion. The content of the details will not have a substantial change to the Program

and should not hold up the ability for the Commission to take action on the Master Plan. If substantial changes do occur, the Project will be brought back for review and consideration.

Planning Commission Meeting

The Planning Commission considered the Project at their April 26, 2018, meeting. During the hearing, approximately seven spoke in favor and three spoke in opposition and/or expressed concerns of development in and around the Dry Creek Preserve (see Minutes - Attachment 5). After hearing testimony, the Commission voted to approve the Mitigated Negative Declaration, 3-1-1 (Antuna absent), and 4-0-1 to approve the Dry Creek Preserve Master Plan.

Public Comments

Staff mailed notices to all property owners within the Dry Creek Preserve Area. There have been no comments or concerns related to the Project upon finalization of this staff report.

The City published notice of this public hearing in *The Business Journal* on Wednesday, May 23, 2018.

California Environmental Quality Act

The City assessed the Project in accordance with the California Environmental Quality Act guidelines. Staff recommends approval of a Mitigated Negative Declaration for the Project which includes the Master Plan, Annexation Agreement, as well as a Woodside development proposal including a General Plan Amendment, Prezone, Vesting Tentative Tract Map and Annexation.

FISCAL IMPACT

None

REASON FOR RECOMMENDATION

The Dry Creek Preserve Master Plan is an implementation document required by the General Plan. Staff, Woodside Homes, and the representatives of the area have spent several hours working with the property owners to prepare a Draft Master Plan that respects the rural lifestyle for existing residents, while providing limited development opportunity. The Master Plan is consistent with the Goals of the General Plan; therefore, Planning Commission and staff recommend that the City Council approve the Mitigated Negative Declaration and Draft Dry Creek Preserve Master Plan and Annexation Agreement.

ACTIONS FOLLOWING APPROVAL

None

Prepared by: Bryan Araki, City Planner

Submitted by: _____
Dwight Kroll, AICP
Director of Planning and
Development Services

RESOLUTIONS

ATTACHMENT 1

DRAFT
RESOLUTION 18-_____

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CLOVIS APPROVING A MITIGATED NEGATIVE DECLARATION FOR THE DRY CREEK PRESERVE MASTER PLAN, ANNEXATION AGREEMENT, GPA2016-06, R2016-07, TM6154, AND RO296, PURSUANT TO CEQA GUIDELINES

WHEREAS, the project proponent, Woodside Homes, Inc., 9 River Park Place East, Suite 430, Fresno, CA 93720, has submitted various files including a General Plan Amendment GPA2016-06, Rezone R2016-07, Vesting Tentative Tract Map TM6154, and an annexation RO296, for properties located near the northwest corner of Teague and Fowler Avenues, in the City of Clovis; and

WHEREAS, the City of Clovis ("City") caused to be prepared an Initial Study (hereinafter incorporated by reference) on March, 2018, for the Project to evaluate potentially significant adverse environmental impacts and on the basis of that study it was determined that no significant environmental impacts would result from this Project, with mitigation measures incorporated for the Project; and

WHEREAS, on the basis of this Initial Study, a Mitigated Negative Declaration has been prepared, circulated, and made available for public comment pursuant to the California Environmental Quality Act ("CEQA"), Public Resources Code, section 21000, et seq., and Guidelines for implementation of CEQA, 14 California Code of Regulations, sections 15000, et seq.; and

WHEREAS, the City Council has independently reviewed, evaluated, and considered the Initial Study, Mitigated Negative Declaration and all comments, written and oral, received from persons who reviewed the Mitigated Negative Declaration, or otherwise commented on the Project.

NOW, THEREFORE, the City Council of the City of Clovis resolves as follows:

1. Adopts the foregoing recitals as true and correct.

2. Finds that the Initial Study and Mitigated Negative Declaration for the Project are adequate and have been completed in compliance with CEQA and the CEQA Guidelines.

3. Finds and declares that the Initial Study and Mitigated Negative Declaration were presented to the City Council and that the City Council has independently reviewed, evaluated, and considered the Initial Study, Mitigated Negative Declaration and all comments, written and oral, received from persons who reviewed the Initial Study and Mitigated Negative Declaration, or otherwise commented on the Project prior to approving the Project and adopts the Mitigated Negative Declaration for this project.

4. Approves and adopts the Mitigation Monitoring Program set forth in Exhibit "B," including the mitigation measures identified therein and as described in the Mitigated Negative Declaration.

5. Directs that the record of these proceedings be contained in the Department of Planning and Development Services located at 1033 Fifth Street, Clovis, California 93612, and that the custodian of the record be the Deputy City Planner or other person designated by the Planning and Development Services Director.

6. The Planning and Development Services Director, or his/her designee, is authorized to file a Notice of Determination for the Project in accordance with CEQA and to pay any fees required for such filing.

* * * * * *

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on June 4, 2018, by the following vote, to wit:

AYES:

NOES:

ABSENT:

ABSTAIN:

Date: June 4, 2018

_____
Mayor

Attest:

_____
City Clerk

DRAFT
RESOLUTION 18-___

A RESOLUTION OF THE CITY COUNCIL APPROVING A MASTER PLAN FOR FOCUS AREA 7 OF THE GENERAL PLAN, FOR THE AREA REFERRED TO AS THE DRY CREEK PRESERVE AND AN ANNEXATION AGREEMENT

The City Council of the City of Clovis resolves as follows:

WHEREAS, Woodside Homes, Inc., 9 River Park Place East, Suite 430, Fresno, CA 93720, submitted various files including a General Plan Amendment GPA2016-06, Rezone R2016-07, Vesting Tentative Tract Map TM6154, and an annexation RO296, for properties located near the northwest corner of Teague and Fowler Avenues, in the City of Clovis; and;

WHEREAS, the Project is located within Focus Area 7 of the General Plan which requires a Master Plan to be approved prior to approval of entitlements; and

WHEREAS, the City prepared a Master Plan and Annexation Agreement pursuant to the Clovis General Plan; and

WHEREAS, the proposed Project was assessed under the provisions of the California Environmental Quality Act (CEQA) and the potential effects on the environment were considered by the City Council, together with comments received and public comments, and the entire public record was reviewed; and

WHEREAS, the Planning Commission has considered said Dry Creek Preserve Master Plan and Annexation Agreement on April 26, 2018, and adopted its Resolution No. 18-13, approving said Dry Creek Preserve Master Plan; and

WHEREAS, a duly noticed hearing was held on June 4, 2018; and

WHEREAS, on June 4, 2018, the Council considered testimony and information received at the public hearing and the oral and written reports from City staff, as well as other documents contained in the record of proceedings relating to the Dry Creek Preserve Master Plan and Annexation Agreement, which are maintained at the offices of the City of Clovis Department of Planning and Development Services; and

WHEREAS, the City Council does approve a Mitigated Negative Declaration pursuant to CEQA guidelines.

NOW, THEREFORE, after hearing evidence gathered by itself and on its behalf and after making the following findings, namely:

1. The Dry Creek Preserve Master Plan and Annexation Agreement are consistent with the Goals of the Clovis General Plan; and

2. The Dry Creek Preserve Master Plan and Annexation Agreement are in keeping with the intent and purpose of the Zoning Ordinance; and

3. That the Clovis Council does approve a Mitigated Negative Declaration for the project.

4. Approves a Master Plan and Annexation Agreement for Focus Area 7, of the General Plan named Dry Creek Preserve.

* * * * *

The foregoing resolution was introduced and adopted at a regular meeting of the City Council of the City of Clovis held on June 4, 2018, by the following vote, to wit:

AYES:
NOES:
ABSENT:
ABSTAIN:

DATED: June 4, 2018

Mayor	City Clerk

DRY CREEK PRESERVE MASTER PLAN
GENERAL PLAN AMENDMENT GPA2016-06
PREZONE R2016-07
VESTING TENTATIVE TRACT MAP TM6154
REORGANIZATION RO296

INITIAL STUDY AND MITIGATED NEGATIVE DECLARATION

PREPARED BY:

CITY OF CLOVIS

Planning Division
1033 Fifth Street
Clovis, CA 93612

Project Manager:
Bryan Araki, City Planner
559-324-2346
bryana@cityofclovis.com

March 2018

ATTACHMENT 2

City of Clovis
Planning and Development Services
1033 Fifth Street
Clovis CA 93612

For County Clerk Stamp

DRY CREEK PRESERVE
NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION
NOTICE OF PUBLIC REVIEW OF A PROPOSED MITIGATED NEGATIVE DECLARATION

NOTICE IS HEREBY GIVEN that the City of Clovis intends to adopt a Mitigated Negative Declaration for the Project described below. The Mitigated Negative Declaration will be considered by both the Planning Commission and City Council during public hearings, conducted in the Council Chamber of the Clovis Civic Center, 1033 Fifth Street, Clovis, CA 93612. A separate public notice will be sent and posted prior to each hearing.

The Clovis Planning Commission and City Council will consider the following items:

A. Approve a Master Plan for Focus Area 7 in the General Plan, approximately 795 acres generally bounded by Nees Avenue on the South, Big Dry Creek on the west, Enterprise Canal on the east, and Shepherd Avenue on the north, commonly referred to as the Dry Creek Preserve.

B. Consider items associated with eight properties located at the northwest corner of Teague and Fowler Avenues. Woodside 06N, LP, Inland Star Distribution Centers, Inc., a California Corporation, Paul and Monique Krause, Suzanne Robertson, Darell and Katherine Kroeker, Charles F. and Lisa J. Keller, Suhardi Tjuanta Trustee, owners; Woodside 06N, LP, applicant; Yamabe and Horn Engineering Inc., representative.

1. **GPA2016-06**, A request to re-designate approximately 48.61 acres from Rural Residential (1 lot per 2 acres) to Low Residential (2.1 to 4 lots per acre).
2. **R2016-07**, A request to prezone approximately 48.61 acres from the County R-R (Rural Residential) Zone District to the R-1 (Single-Family Residential) Zone District, and prezone 9.52 acres from County R-R Zone District to the City R-R Zone District.
3. **TM6154**, Approve a vesting tentative tract map for a 95-lot single-family subdivision on 43.23 acres.
4. **RO296,** A resolution of application for the Annexation of the Territory known as the Teague-Fowler Northwest Reorganization.

A Mitigated Negative Declaration has been completed for this project, pursuant to CEQA Guidelines 15070. Recommendation of a proposed Mitigated Negative Declaration does not necessarily mean this project will be approved. Hard copies and electronic copies of the proposed Mitigated Negative Declaration for this project may be reviewed and/or obtained at the City of Clovis Planning Division, 1033 Fifth Street, Clovis, California, Monday through Friday, between 8:00 a.m. and 3:00 p.m.

All interested parties are invited to comment in writing to the Planning Division and/or City Council. Comments will be accepted until 3:00 p.m. on April 19, 2018. Comments and questions regarding these items should be directed to Bryan Araki, City Planner at (559) 324-2346 or email at bryana@cityofclovis.com.

If you would like to view the Mitigated Negative Declaration and supporting documents, please visit the City of Clovis Website at www.cityofclovis.com. Select "Dry Creek Preserve" on the right hand column of the main page.

If you challenge a project in court, you may be limited to raising only those issues you or someone else raised at the public hearing described in this notice, or in written correspondence delivered to the City at, or prior to, the public hearing.

Bryan Araki, City Planner
PUBLISH: Wednesday, March 28, 2018, *The Business Journal*

City of Clovis
Planning and Development Services
1033 Fifth Street
Clovis CA 93612

For County Clerk Stamp

DRAFT MITIGATED NEGATIVE DECLARATION

Proposed: March 28, 2018

Agency File No: Dry Creek Preserve Master Plan, GPA2016-06, R2016-07, TM6154, RO296

Finding: The City of Clovis has determined that the project described below will not have a significant effect on the environment and therefore the preparation of an Environmental Impact Report is not required.

Lead Agency: City of Clovis is the Lead Agency for this project.

Project Title: Dry Creek Preserve Master Plan, General Plan Amendment GPA2016-06, Prezone R2016-07, Vesting Tentative Tract Map TM6154, and Reorganization RO296.

Project Location: GPA2016-06, R2016-07, TM6154, and RO296, are generally located at the Northwest corner of Teague and Fowler Avenues in Fresno County. The Master Plan for Focus Area 7 (Dry Creek Preserve) is generally bounded by Nees Avenue on the South, Big Dry Creek on the west, Enterprise Canal on the east, and Shepherd Avenue on the north.

Project Description:

A. Approve a Master Plan for Focus Area 7 in the General Plan, approximately 795 acres generally bounded by Nees Avenue on the South, Big Dry Creek on the west, Enterprise Canal on the east, and Shepherd Avenue on the north, commonly referred to as the Dry Creek Preserve.

B. Consider items associated with eight properties located at the northwest corner of Teague and Fowler Avenues. Woodside 06N, LP, Inland Star Distribution Centers, Inc., a California Corporation, Paul and Monique Krause, Suzanne Robertson, Darell and Katherine Kroeker, Charles F. and Lisa J. Keller, Suhardi Tjuanta Trustee, owners; Woodside 06N, LP, applicant; Yamabe and Horn Engineering Inc., representative.

   1. **GPA2016-06**, A request to re-designate approximately 48.61 acres from Rural Residential (1 lot per 2 acres) to Low Residential (2.1 to 4 lots per acre).
   2. **R2016-07**, A request to prezone approximately 48.61 acres from the County R-R (Rural Residential) Zone District to the R-1 (Single-Family Residential) Zone District, and prezone 9.52 acres from County R-R Zone District to the City R-R Zone District.
   3. **TM6154**, Approve a vesting tentative tract map for a 95-lot single-family subdivision on 43.23 acres.
   4. **RO296,** A resolution of application for the Annexation of the Territory known as the Teague-Fowler Northwest Reorganization.

Environmental Assessment: The Initial Study for this project is available for review at the City of Clovis, Planning and Development Services Department, 1033 Fifth Street, Clovis, CA.

Justification for Mitigated Negative Declaration: The City of Clovis has completed the preparation of an Initial Study for the project described above. The Initial Study did not identify any potentially significant environmental

effects that would result from the proposed activity with mitigation measures incorporated. Accordingly, approval of a Mitigated Negative Declaration for the project is recommended. The City finds that the proposed activity can be adequately served by City public services. It will not have a negative aesthetic effect, will not affect any rare or endangered species of plant or animal or the habitat of such species, nor interfere with the movement of any resident or migratory fish or wildlife species. It will not adversely affect water quality, contaminate public water supplies, or cause substantial flooding, erosion, or siltation. It will not have a significant effect on air quality, climate change, transportation or circulation systems, noise, light and glare, and land use. No significant cumulative impacts will occur from this project.

Contact Person: Bryan Araki, City Planner

Phone: (559) 324-2346

Signature: _____

Date: March 26, 2018

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INITIAL STUDY

1.0 Introduction

This document is an Initial Study and Mitigated Negative Declaration (MND) prepared pursuant to the California Environmental Quality Act (CEQA), for the Project. This MND has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code Sections 21000 *et seq.*, and the CEQA Guidelines Sections 15070(b), 15071(e).

1.1 Documents Incorporated By Reference

This mitigated negative declaration utilizes information and incorporates information and analysis provided in the following documents pursuant to CEQA Guidelines Section 15150.

- **City of Clovis General Plan**. The 2014 Clovis General Plan provides a description of the project area setting, and sets forth a plan for development of the general plan planning area, of which the current project area is part.
- **Program Environmental Impact Report prepared for the Clovis General Plan.** The General Plan Program EIR describes potential impacts of development of the project area consistent with the general plan land use map. Some of these impacts (e.g. runoff, aesthetics, etc.) are to be expected with any urban development, and are therefore applicable to the current project.
- **Findings and Statement of Overriding Considerations prepared for adoption of the Clovis General Plan.** Adoption of the development plan contained in the General Plan is expected to result in certain unavoidable environmental impacts (Agriculture, Air Quality, Cultural Resources, Greenhouse Gas, Hydrology and Water, Noise and Vibration, Population and Housing, Transportation and Traffic, and Utility and Service Systems) that the City has determined are outweighed by the potential benefits of plan implementation.
- **Herndon Shepherd Specific Plan.** The Herndon Shepherd Specific Plan provides a description of the project area setting, and sets forth a plan for the development of the specific plan planning area, of which the current project area is a part.
- **Clovis Municipal Code Title 5 (Public Welfare, Morals and Conduct) and Title 9 (Development Code)**. This Code consists of the City's regulatory, penal, and administrative laws of general application of the City of Clovis and specifically to development standards, property maintenance and nuisances, necessary for the protection of health, safety and welfare.
- **California Health and Safety Code Section 7050.5.** This section states that in the event that human remains are discovered, there shall be no further disturbance of the site of any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has been notified. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission shall be adhered to in the treatment and disposition of the remains.
- **Section 15064.5 of the CEQA Guidelines.** This section addresses the discovery of human remains, and the disturbance of potential archaeological, cultural, and historical resources. The requirements of Section 15064.5 with regard to the discovery of human remains are identical to the requirements of Health and Safety Code Section 7050.5.
- **City of Clovis 2017-2018 Budget.** The budget provides information about city services, and objectives, annual spending plan for the 2017-2018 fiscal year, debt obligations, and the five-year Community Investment Program.
- **City of Clovis 2015 Urban Water Management Plan,** July 2016, The Clovis Urban Water Management Plan outlines the City's strategy to manage its water resources through both conservation and source development. The Plan was prepared in compliance with California Water Code Section 10620.

- **Fresno Metropolitan Flood Control District Storm Drainage and Flood Control Master Plan (Adopted December 16, 2015).** The Fresno Metropolitan Flood Control District (FMFCD) is located in the north-central portion of Fresno County between the San Joaquin and Kings rivers. The FMFCD service area includes most of the Fresno-Clovis metropolitan area (excluding the community of Easton), and unincorporated lands to the east and northeast. The Storm Drainage and Flood Control Master Plan includes program planning, structure, service delivery, and financing, for both flood control and local drainage services. The flood control program relates to the control, containment, and safe disposal of storm waters that flow onto the valley floor from the eastern streams. The local drainage program relates to the collection and safe disposal of storm water runoff generated within the urban and rural watersheds.
- **Fresno Metropolitan Flood Control District Notice of Requirements,** January 29, 2018, A letter from the District stating that their facilities can accommodate the Project.
- **San Joaquin Valley Air Pollution Control District, Regulation VIII - Fugitive PM10 Prohibitions.** The purpose of Regulation VIII (Fugitive PM10 Prohibitions) is to reduce ambient concentrations of fine particulate matter (PM10) by requiring actions to prevent, reduce or mitigate anthropogenic fugitive dust emissions. Regulation VIII is available for download at http://www.valleyair.org/rules/1ruleslist.htm#reg8. A printed copy may be obtained at the District's Central Region offices at 1990 E. Gettysburg Ave., Fresno, CA 93726.
- **Fresno Irrigation District Letter**, January 12, 2018, An evaluation of project impacts on Fresno Irrigation District facilities.
- **City of Clovis Sewer System Management Plan,** July 2014, An evaluation of impacts to the Master Sewer Collection System.
- **Biological Evaluation from Argonaut Ecological Consulting, Inc.,** January 18, 2018, An evaluation of biological impacts.
- **Cultural Archeological Evaluation from Peak & Associates, Inc**, January 17, 2018, An evaluation of cultural and archeological resources.
- **Air Quality and Global Climate Change Evaluation from First Carbon Solutions,** June 6, 2016, An evaluation of the impacts related to Air Quality and Green House Gas.
- **Blair Church and Flynn Engineers Sewer Assessment,** July 19, 2016, An evaluation of impacts related to sewer resources.
- **Water Assessment Memo from Provost and Pritchard,** July 22, 2016, An evaluation of impacts related to water resources.
- **Clovis Unified School District,** Letter dated April 22, 2016, An evaluation of school enrollment.
- **Traffic Evaluation by Peters Engineering Group,** February 13, 2018, an evaluation of traffic related impacts.
- **Department of Transportation,** January 11, 2018, an evaluation of impacts related to State Route 168.

Unless otherwise noted, documents incorporated by reference in this Initial Study are available for review at the Clovis Planning and Development Services Department located at 1033 Fifth Street, Clovis, CA 93612 during regular business hours.

1.2 Lead Agency

The lead agency is the public agency with primary responsibility over a proposed project. Where two or more public agencies will be involved with a project, CEQA Guidelines Section 15051 provides criteria for identifying the lead agency. In accordance with CEQA Guidelines Section 15051(b)(1), "the lead agency will normally be the agency with general governmental powers, such as a city or county, rather than an agency with a single or limited purpose." Based on these criteria, the City of Clovis will serve as lead agency for the proposed project.

1.3 Agencies That May Use This Document

This Initial Study and Mitigated Negative Declaration may be used by any responsible or trustee agencies that also have review authority over the project. As stated in the CEQA Guidelines Section 15231:

> *A Final EIR prepared by a lead agency or a Negative Declaration adopted by the lead agency shall be conclusively presumed to comply with CEQA for the purposes of use by responsible agencies which were consulted pursuant to Sections 15072 or 15082 unless one of the following conditions occurs:*
>
> *a. The EIR or Negative Declaration is finally adjudged in a legal proceeding not to comply with the requirements of CEQA, or*
>
> *b. A subsequent EIR is made necessary be Section 15162 of these Guidelines.*

The various local, state, and federal agencies that may use this document are listed in Section 2.0, "Project Description."

2.0 Project Description

The Project is located within an area which remains in the County of Fresno but within the Clovis Sphere of Influence. The County area is approximately 795 acres and is described as Focus Area 7 in the General Plan (see Figure 1 below). The General Plan describes the land use as rural residential which permits one unit per two acres. The General Plan also requires a master plan to be developed as part of the first development to be requested in Focus Area 7.

The Project includes a master plan which provides development standards for future development as well as a specific tract map project. The tract map project consists of a request to re-designate approximately 48.61 acres from Rural Residential (1 unit per 2 acres) to Low Residential (2.1 to 4 lots per acre), prezone approximately 48.61 acres from the County R-R (Rural Residential) Zone District to the R-1 (Single-Family Residential) Zone District, prezone approximately 9.52 acres from the County R-R Zone District to the City R-R Zone District, approve a master plan for Focus Area 7, approve a vesting tentative tract map for a 95-lot single-family subdivision, and annex 58.13 acres for properties at the northwest corner of Teague and Fowler Avenues in the County of Fresno.

The development of the tract map will necessitate the demolition of structures, wells, septic systems, and removal of several trees. The tract map will also include site grading, temporary flood control basin, installation of off-site improvements including right-of-way acquisition, and infrastructure to accommodate a 95-lot single-family planned residential development with landscaping, and street improvements. The tract map and associated parcels will be required to be annexed from the County of Fresno to the City of Clovis and detachment from the Fresno County Fire Protection District and the Kings River Conservation District.

Figure 1 – Focus Area 7 Master Plan Area

2.1 Project Location

The proposed Project is located within the City of Clovis Sphere of Influence, in the County of Fresno. The proposed Project site is located near the northwest corner of Teague and Fowler Avenue. The proposed General Plan Amendment, Prezone and Vesting Tentative Tract Map are generally bounded by Fowler Avenue on the east, Teague Avenue on the south, The Enterprise Canal on the north and Rural residential properties on the west (see Figure 2). The General Plan requires a master plan to be developed with any development within the 795 acre County area described as Focus Area 7. Focus Area 7 is generally bounded by Nees Avenue on the south, Big Dry Creek on the west, Enterprise Canal on the east, and Shepherd Avenue on the north (see Figure 2 below).

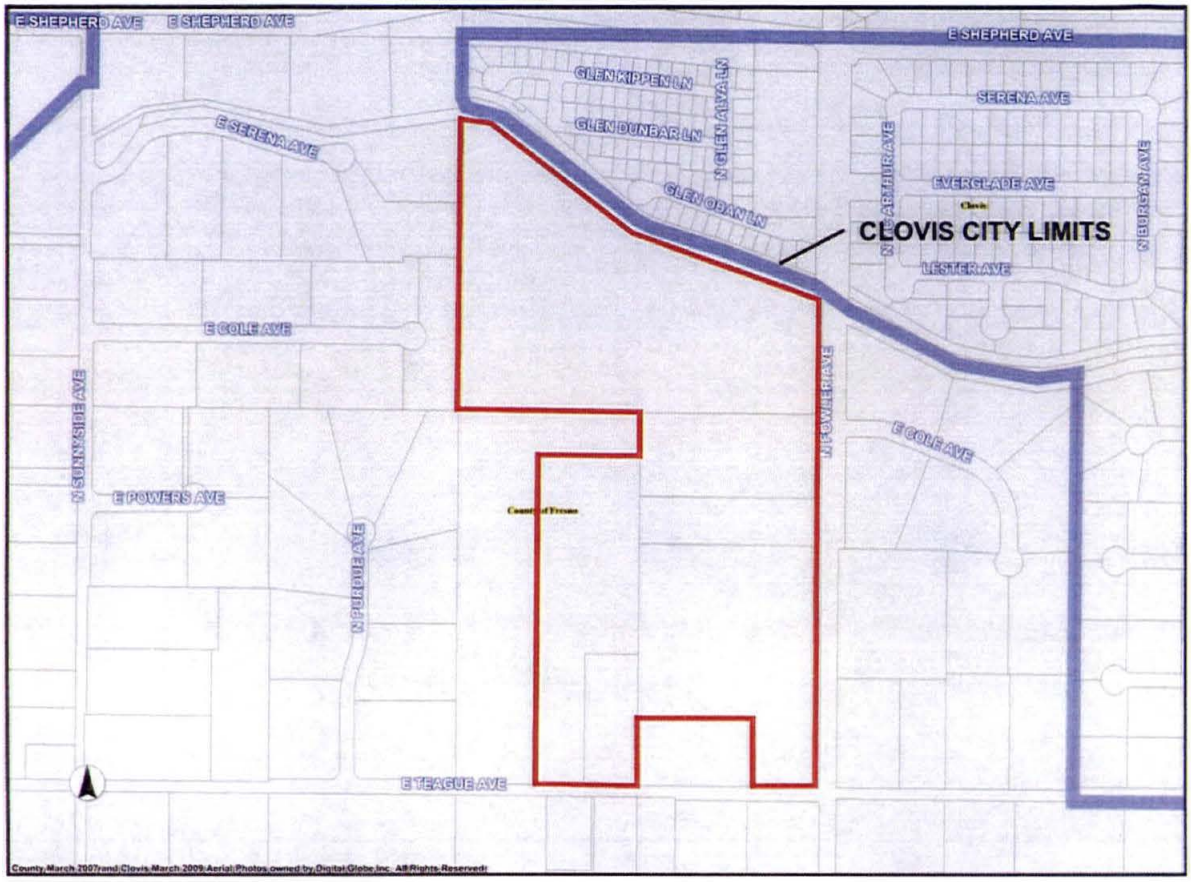

Figure 2 – TM6154 Project Location

2.2 Development Opportunity

During the initial review of the Project, it was brought to staff's attention that there are a number of properties outside the proposed Vesting Tentative Map area (within the County area) that are either owned by developers, or in discussion with other developers for future development at a higher density than the existing Rural Residential designation. There is one map in process with this development and it is necessary to assume that there may be other development requests in the future. Because this is a County area surrounded almost completely by the City of Clovis, infrastructure such as sewer, water, and streets will need to be designed to connect Clovis' growth areas to the north. As a County area, there are no taxes or fees collected to support infrastructure to, from, or through the area. The developers understand that lacking grant opportunities, development is the only means to fund infrastructure improvements within this area.

For purposes of this analysis, an assumption has been made that approximately 150 acres may develop at a density 2.3 units per acre which equates to an additional 345 lots (See Figure 3 below). This map is for general illustration purposes only and is not intended to require any property owner to develop their property or commit to development. This document as well as the supporting studies have considered the cumulative impacts related to a buildout of the County area using this assumption. Additionally, the sewer and water studies included potentially developable acreage beyond the additional 150 acres, even assuming the entire County area were to develop at 2.5 units per acre.

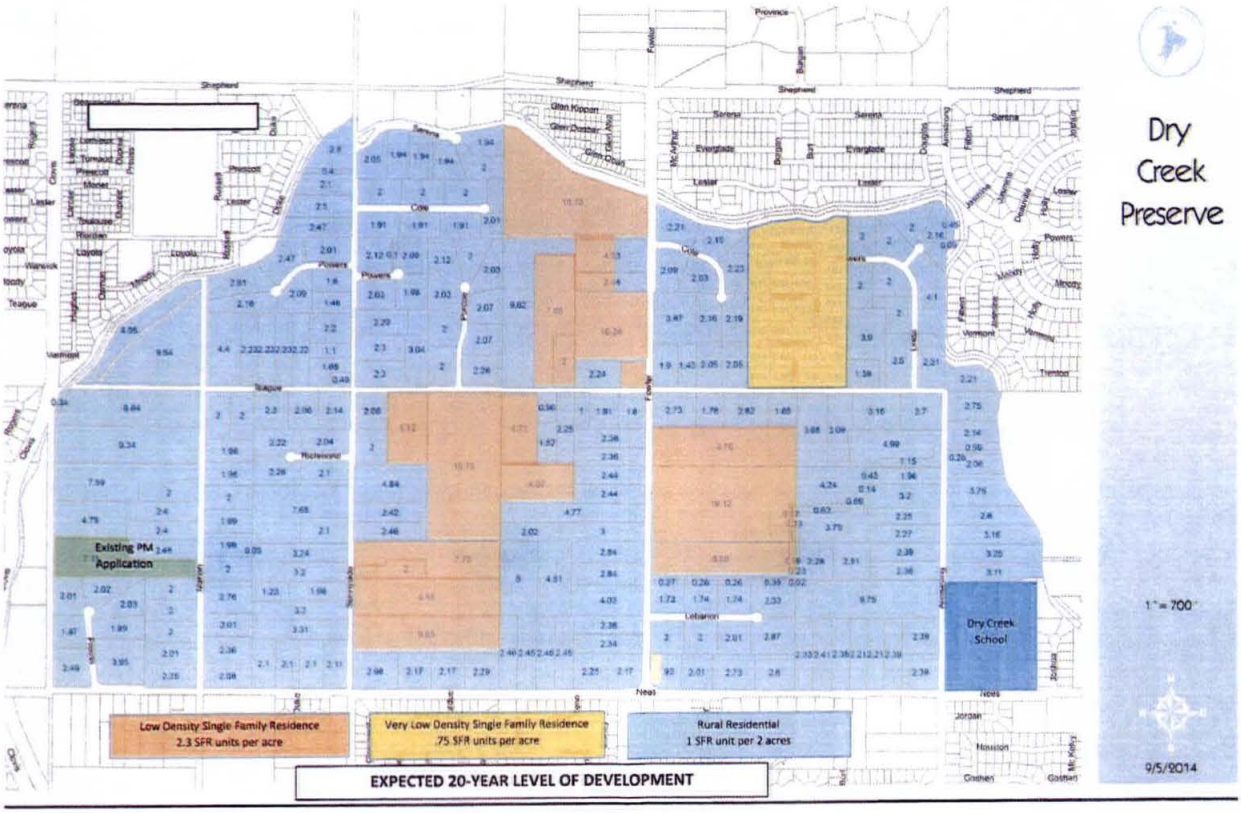

FIGURE 3 – Development Potential

2.3 Dry Creek Preserve Neighborhood Committee

There is a group of property owners within this 795 acre County area known as the Dry Creek Preserve Neighborhood Committee (DCPNC). The DCPNC mission includes but is not limited to preserving the rural residential atmosphere while providing for future development that is in keeping with the rural residential lifestyle.

The DCPNC is generally opposed to increase in densities beyond the Rural Residential Designation (1 lot per 2 acres), citing that any development of higher density residential would destroy any attempt to accomplish its mission. However, after extensive outreach to the neighborhood, there is a consensus that limited development, constructed with strict standards, could be consistent with the vision of the Dry Creek Preserve area.

As stated, the proposed tentative map is approximately 43.23 acres and sits at the top center of the County area. With an assumption that there may be an additional 110 acres which could develop at a higher density in the future, there are still opportunities for the DCPNC to reach their mission by proposing a General Plan Amendment or Specific Plan to re-designate their own properties as open space or public use as well as others which support the goals. Over the past ten years, the DCPNC has been working on a draft specific plan, occasionally providing copies to staff for review. The DCPNC draft specific plan was the seed that grew into what is now the Dry Creek Preserve Master Plan.

2.4 Annexation from the County to the City Overview

Development of the proposed Vesting Tentative Tract Map would necessitate properties to be annexed from the County of Fresno to the City of Clovis. The tentative boundary (see Figure 4 below) was presented to the County of Fresno and Fresno County Local Agency Land Formation Commission (LAFCo). The County of Fresno, LAFCo, and the City of Clovis tentatively agreed that the proposed

boundary meets the intent of the Memorandum of Understanding between the City of Clovis and County of Fresno, as well as LAFCo polices.

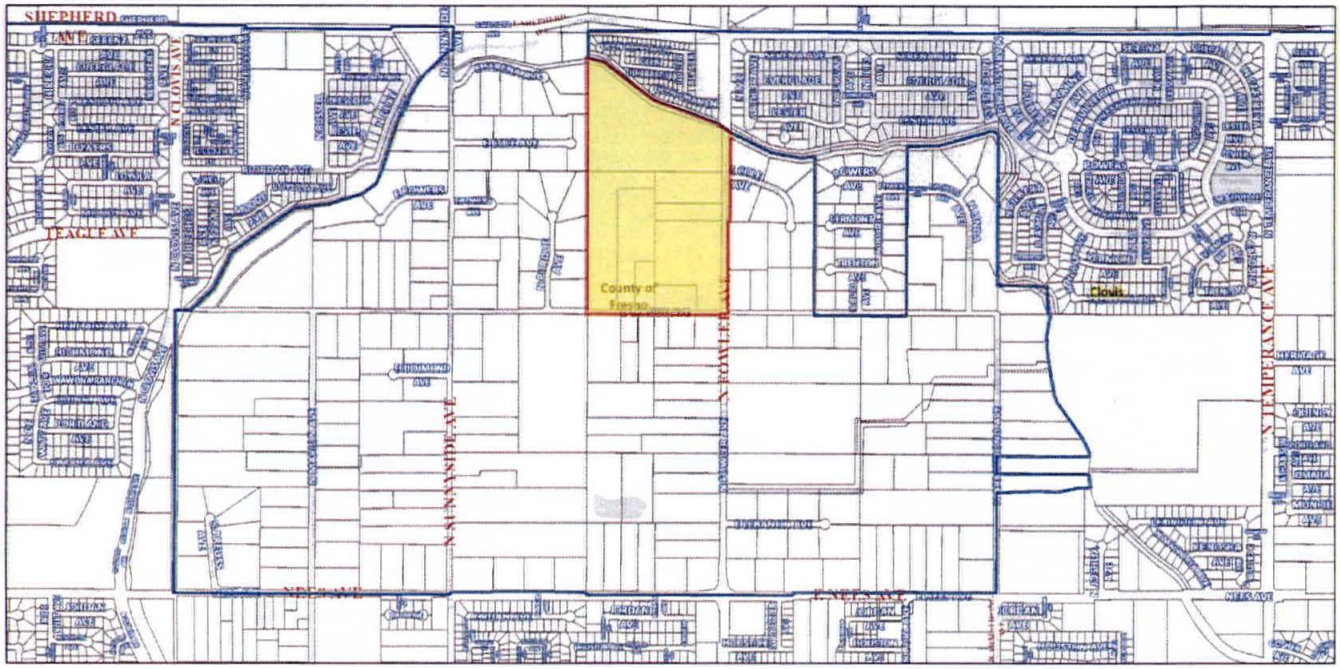

Figure 4 – Proposed Annexation Boundary

2.5 Proposed Design of the Woodside Tentative Map

Figure 5 shows the proposed vesting tentative map. The proposed map is approximately 43.23 acres and includes 95-lots and two remainder lots. The new lots range in size from 10,747 to 33,600 square feet. The density of the north portion is approximately 1.68 lots per acre and the south portion is approximately 2.8 lots per acre for an overall density around 2.2 lots per acre. The General Plan allows blending density across a Project to meet the maximum number of lots. The remainder lots were not factored as part of the density but if included, would bring the Project density to approximately 2.06 units per acre.

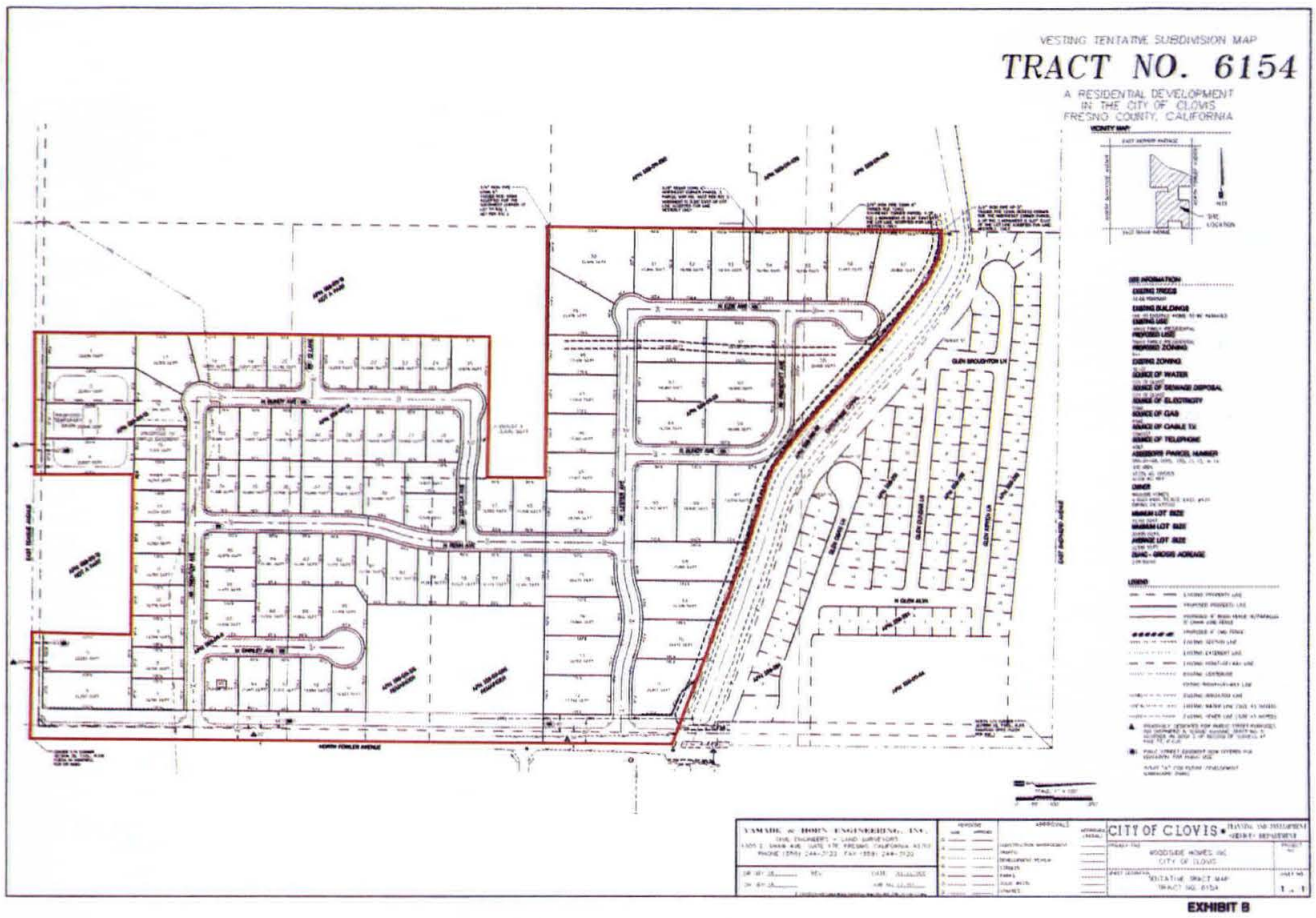

Figure 5 - Project Tentative Map

2.6 Standard Environmental Measures

Standard Environmental measures are methods, measures, standard regulations, or practices that avoid, reduce, or minimize a project's adverse physical impacts on the environment. Based on the underlying authority, they may be applied before, during, or after construction of the Project.

The following standard environmental measures, which are drawn from City ordinances and other applicable regulations and agency practices, will be implemented as part of the Project and incorporated into the City's approval processes for specific individual projects. The City will ensure that these measures are included in any Project construction specifications (for example, as conditions of approval of a tentative parcel or subdivision map), as appropriate. This has proven to be effective in reducing potential impacts by establishing policies and standard requirements that are applied ministerialy to all applicable projects.

Standard Environmental Measure 1: Measures to Minimize Effects of Construction-Related Noise

The following construction noise control standards per the Clovis Municipal Code (Clovis Municipal Code Section 5.27.604 et seq.) will be required, which are proven effective in reducing and controlling noise generated from construction-related activities.

- Noise-generating construction activities. Unless otherwise expressly provided by permit, construction activities are only permitted between the hours of 7:00 a.m. and 7:00 p.m. Monday through Friday and between 9:00 a.m. and 5:00 p.m. on Saturday and Sunday. From June 1st through September 15th, permitted construction activity may commence after

6:00 a.m. Monday through Friday. Extended construction work hours must at all times be in strict compliance with the permit.

- Stationary equipment (e.g., generators) will not be located adjacent to any existing residences unless enclosed in a noise attenuating structure, subject to the approval of the Director.

Standard Environmental Measure 2: Erosion Control Measures to Protect Water Quality

To minimize the mobilization of sediment to adjacent water bodies, the following erosion and sediment control measures will be included in the storm water pollution prevention plan (SWPPP), to be included in the construction specifications and Project performance specifications, based on standard City measures and standard dust-reduction measures for each development.

- Cover or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
- Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways.
- Contain soil and filter runoff from disturbed areas by berms, vegetated filters, silt fencing, straw wattle, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area.
- No earth or organic material shall be deposited or placed where it may be directly carried into a stream, marsh, slough, lagoon, or body of standing water.
- Prohibit the following types of materials from being rinsed or washed into the streets, shoulder areas, or gutters: concrete; solvents and adhesives; thinners; paints; fuels; sawdust; dirt; gasoline; asphalt and concrete saw slurry; heavily chlorinated water.
- Dewatering activities shall be conducted according to the provisions of the SWPPP. No dewatered materials shall be placed in local water bodies or in storm drains leading to such bodies without implementation of proper construction water quality control measures.

Standard Environmental Measure 3: Dust Control Measures to Protect Air Quality

To control dust emissions generated during construction of future parcels, the following San Joaquin Valley Unified Air Pollution Control District (SJVAPCD) Regulation VIII Control Measures for construction emissions of PM10 are required to be implemented (SJVUAPCD Rule 8021). They include the following:

- Watering—for the purpose of dust control, carry-out, and tracking control—shall be conducted during construction in accordance with the City of Clovis' Storm Water Management Plan (SWMP) and the Project Storm Water Pollution Prevention Plan (SWPPP), if applicable.
- All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, shall be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
- All onsite unpaved roads and offsite unpaved access roads shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
- With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.

- When materials are transported off site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least 2 feet of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions.) (Use of blower devices is expressly forbidden.)
- Following the addition of materials to, or the removal of materials from, the surface of outdoor storage piles, said piles shall be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.

Standard Environmental Measure 4: Measures to Control Construction-Related Emissions

To comply with guidance from the SJVAPCD, the City will incorporate the following measures into the construction specifications and Project performance specifications:

- The construction contractor will ensure that all diesel engines are shut off when not in use on the premises to reduce emissions from idling.
- The construction contractor will review and comply with SJVAPCD Rules 8011 to 8081 (Fugitive Dust), 4102 (Nuisance), 4601 (Architectural Coatings), and 4641 (Paving and Maintenance Activities). Current SJVAPCD rules can be found at http://www.valleyair.org/rules/1ruleslist.htm.
- The construction contractor will use off-road trucks that are equipped with on-road engines, when possible.
- The construction contractor will use light duty cars and trucks that use alternative fuel or are hybrids, if feasible.

Standard Environmental Measure 5: Measures to Minimize Exposure of People and the Environment to Potentially Hazardous Materials

Construction of the Project could create a significant hazard to workers, the public, or the environment though the transport, use or disposal of hazardous materials. Small quantities of potentially toxic substances (such as diesel fuel and hydraulic fluids) would be used and disposed of at the site and transported to and from the site during construction. Accidental releases of small quantities of these substances could contaminate soils and degrade the quality of surface water and groundwater, resulting in a public safety hazard.

To minimize the exposure of people and the environment to potentially hazardous materials, the following measures will be included in the construction specifications and Project performance specifications for each parcel that includes the use of hazardous materials, based on the City's standard requirements that construction specifications include descriptions of the SWPPP, dust control measures, and traffic mobilization.

- *Develop and Implement Plans to Reduce Exposure of People and the Environment to Hazardous Conditions Caused by Construction Equipment.* The City/contractor shall demonstrate compliance with Cal OSHA as well as federal standards for the storage and handling of fuels, flammable materials, and common construction-related hazardous materials and for fire prevention. Cal OSHA requirements can be found in the California Labor Code, Division 5, and Chapter 2.5. Federal standards can be found in Occupational Safety and Health Administration Regulations, Standards—29 CFR. These standards are considered to be adequately protective such that significant impacts would not occur. Successful development and implementation of the proper storage and handling of

hazardous materials will be measured against the state and federal requirements as verified by the City of Clovis.

- *Develop and Implement a Hazardous Materials Business Plan in Accordance with the Requirements of the County of Fresno Environmental Health System Hazardous Materials Business Plan Program.* The City shall require contractors to develop and implement a Hazardous Materials Business Plan, if required, in accordance with the requirements of the County of Fresno Environmental Health System (EHS) Hazardous Materials Business Plan Program. The Hazardous Materials Business Plan shall be submitted to the County EHS and the City of Clovis Fire Department prior to construction activities and shall address public health and safety issues by providing safety measures, including release prevention measures; employee training, notification, and evacuation procedures; and adequate emergency response protocols and cleanup procedures. A copy of the Hazardous Materials Business Plan shall be maintained on-site, during site construction activities and as determined by the County EHS.
- *Immediately Contain Spills, Excavate Spill-Contaminated Soil, and Dispose at an Approved Facility.* In the event of a spill of hazardous materials in an amount reportable to the Clovis Fire Department (as established by fire department guidelines), the contractor shall immediately control the source of the leak, contain the spill and contact the Clovis Fire Department through the 9-1-1 emergency response number. If required by the fire department or other regulatory agencies, contaminated soils shall be excavated, treated and/or disposed of off-site at a facility approved to accept such soils.
- As applicable, each Project applicant shall demonstrate compliance with Cal-OSHA for the storage and handling of fuels, flammable materials, and common construction-related hazardous materials and for fire prevention. Cal-OSHA requirements can be found in the California Labor Code, Division 5, Chapter 2.5. Federal standards can be found in Occupational Safety and Health Administration Regulations, Standards—29 CFR.

Standard Environmental Measure 6: Measures to Protect Undiscovered Cultural Resources

If buried cultural resources, such as chipped or ground stone, historic debris, building foundations, or human bone, are inadvertently discovered during ground-disturbing activities, the City shall require that work stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with the City of Clovis and other appropriate agencies.

If human remains of Native American origin are discovered during Project construction, it is necessary to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the Native American Heritage Commission (Pub. Res. Code Sec. 5097). If any human remains are discovered or recognized in any location other than a dedicated cemetery, there will be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until:

- The Fresno County coroner has been informed and has determined that no investigation of the cause of death is required; and if the remains are of Native American origin,
  - The descendants of the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98, or
  - The Native American Heritage Commission was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the commission.

According to California Health and Safety Code, six or more human burials at one location constitute a cemetery (Section 8100) and disturbance of Native American cemeteries is a felony (Section 7052).

Section 7050.5 requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If the remains are determined to be Native American, the coroner must contact the California Native American Heritage Commission.

Standard Environmental Measure 7: Develop and Implement a Construction Traffic Control Plan

If applicable, the construction contractor, in coordination with the City, will prepare a traffic control plan during the final stage of Project design. The purpose of the plan is to insure public safety, provide noise control and dust control. The plan shall be approved by the City of Clovis City Engineer and comply with City of Clovis local ordinances and standard policies.

- The construction traffic control plan will be provided to the City of Clovis for review and approval prior to the start of construction and implemented by construction contractor during all construction phases, and monitored by the City.

2.7 Required Project Approvals

In addition to the approval of the proposed Project by the City of Clovis, the following agency approvals may be required:

- Fresno County Local Agency Formation Commission (LAFCo)

4.0 ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

Introduction

This chapter provides an evaluation of the potential environmental impacts of the proposed Project, including the CEQA Mandatory Findings of Significance. There are 18 specific environmental topics evaluated in this chapter including:

- Aesthetics
- Agriculture and Forest Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Geology/Soils
- Greenhouse Gas Emissions
- Hazards & Hazardous Materials
- Hydrology/Water Quality
- Land Use/Planning
- Mineral Resources
- Noise
- Population/Housing
- Public Services
- Recreation
- Transportation/Traffic
- Tribal Cultural Resources
- Utilities/Service Systems

For each issue area, one of four conclusions is made:

- **No Impact**: No project-related impact to the environment would occur with project development.

- **Less Than Significant Impact:** The proposed project would not result in a substantial and adverse change in the environment. This impact level does not require mitigation measures.

- **Less Than Significant with Mitigation Incorporated**: The proposed project would result in an environmental impact or effect that is potentially significant, but the incorporation of mitigation measure(s) would reduce the project-related impact to a less than significant level.

- **Potentially Significant Impact**: The proposed project would result in an environmental impact or effect that is potentially significant, and no mitigation can be identified that would reduce the impact to a less than significant level.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.1 Aesthetics *Would the Project:*				
a. Have a substantial effect on a scenic vista?	❒	❒	■	❒
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	❒	❒	■	❒
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	❒	■	❒	❒
d. Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	❒	■	❒	❒

Environmental Setting

The City of Clovis is located within the San Joaquin Valley. As a result, the Project site and surrounding areas are predominantly flat. The flat topography of the valley floor provides a horizontal panorama providing vistas of the valley. On clear days, the Sierra Nevada Mountains are visible to the east. Aside from the Sierra Nevada and nearby foothills, there are no outstanding focal points or views from the City.

The vesting tentative tract map is located at the northwest corner of Teague and Fowler Avenues, located within a County peninsula bounded by Nees Avenue on the south, Big Dry Creek on the west, Enterprise Canal on the east, and Shepherd Avenue on the north. The County area is approximately 795 acres referred to as Focus Area 7 in the General Plan. Focus Area 7 is generally a rural residential area comprised of 2 acre and larger lots, rural homes, agriculture, farming, and hobby commercial activities.

Impacts

The Project may result in significant aesthetic impacts if it substantially affects the view of a scenic corridor, vista, or view open to the public, or will cause substantial degradation of views from adjacent residences, or results in night lighting that shines into adjacent residences.

a. The proposed Project will not obstruct federal, state or locally classified scenic areas, historic properties, community landmarks, or formally classified scenic resources such as a scenic highway, national scenic area, or state scenic area. The City of Clovis is located in a predominantly agricultural area at the base of the Sierra Nevada Mountain Range, which provides for aesthetically pleasing views and open spaces. The project site is currently rural residential with homes and open pasture land. The Focus Area is predominately rural residential in nature. The Project proposes R-1 Zoning which permits two-story development, consistent with that allowed in development surrounding the property, however homes would be placed closer together than is allowed under the current zoning. The project proposes one and two-story development consistent with the Clovis Development Code. As such, the implementation of the Project using current zoning standards, would result in a less than significant impact to scenic vistas.

b. The Project is surrounded on three sides by rural residential properties and is not located near a scenic highway. The development of this parcel with single-story and two-story development would have a less than significant impact on scenic resources.

c. The project area is predominately rural residential with existing homes. The implementation of the Project, consistent with the existing and proposed zoning as well as mitigation measures would reduce impacts to a less than significant level.

d. The Project will include on-site project and off-site street lighting, which would introduce a new source of light. The lighting is necessary to provide enough illumination at night for security and traffic purposes. All lighting will be installed per City and PG&E standards. A requirement to reduce up-lighting or shield lighting having direct impact to adjacent development is necessary to maintain the rural nature of the area. With the inclusion of the following Mitigation Measure, impacts in this category will be reduced to a less than significant impact.

Mitigation Measure 3.1-c

The developer shall incorporate the following mitigation measures into the tentative map TM6154 design and construction:

1. Utilize natural sidewalk paving materials, rather than concrete in developed areas, and no sidewalks, curbs or gutters in areas that remain Rural Residential.
2. Utilize split rail type fencing in place of or outside of block sound walls along developed streets.
3. Place homes facing Teague Avenue.
4. Restrict two-story homes within 100 feet of rural residential properties.
5. Utilize rural landscaping materials along developed streets. Landscaping along undeveloped reaches remain as-is.

Mitigation Measure 3.1-d

The developer shall direct all on-site lighting downward and provide physical shields to prevent direct view of the light source from adjacent residential properties. Street lighting shall be spaced in accordance with City Standards to reduce up-lighting. The applicant shall utilize a PG&E street light which directs light downward.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.2 Agriculture and forest resources *Would the Project:*				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.	❒	❒	❒	■
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?	❒	❒	❒	■
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220 (g)) or timberland (as defined in Public Resources Code section 4526)?	❒	❒	❒	■
d. Result in the loss of forest land or conversion of forest land to non-forest use?	❒	❒	❒	■
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	❒	❒	■	❒

Environmental Setting

The Project is located at the northwest corner of Teague and Fowler Avenues, located within a County peninsula bounded by Nees Avenue on the south, Big Dry Creek on the west, Enterprise Canal on the east, and Shepherd Avenue on the north. The County area is approximately 795 acres referred to as Focus Area 7 in the General Plan. Focus Area 7 is generally a rural residential area comprised of 2 acre and larger lots, rural homes, agriculture, farming, and hobby commercial activities.

Since the early 1950s, Fresno County has led all counties in the United States in the greatest agricultural production by dollar value (Fresno County 2000; Fresno County 2011). Agriculture is the largest industry in the county, producing $5.94 billion in 2010. The top five crops by dollar value in 2010, in descending order, were grapes, almonds, tomatoes, poultry, and milk (Fresno County 2011). In 2010, about 1.6 million acres, or 2,500 square miles, were in agricultural production, that is, about 42 percent of the county's land area (UCCE 2011).

The early agricultural history of Clovis was partly tied to the logging industry in the Sierra Nevada. A 42-mile log flume was built from Shaver Lake to Clovis, and a mill and finishing plant were developed in Clovis. Other agricultural products from the Clovis area included grains and livestock (Clovis 2012). Currently, there is little active agricultural use in the General Plan Area because of water supply

constraints and soil suitability issues, even though 7 percent of the SOI and 36 percent of the non-SOI Plan Area are designated Agriculture.

There are 10,199 acres in the General Plan Area designated for agricultural use under the current General Plan— 9,810 acres in the non-SOI Plan Area and 389 acres in the SOI. No land within the City is designated for agriculture (see Figure 3-4, *Current General Plan Land Use*). The land designated for agriculture is approximately 23 percent of the entire Plan Area.

The General Plan EIR analyzed the impacts of the City's urban growth on agricultural land and includes mitigation measures to reduce those impacts; however, impacts to agricultural land remain significant and unavoidable. A Statement of Overridding Considerations was adopted for the impacts to agriculture lands. The proposed Project does not significantly impact agricultural resources as identified in the General Plan's PEIR.

Impacts

A significant impact may occur if the Project:

- Converts Prime Farmland, Unique Farmland, or Farmland of Statewide Importance.
- Conflicts with existing zoning for agricultural use, or a Williamson Act contract.
- Conflicts with existing zoning for, or cause rezoning of, forest land or timberland.
- Results in the loss of forest land or conversion of forest land to non-forest use.
- Involves other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use.

a. The Project is not located within lands identified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use.

b. The Project is not within lands which have existing Williamson Act or other contracts.

c. The Project will not conflict with any forest or timberland zoning. The Project site does not contain and is not adjacent to any forest or timberland resources.

d. The Project will not result in the loss of forest land or conversion of forest land to non-forest use.

e. All existing and/or planned services and infrastructure in the area can accommodate the proposed project. Other than the project site, there will be no changes to the existing environment which will result in conversion of Farmland to a non-agricultural use. The Project will not result in the other surrounding properties converting from farmland or forest land.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.3 Air Quality *Will the proposal:*				
a. Conflict with or obstruct implementation of the applicable air quality plan?	❒	❒	■	❒
b. Violate any air quality standards or contribute to an existing or projected air quality violation?	❒	❒	■	❒
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	❒	❒	■	❒
d. Expose sensitive receptors to substantial pollutant concentrations?	❒	❒	■	❒
e. Create objectionable odors?	❒	❒	■	❒

Environmental Setting

San Joaquin Valley Air Basin

The City of Clovis (City) is in the central portion of the San Joaquin Valley Air Basin (SJVAB). SJVAB consists of eight counties: Fresno, Kern (western and central), Kings, Tulare, Madera, Merced, San Joaquin, and Stanislaus. Air pollution from significant activities in the SJVAB includes a variety of industrial-based sources as well as on- and off-road mobile sources. These sources, coupled with geographical and meteorological conditions unique to the area, stimulate the formation of unhealthy air.

The SJVAB is approximately 250 miles long and an average of 35 miles wide. It is bordered by the Sierra Nevada in the east, the Coast Ranges in the west, and the Tehachapi mountains in the south. There is a slight downward elevation gradient from Bakersfield in the southeast end (elevation 408 feet) to sea level at the northwest end where the valley opens to the San Francisco Bay at the Carquinez Straits. At its northern end is the Sacramento Valley, which comprises the northern half of California's Central Valley. The bowl-shaped topography inhibits movement of pollutants out of the valley (SJVAPCD 2012a).

Climate

The SJVAB is in a Mediterranean climate zone and is influenced by a subtropical high-pressure cell most of the year. Mediterranean climates are characterized by sparse rainfall, which occurs mainly in winter. Summers are hot and dry. Summertime maximum temperatures often exceed 100°F in the valley.

The subtropical high-pressure cell is strongest during spring, summer, and fall and produces subsiding air, which can result in temperature inversions in the valley. A temperature inversion can act like a lid, inhibiting vertical mixing of the air mass at the surface. Any emissions of pollutants can be trapped below the inversion. Most of the surrounding mountains are above the normal height of summer inversions (1,500–3,000 feet).

Winter-time high pressure events can often last many weeks, with surface temperatures often lowering into the 30°F. During these events, fog can be present and inversions are extremely strong. These wintertime inversions can inhibit vertical mixing of pollutants to a few hundred feet (SJVAPCD 2012a).

Ambient Air Quality Standards

The Clean Air Act (CAA) was passed in 1963 by the US Congress and has been amended several times. The 1970 Clean Air Act amendments strengthened previous legislation and laid the foundation for the regulatory scheme of the 1970s and 1980s. In 1977, Congress again added several provisions, including nonattainment requirements for areas not meeting National AAQS and the Prevention of Significant Deterioration program. The 1990 amendments represent the latest in a series of federal efforts to regulate the protection of air quality in the United States. The CAA allows states to adopt more stringent standards or to include other pollution species. The California Clean Air Act (CCAA), signed into law in 1988, requires all areas of the state to achieve and maintain the California AAQS by the earliest practical date. The California AAQS tend to be more restrictive than the National AAQS, based on even greater health and welfare concerns.

These National and California AAQS are the levels of air quality considered to provide a margin of safety in the protection of the public health and welfare. They are designed to protect "sensitive receptors," those most susceptible to further respiratory distress, such as asthmatics, the elderly, very young children, people already weakened by other disease or illness, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollutant concentrations considerably above these minimum standards before adverse effects are observed.

Both California and the federal government have established health-based AAQS for seven air pollutants. As shown in Table 5.3-1, *Ambient Air Quality Standards for Criteria Pollutants*, these pollutants are ozone (O3), nitrogen dioxide (NO2), carbon monoxide (CO), sulfur dioxide (SO2), coarse inhalable particulate matter (PM10), fine inhalable particulate matter (PM2.5), and lead (Pb). In addition, the state has set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. These standards are designed to protect the health and welfare of the populace with a reasonable margin of safety.

TABLE 3.4-1
FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	Federal Primary Standard	State Standard
Ozone	1-Hour 8-Hour	-- 0.075 ppm	0.09 ppm 0.07 ppm
Carbon Monoxide	8-Hour 1-Hour	9.0 ppm 35.0 ppm	9.0 ppm 20.0 ppm
Nitrogen Dioxide	Annual 1-Hour	0.053 ppm 0.100 ppm	0.03 ppm 0.18 ppm
Sulfur Dioxide	Annual 24-Hour 1-Hour	0.03 ppm 0.14 ppm 0.075 ppm	-- 0.04 ppm 0.25 ppm
PM_{10}	Annual 24-Hour	-- 150 ug/m^3	20 ug/m^3 50 ug/m^3
$PM_{2.5}$	Annual 24-Hour	15 ug/m^3 35 ug/m^3	12 ug/m^3 --

Lead	30-Day Avg. 3-Month Avg.	-- 1.5 ug/m^3	1.5 ug/m^3 --

Notes: ppm = parts per million; ug/m^3 = micrograms per cubic meter.
Source: California Air Resources Board, 2008. Ambient Air Quality Standards (4/01/08), http://www.arb.ca.gov.aqs/aaqs2.pdf.

In addition to the criteria pollutants discussed above, toxic air contaminants (TACs) are another group of pollutants of concern. TACs are injurious in small quantities and are regulated despite the absence of criteria documents. The identification, regulation and monitoring of TACs is relatively recent compared to that for criteria pollutants. Unlike criteria pollutants, TACs are regulated on the basis of risk rather than specification of safe levels of contamination.

Attainment Status

The air quality management plans prepared by SJVAPCD provide the framework for SJVAB to achieve attainment of the state and federal AAQS through the SIP. Areas are classified as attainment or nonattainment areas for particular pollutants, depending on whether they meet the ambient air quality standards. Severity classifications for ozone nonattainment range in magnitude from marginal, moderate, and serious to severe and extreme.

At the federal level, the SJVAPCD is designated as extreme nonattainment for the 8-hour ozone standard, attainment for PM10 and CO, and nonattainment for PM2.5. At the state level, the SJVAB is designated nonattainment for the 8-hour ozone, PM10, and PM2.5 standards. The SJVAB has not attained the federal 1-hour ozone, although this standard was revoked in 2005.

Impacts

The SJVUAPCD has established the following standards of significance (SJVUAPCD, 1998). A project is considered to have significant impacts on air quality if:

- A project results in new direct or indirect emissions of ozone precursors (ROG or NOx) in excess of 10 tons per year.
- Any project with the potential to frequently expose members of the public to objectionable odors will be deemed to have a significant impact.
- Any project with the potential to expose sensitive receptors (including residential areas) or the general public to substantial levels of toxic air contaminants would be deemed to have a potentially significant impact.
- A project produces a PM10 emission of 15 tons per year (82 pounds per day).

While the SJVUAPCD CEQA guidance recognizes that PM_{10} is a major air quality issue in the basin, it has to date not established numerical thresholds for significance for PM_{10}. However, for the purposes of this analysis, a PM_{10} emission of 15 tons per year (82 pounds per day) was used as a significance threshold. This emission is the SJVUAPCD threshold level at which new stationary sources requiring permits for the SJVUAPCD must provide emissions "offsets". This threshold of significance for PM_{10} is consistent with the SJVUAPCD's ROG and NO_x thresholds of ten tons per year which are also the offset thresholds established in SJVUAPCD Rule 2201 New and Modified Stationary Source Review Rule.

The SJVUAPCD significance threshold for construction dust impacts is based on the appropriateness of construction dust controls, including compliance with its Regulation VIII fugitive PM10 Prohibitions. The SJVUAPCD guidelines provide feasible control measures for construction emission of PM_{10} beyond that required by SJVUAPCD regulations. If the appropriate construction controls are to be

implemented, then air pollutant emissions for construction activities would be considered less than significant.

The projects impacts to air quality was analyzed by First Carbon Solutions, dated April 18, 2016. The study concluded that the Project related impacts are less than significant.

a-e. The Project site is located within the San Joaquin Valley Air Basin (SJVUAPCD), which is a "nonattainment" area for the federal and state ambient air quality standards for ozone and PM_{10}. The Federal Clean Air Act and the California Clean Air Act require areas designated as nonattainment to reduce emissions until standards are met. The proposed Project would not obstruct implementation of an air quality plan; however, temporary air quality impacts could result from construction activities. The proposed Project would not create a significant impact over the current levels of ozone and PM_{10} or result in a violation of any applicable air quality standard. The Project is not expected to conflict with the SJVUAPCD's attainment plans. The Project will be subject to the SJVUAPCD's Regulation VIII to reduce PM_{10} emissions and subject to Standard Environmental Measure 3: Dust Control Measures to Protect Air Quality. With the incorporation of these existing measures, the Project will have a less than significant impact.

The proposed Project would result in short-term construction related emissions (dust, exhaust, etc.). The SJVAB currently exceeds existing air quality standards for ozone and the State Standard for PM_{10}. However, as with all construction projects, the Project will be subject to the rules and regulations adopted by the SJVUAPCD to reduce emissions throughout the San Joaquin Valley and will be subject to Standard Environmental Measure 4: Measures to Control Construction-Related Emissions. Therefore, the Project would create a less than significant impact with existing measures incorporated.

The existing sensitive receptors near the proposed Project include residences. The proposed Project may subject sensitive receptors to pollutant concentrations due to construction activities. The use of construction equipment would be temporary and all equipment is subject to permitting requirements of the SJVUAPCD. This impact is considered less than significant.

Objectionable odors are possible during site preparation and construction. However, the odors are not expected to be persistent or have an adverse effect on residents or other sensitive receptors in the Project's vicinity. No objectionable odors are anticipated after constructions activities are complete; therefore, the Project is expected to have a less than significant impact.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.4 Biological Resources *Will the proposal result in impacts to:*				
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?	❒	■	❒	❒
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	❒	❒	■	❒
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?	❒	■	❒	❒
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?	❒	■	❒	❒
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	❒	❒	■	❒
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?	❒	❒	■	❒

Environmental Setting

The Project site is currently rural residential, farmland, and vacant lands. The site is bounded by residential and commercial to the north, rural residential to the east, south, and west. The area generally includes rural residential properties, agriculture, farming and hobby commercial activities.

Impacts

The Project would have a significant effect on the biological resources if it would:

- 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;

- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or US Fish and Wildlife Service;
- 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;
- Interfere substantially with the movement of any resident or migratory fish or wildlife species;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

CEQA Guidelines Section 15380 further provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists if, for example, it is likely to become endangered in the foreseeable future. This includes listed species, rare species (both Federal and California), and species that could reasonably be construed as rare.

a. According to multiple assessments of the site performed by Argonout Ecological Consulting, Inc, the proposed project has the potential to cause a significant impact, either directly or through habitat modifications, on 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. Raptor nests were identified in the large trees along the Enterprise Canal. The study also concluded that ground nesting could be supported in the area. With inclusion of mitigation measures to address the nesting season for raptors and/or burrowing owls, impacts in this category are less than significant.

b. Some disturbed riparian habitat (small willows, mule fat, and cottonwoods, with mixed grassland) does exist along the banks of Dry Creek, west of Sunnyside Avenue. It has historically been disturbed by periodic waterway clearing and maintenance activities, but still supports a largely native riparian and grassland flora and fauna, which includes roosting trees, and nest tree for raptors (both hawks and owls). Tracks indicate that it also represents a heavily used mammalian wildlife travel corridor.

c. The project would not 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. With inclusion of mitigation measures to address possible wetlands, a project level wetland delineation is required for areas that are identified.

d. The project would not interfere 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. Per the assessment provided by Argonaut Ecological Consulting, Inc., the vesting tentative map area is made up of fallow pasture and non-native grassland and has been graded and compacted for various uses. The area was a lowland that held water for several years. Over time, the land was turned and regraded to fill the low areas. A wetland delineation was prepared for the map area and confirms no wetlands remain.

   The Master Plan and currently proposed TM6154, development will not materially alter the sensitive riparian habitat remnant, however future proposed developments, if in the vicinity of Dry Creek, would need to include required mitigation measures (e.g., setbacks and artificial

lighting restrictions) needed to protect the habitat corridor and its wildlife use. A stream protective corridor of at least 100 feet would be adequate and should be provided.

e. There are a number of trees on the project site which are not listed on the protected tree ordinance. Some trees may be on the list and will be preserved or replaced per the Protected Tree Ordinance. The project would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

f. The project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

Mitigation Measures

- **Mitigation Measure 3.4-a1:** Should project construction be scheduled to commence between March and the end of August, a pre-construction survey will be conducted by a qualified biologist for nesting raptors. This survey will occur within 30 days of the on-set of construction. All suitable habitats of the study are will be covered during this survey.
- **Mitigation Measure 3.4-a2:** If pre-construction surveys undertaken during the nesting season locate active nests within or near the construction zones, these nests, and an appropriate zone around them (as determined by a qualified biologist) will remain off limits to construction until the nesting season in over. Suitable setbacks from occupied nests will be established by a qualified biologist and maintained until the conclusion of the nesting season.
- **Mitigation Measure 3.4-a3:** The applicant shall conduct a pre-construction survey to assess any burrowing owl habitat. A licensed biologist will make a recommendation on measures necessary based on the findings of the survey.
- **Mitigation Measure 3.4-c:** A wetland delineation shall be conducted prior to permitting of development within areas described as potential wetland.
- **Mitigation Measure 3.4-d:** Project level habitat assessment for California Tiger Salamander, and Western Pond Turtle shall be conducted to cover areas of concern as identified in the biological survey..

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.5 Cultural Resources *Will the proposal:*				
a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	❒	■	❒	❒
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	❒	❒	■	❒
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	❒	❒	■	❒
d. Disturb any human remains, including those interred outside of formal cemeteries?	❒	❒	■	❒

Environmental Setting

Mitigation Measures in the Clovis General Plan Program Environmental Impact Report, require evaluation of the site for archaeological, paleontological, and historical structure sensitivity. These mitigation measures, which identify archaeological and paleontological levels of sensitivity, list historically important sites identified by the Fresno County Library. The Project is not anticipated to impact any cultural resources; however, the Project could lead to the disturbance of undiscovered archaeological and paleontological resources. General Plan Conservation Element Goal 2, acts to preserve historical resources, and mitigation measures adopted in association with the General Plan PEIR help to reduce potential impacts to a less than significant level. The project was evaluated by First Carbon Solutions who concluded that there are no previously recorded prehistoric or historic sites identified within a .5 mile radius of the project.

Pursuant to requirements of SB18 and AB52, a notification was sent to the Native American Heritage Commission for review with local tribes for cultural significance. Staff did not receive any request for consultation within the 90-day review period.

Impacts

The Project may have a significant impact on cultural resources if it causes substantial adverse changes in the significance of a historical or archaeological resource as set forth by the California Register of Historic Places and Section 106 of the National Historic Preservation Act; directly or indirectly destroys a unique paleontological resource or site or unique geologic feature; or disturbs any human remains, including those interred in formal cemeteries. A cultural study was performed by First Carbon Solutions and concluded that there are no previously recorded prehistoric or historic sites identified within a .5 mile radius of the project.

a. A cultural Resource Assessment was conducted by Peak & Associates (January 17, 2018), to study the entire Dry Creek Master Plan area. The surveyor was not able to gain access to the entire area, but able to make conclusions based on several factors including visual, interviews, and historical documents. The assessment concluded that the proposed vesting tentative map area would not cause a substantial adverse change in the significance of a historical resource as defined in §15064.5 of the CEQA Guidelines. There are no known historical resources that will be impacted by the map. However, due to lack of access, it is recommended that a project level assessment is conducted with each project in the areas not covered by cultural resource surveys.

b&c. The proposed Project is not anticipated to cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5 of the CEQA Guidelines or directly or indirectly destroy a unique paleontological resource or site or unique geological features. There are no known archaeological or paleontological resources located in the areas of construction. These areas have been previously disturbed with previous agriculture activity; however with ground disturbance there is chance that previously undiscovered archaeological and/or paleontological resources could be uncovered. The Project is subject to Standard Environmental Measure 6: Measures to Protect Undiscovered Cultural Resources. Therefore, impacts will be less than significant.

d. The site has not been identified as containing areas where human remains may be located. However, California Public Resources Code Section 5097.98, provides procedures in case of accidental finds. Should any human remains be discovered at any time, all work is to stop and the County Coroner must also be immediately notified pursuant to California Health and Safety Code, Section 7050.5 and California Public Resources Code, Section 5097.98. If the remains are determined to be Native American, guidelines of the Native American Heritage Commission shall be adhered to in the treatment and disposition of the remains.

Mitigation Measures

- **Mitigation Measure 3.5-a:** Project level studies shall be conducted before approval of specific projects on properties not previously covered by cultural resource studies. The studies shall research field surveys, and recordation and evaluation of any resources.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.6 Geology and Soils *Will the Project:*				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
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?	❒	❒	❒	■
ii) Strong seismic ground shaking?	❒	❒	❒	■
iii)Seismic-related ground failure, including liquefaction?	❒	❒	❒	■
iv)Landslides?	❒	❒	❒	■
b Result in substantial soil erosion or the loss of topsoil?	❒	❒	❒	■
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?	❒	❒	❒	■
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?	❒	❒	❒	■
e. Have soils incapable of adequately supporting the use of septic tanks or alternative waste disposal systems where sewers are not available for the disposal of wastewater?	❒	❒	❒	■

Environmental Setting

The General Plan EIR identified no geologic hazards or unstable soil conditions known to exist on the Project site. There are several known faults that exist close enough to the Project to cause potential damage to structures or individuals. The City of Clovis has adopted the California Building Code to govern all construction within the City, further reducing potential impacts in this category by ensuring that development is designed to withstand seismic or other geologic hazards.

Impacts

The Project may result in significant earth impacts if it causes substantial erosion or siltation; exposes people and structures to geologic hazards or risk from faults, landslides, unstable soil conditions, etc.; or substantially alters the natural topography or a unique geological or physical feature. Grading that disturbs large amounts of land or sensitive grading areas (e.g. slopes in excess of 20 percent, intermittent drainages) may cause substantial erosion or siltation.

a. No known faults with evidence of historic activity cut through the valley soils in the Project vicinity. The major active faults and fault zones occur at some distance to the east, west, and south of the Project site, the closest fault being approximately 62 miles to the southwest. Due to the geology of the Project area and its distance from active faults, the potential for loss of life, property damage, ground settlement, or liquefaction to occur in the Project vicinity is considered minimal.

   Ground shaking generally decreases with distance and increases with the depth of unconsolidated alluvial deposits. The most likely source of potential ground shaking is attributed to the San Andreas, Owens Valley, and the White Wolf faults. Based on this premise, and taking into account the distance to the causative faults, the potential for ground motion in the vicinity of the Project site is such that a minimal risk can be assigned.

   Liquefaction describes a phenomenon in which a saturated soil loses strength during an earthquake as a result of induced shearing strains. Lateral and vertical movement of the soil mass, combined with loss of bearing usually results. Loose sand, high groundwater conditions (where the water table is less than 30 feet below the surface), higher intensity earthquakes, and particularly long duration of ground shaking are the requisite conditions for liquefaction. Studies indicate that the soil types are not conducive to liquefaction (General Plan, Page 7-6 and General Plan EIR, Page 4-5).

   Landslides and mudflows are more likely in foothill and mountain areas where fractured and steep slopes are present (as in the Sierra Nevada Mountains). The Project is located on relatively flat topography, therefore the Project will not result in or expose people to potential impacts from landslides or mudflows.

b. Construction of urban uses would create changes in absorption rates, drainage patterns, and the rate and amount of surface runoff on the selected Project site. Standard construction practices that comply with City of Clovis ordinances and regulations, the California Building Code, and professional engineering designs approved by the Clovis Engineering Division will mitigate any potential impacts from development, if any.

c. The Project site would not 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 off-site landslide, lateral spreading, subsidence, liquefaction or collapse.

d. The Project will not result in or expose people to potential impacts from expansive soils.

e. The City of Clovis provides necessary sewer and water systems for development within the City. The Project will not utilize septic tanks or alternate waste disposal.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.7 Greenhouse Gas Emissions *Will the proposal:*				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	❒	❒	■	❒
b. Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases?	❒	❒	■	❒

Environmental Setting

Gases that trap heat in the atmosphere are referred to as greenhouse gases (GHGs) because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHG's has been implicated as a driving force for global climate change. Definitions of climate change vary between and across regulatory authorities and the scientific community, but in general can be described as the changing of the earth's climate caused by natural fluctuations and anthropogenic activities which alter the composition of the global atmosphere.

Individual Projects contribute to the cumulative effects of climate change by emitting GHGs during construction and operational phases. The principal GHGs are carbon dioxide, methane, nitrous oxide, ozone, and water vapor. While the presence of the primary GHGs in the atmosphere are naturally occurring, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) are largely emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Carbon dioxide is the "reference gas" for climate change, meaning that emissions of GHGs are typically reported in "carbon dioxide-equivalent" measures. Emissions of carbon dioxide are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs, with much greater heat-absorption potential than carbon dioxide, include hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes.

There is international scientific consensus that human-caused increases in GHGs have and will continue to contribute to global warming, although there is uncertainty concerning the magnitude and rate of the warming. Potential global warming impacts in California may include, but are not limited to, loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years.[1] Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.

In 2005, in recognition of California's vulnerability to the effects of climate change, Governor Schwarzenegger established Executive Order S-3-05, which sets forth a series of target dates by which statewide emission of greenhouse gases (GHG) would be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels; by 2020, reduce GHG emissions to 1990 levels; and by 2050, reduce GHG emissions to 80 percent below 1990 levels. In 2006, California passed the California

[1] California Air Resources Board (ARB), 2006, Climate Change website. (http://www.arb.ca.gov/cc/120106workshop/intropres12106.pdf).

Global Warming Solutions Act of 2006 (AB 32), which requires the California Air Resources Board (CARB) to design and implement emission limits, regulations, and other measures, such that feasible and cost-effective statewide GHG emissions are reduced to 1990 levels by 2020 (representing a 25 percent reduction in emissions).

In April 2009, the California Office of Planning and Research published proposed revisions to the California Environmental Quality Act to address GHG emissions. The amendments to CEQA indicate the following:

- Climate action plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.
- Local governments are encouraged to quantify the greenhouse gas emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.
- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.
- New amendments include guidelines for determining methods to mitigate the effects of greenhouse gas emissions in Appendix F of the CEQA Guidelines.
- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation."
- OPR's emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.
- Environmental impact reports (EIRs) must specifically consider a project's energy use and energy efficiency potential.

On December 30, 2009, the Natural Resources Agency adopted the proposed amendments to the CEQA Guidelines in the California Code of Regulations.

In December 2009, the San Joaquin Valley Air Pollution Control District (SJVAPCD) adopted guidance for addressing GHG impacts in its *Guidance for Valley Land Use Agencies in Addressing GHG Impacts for New Projects Under CEQA*. The guidance relies on performance-based standards, otherwise known as Best Performance Standards (BPS), to assess significance of project-specific GHG emissions on global climate change during the environmental review process. Projects can reduce their GHG emission impacts to a less than significant level by implementing BPS. Projects can also demonstrate compliance with the requirements of AB 32 by demonstrating that their emissions achieve a 29% reduction below "business as usual" (BAU) levels. BAU is a projected GHG emissions inventory assuming no change in existing business practices and without considering implementation of any GHG emission reduction measures.

Significance Criteria

The SJVAPCD's *Guidance for Valley Land Use Agencies in Addressing GHG Impacts for New Projects Under CEQA* provides initial screening criteria for climate change analyses, as well as draft guidance for the determination of significance.

The effects of project-specific GHG emissions are cumulative, and therefore climate change impacts are addressed as a cumulative, rather than a direct, impact. The guidance for determining significance of impacts has been developed from the requirements of AB 32. The guideline addresses the potential cumulative impacts that a project's GHG emissions could have on climate change. Since climate change is a global phenomenon, no direct impact would be identified for an individual land development project. The following criteria are used to evaluate whether a project would result in a significant impact for climate change impacts:

- Does the project comply with an adopted statewide, regional, or local plan for reduction or mitigation of GHG emissions? If no, then
- Does the project achieve 29% GHG reductions by using approved Best Performance Standards? If no, then
- Does the project achieve AB 32 targeted 29% GHG emission reductions compared with BAU?

Projects that meet one of these guidelines would have less than significant impact on the global climate.

Because BPS have not yet been adopted and identified for specific development projects, and because neither the ARB nor the City of Clovis has not yet adopted a plan for reduction of GHG with which the Project can demonstrate compliance, the goal of 29% below BAU for emissions of GHG has been used as a threshold of significance for this analysis.

A global climate change evaluation was performed by First Carbon Solutions, dated April 28, 2016. The evaluation concluded that the project is consistent with the goals of the ARB and impact is less than significant.

Impacts

a. A significance threshold of 29% below "business as usual" levels is considered to demonstrate that a project would be consistent with the goals of AB 32. A global climate change evaluation was performed by First Carbon Solutions. The study concludes that impacts related to conflicts with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases is less than significant.

b. A Global Climate Change Evaluation was prepared for the Project by First Carbon Solutions. The evaluation addresses the potential for greenhouse gas emissions during construction and after full build out of the proposed Project.

   GHG emissions were calculated for BAU conditions and for conditions with implementation of GHG emission reduction project design features proposed by the Project applicants. The study concludes that the proposed Project would not result in any direct impacts to the global climate, and cumulative impacts would be less than significant.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.8 Hazards and Hazardous Materials *Will the Project:*				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	❒	❒	❒	■
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?	❒	❒	■	❒
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	❒	❒	■	❒
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?	❒	❒	❒	■
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?	❒	❒	❒	■
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?	❒	❒	❒	■
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	❒	❒	■	❒
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?	❒	❒	❒	■

Environmental Setting

The General Plan Environmental Safety Element Policies were adopted to reduce the potential safety risks associated with hazardous materials and urban development. The proposed Project does not involve activities related to the handling or transport of hazardous materials other than substances to be used during construction. The Project does not involve the construction or operation of hazardous material facilities.

Further, the Project site is not listed as part of the State of California's Hazardous Waste and Substances Site List. Field review by City staff did not identify any obvious signs of contamination.

Impacts

a. Based on field review, no signs of potential contamination or hazardous materials were identified. Thus, no hazard issues are expected with this development of this site. Any hazardous materials used would be required to comply with all applicable local, state, and federal standards associated with the handling of hazardous materials. Therefore, there are no impacts anticipated in the category.

b. Construction activities that could involve the release of hazardous materials associated with Project would include maintenance of on-site construction equipment, which could lead to minor fuel and oil spills. The use and handling of hazardous materials during construction activities would occur in accordance with applicable federal, state, and local laws. Therefore, these impacts are considered less than significant.

c. There is a future school facility located within one-half (0.5) mile of the Project area. Based on field review, no signs of potential contamination or hazardous materials were identified. Thus, no hazard issues are expected with this development of this site.

d. The land within the Project site is not included on a list of hazardous materials sites. The Department of Toxic Substances Control's Hazardous Waste and Substances Site List (Cortese List) does not list any hazardous waste and substances sites within the City of Clovis (www.dtsc.ca.gov/database/Calsites/Cortese_List.cfm).

e. The Project site is not located within the Fresno-Yosemite International Airport land use plan or, within two miles of a public airport or public use airport. The proposed Project would not bring about a safety hazard related to an airport or aviation activities for people residing or working in the Project area.

f. The Project site is not located within the vicinity of a private airstrip, and would not result in a safety hazard for people residing or working in the Project vicinity related to an airstrip or aviation activities.

g. There may be temporary detouring of traffic during construction periods. Those periods will be monitored by traffic personnel. However, the proposed Project would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.

h. The Project site is located in an area surrounded by urban uses. As such, the site is not adjacent to or in close proximity to wildland areas. No impacts are anticipated.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.9 Hydrology and Water Quality *Will the proposal result in:*				
a. Violate any water quality standards or waste discharge requirements?	❒	❒	■	❒
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)?	❒	❒	■	❒
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?	❒	❒	■	❒
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 that would result in flooding on- or off-site?	❒	❒	■	❒
e. 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?	❒	❒	■	❒
f. Otherwise substantially degrade water quality?	❒	❒	■	❒
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?	❒	❒	■	❒
h. Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	❒	❒	■	❒
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?	❒	❒	■	❒
j. Inundation by seiche, tsunami, or mudflow?	❒	❒	❒	■

Environmental Setting

The General Plan Area is within the drainages of three streams: Dry Creek, Dog Creek, and Redbank Slough. On the north, Dry Creek discharges into the Herndon Canal in the City of Fresno west of Clovis. South of Dry Creek, Dog Creek is a tributary of Redbank Slough, which discharges into Mill Ditch south of Clovis (USGS 2012). A network of storm drains in the City and the Plan Area discharges into 31 retention basins, most of which provide drainage for a one- to two-square-mile area. Most of the Plan Area east and northeast of the City is not in drainage areas served by retention basins. Those areas drain to streams that discharge into reservoirs, including Big Dry Creek Reservoir in the north-central part of the Plan Area and Redbank Creek Dam and Reservoir in the southeast part of the Plan Area. Fancher Creek Dam and Reservoir are near the east Plan Area boundary.

Detention and retention basins in the FMFCD's flood control system are sized to accommodate stormwater from each basin's drainage area in buildout condition. The current capacity standard for FMFCD basins is to contain runoff from six inches of rainfall during a ten-day period and to infiltrate about 75 to 80 percent of annual rainfall into the groundwater basin (Rourke 2014). Basins are highly effective at reducing average concentrations of a broad range of contaminants, including several polyaromatic hydrocarbons, total suspended solids, and most metals (FMFCD 2013). Pollutants are removed by filtration through soil, and thus don't reach the groundwater aquifer (FMFCD 2014). Basins are built to design criteria exceeding statewide Standard Urban Stormwater Mitigation Plan (SUSMP) standards (FMFCD 2013). The urban flood control system provides treatment for all types of development—not just the specific categories of development defined in a SUSMP—thus providing greater water quality protection for surface water and groundwater than does a SUSMP.

In addition to their flood control and water quality functions, many FMFCD basins are used for groundwater recharge with imported surface water during the dry season through contracts with the Fresno Irrigation District (FID) and the cities of Fresno and Clovis; such recharge totaled 29,575 acre feet during calendar year 2012 (FMFCD 2013).

The pipeline collection system in the urban flood control system is designed to convey the peak flow rate from a two-year storm.

Most drainage areas in the urban flood control system do not discharge to other water bodies, and drain mostly through infiltration into groundwater. When necessary, FMFCD can move water from a basin in one such drainage area to a second such basin by pumping water into a street and letting water flow in curb and gutter to a storm drain inlet in an adjoining drainage area (Rourke 2014). Two FMFCD drainage areas discharge directly to the San Joaquin River, and three to an irrigation canal, without storage in a basin. Six drainage areas containing basins discharge to the San Joaquin River, and another 39 basins discharge to canals (FMFCD 2013).

A proposed development that would construct more impervious area on its project site than the affected detention/retention basin is sized to accommodate is required to infiltrate some stormwater onsite, such as through an onsite detention basin or drainage swales (Rourke 2014).

The Big Dry Creek Reservoir has a total storage capacity of about 30 thousand acre-feet (taf) and controls up to 230-year flood flows. Fancher Creek Dam and Reservoir hold up to 9.7 taf and controls up to 200-year flood flows. Redbank Creek Dam and Reservoir hold up to 1 taf and controls up to 200-year flood flows.

Groundwater

Clovis is underlain by the Kings Groundwater Basin that spans 1,530 square miles of central Fresno County and small areas of northern Kings and Tulare counties. Figure 5.9-4, *Kings Groundwater Basin*, shows that the basin is bounded on the north by the San Joaquin River, on the west by the Delta-Mendota and Westside Subbasins, the south by the Kings River South Fork and the Empire West Side Irrigation District, and on the east by the Sierra Nevada foothills. Depth to groundwater in 2012 ranged from 160 feet along the west City boundary to 70 feet at the east City boundary, 25 feet at the southeast SOI boundary, and about 20 feet at the eastern Plan Area boundary (FID 2013). The Kings Subbasin has been identified as critically overdrafted (Provost & Pritchard 2011).

In the Plan Area, groundwater levels are monitored by the City of Clovis and FID. The area has not experienced land subsidence due to groundwater pumping since the early 1900s (FID 2006). Subsidence occurs when underground water or natural resources (e.g., oil) are pumped to the extent that the ground elevation lowers. No significant land subsidence is known to have occurred in the last 50 years as a result of land development, water resources development, groundwater pumping, or oil drilling (FID 2006). Regional ground subsidence in the Plan Area was mapped as less than one foot by the US Geological Survey in 1999 (Galloway and Riley 1999). However, groundwater levels in the San Joaquin Valley are forecast to hit an all-time low in 2014 (UCCHM 2014).

Groundwater Recharge

New development in accordance with the General Plan Update would increase the amount of impervious surface in the Plan Area, potentially affecting the amount of surface water that filters into the groundwater supply. Groundwater levels are monitored in the Plan Area by the FID and the City of Clovis. As described in the 2010 City of Clovis Urban Water Management Plan (UWMP), groundwater recharge occurs both naturally and artificially throughout the City. The Kings Groundwater Basin area is recharged through a joint effort between the Cities of Clovis and Fresno and the FID (CDWR 2006). Approximately 8,400 acre-feet per year (afy) of water are intentionally recharged into the Kings Groundwater Basin by the City of Clovis, and approximately 7,700 afy of water naturally flow into groundwater in the City's boundaries (Clovis 2011).

The FMFCD urban stormwater drainage system would provide groundwater infiltration for runoff from developed land uses in detention basins in the drainage system service area. The process of expansion of the FMFCD urban storm drainage system is explained above under the analysis of the 2035 Scenario under Impact 5.9-1.

Projects pursuant to the proposed General Plan Update and developed outside of the FMFCD urban stormwater drainage system would be required to meet the requirements of NPDES regulations, including the implementation of BMPs to improve water retention and vegetation on project sites.

Impacts

The proposed Project may result in significant impacts if it would violate any water quality standards or waste discharge requirements; substantially deplete groundwater supplies or interfere substantially with ground water recharge; substantially alter the existing drainage pattern if the site; substantially increase the rate or amount of surface runoff; exceed the existing or planed storm water drainage system; provide substantial additional sources of polluted runoff; degrade water quality; place housing or structures within a 100-year flood hazard area; expose people or structures to risks of flooding; and inundation from seiche, tsunami, or mudflow.

The General Plan Program Environmental Impact Report identified significant and unavoidable impacts for both the 2035 scenario and full build-out of the General Plan Area and statement of overriding considerations was adopted.

a. Development of the Project site would be required to comply with all City of Clovis ordinances and standard practices which assure proper grading and storm water drainage into the approved storm water systems. The Project would also be required to comply with Fresno County Health Department requirements, FMFCD regulations, and all local, state, and federal regulations to prevent any violation of water quality standards or waste discharge requirements. This project would not violate any water quality standards or waste discharge requirements.

b. The Project would not deplete groundwater supplies or interfere with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level due to the Project. The General Plan Program EIR identified a net decrease in ground water aquifer throughout the region, however, because the City's domestic water system is primarily served through surface water via existing water entitlements, the loss of aquifer is less than significant. The City has developed a surface water treatment plant (opened in June, 2004) that reduces the need for pumped groundwater, and has also expanded the municipal groundwater recharge facility. New City development in the area would be required to utilize surface water through the City's domestic water lines. The Projects impacts to groundwater are less than significant.

c. The Project would not alter the existing drainage pattern of the site or area 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. Any development within a flood zone would require building pads to be elevated per Fresno Metropolitan Flood Control and Federal Emergency Management Agency polices. Therefore, impacts are less than significant.

d. The Project would not 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 that would result in flooding on or off-site. Any development within a flood zone would require building pads to be elevated per Fresno Metropolitan Flood Control and Federal Emergency Management Agency polices. Therefore, impacts are less than significant.

e, f. The proposed Project would add new impervious surfaces. These new surfaces would not significantly change absorption rates or drainage patterns that would result in a significant impact. Construction-related activates could result in degradation to water quality. Construction activities typically involve machines that have the potential to leak hazardous materials that may include oil and gasoline.

g. Development within the Dry Creek Preserve Master Plan area could place housing within a 100-year flood hazard area as mapped on the latest federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map. The Fresno Metropolitan Flood Control District has policies in place to address projects within a 100-year flood hazard area. A letter from the FMFCD dated January 26, 2018, states that the tract map (TM6154) does not appear to be within a 100 year flood zone.

h. Development within the Dry Creek Preserve Master Plan area could place within a 100-year flood hazard area structures that would impede or redirect flood flows. The Fresno Metropolitan Flood Control District has policies in place to address projects within a 100-year flood hazard area. The FMFCD has noted that this project may be located in a 100-year flood area, and would be subject to the District policies to reduce impacts to a less than significant level. A letter from the FMFCD dated January 26, 2018, states that the tract map (TM6154) does not appear to be within a 100 year flood zone.

i. The Project would not 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. The Enterprise canal runs adjacent to the north boundary of the project. The high water mark is above the current grade of the properties. The project area could be impacted with flood water if a breach in the canal bank occurs. The Fresno Irrigation has standards which require the developer to line the canal or encase within a culvert. The developer will be required to comply with Fresno irrigation District standards to provide a detailed plan prior to permits.

j. The Project is not located near any ocean, coast, or seiche hazard areas and would not involve the development of residential or other sensitive land uses. Therefore, the Project would not expose people to potential impacts involving seiche or tsunami. No potential for mudflows is anticipated. There is no impact associated with the proposed Project.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.10 Land Use and Planning *Will the proposal:*				
a. Physically divide an established community?	❒	❒	■	❒
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?	❒	❒	■	❒
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	❒	❒	❒	■

Environmental Setting

The proposed Project is located within the City of Clovis Sphere of Influence, in the County of Fresno. The proposed Project site is located near the northwest corner of Teague and Fowler Avenue. The proposed General Plan Amendment, Prezone and Vesting Tentative Tract Map are generally bounded by Fowler Avenue on the east, Teague Avenue on the south, The Enterprise Canal on the north and Rural residential properties on the west (see Figure 1). The General Plan requires a master plan to be developed with any development within the 795 acre County area described as Focus Area 7. Focus Area 7 is generally bounded by Nees Avenue on the south, Big Dry Creek on the west, Enterprise Canal on the east, and Shepherd Avenue on the north.

The Project consists of a request to re-designate approximately 48.61 acres from Rural Residential (1 unit per 2 acres) to Low Residential (2.1 to 4 lots per acre), prezone approximately 48.61 acres from the County R-R (Rural Residential) Zone District to the R-1 (Single-Family Residential) Zone District, prezone approximately 9.52 acres from the County R-R Zone District to the City R-R Zone District, approve a master plan for Focus Area 7, approve a vesting tentative tract map for a 95-lot single-family subdivision, and annex 58.13 acres for properties at the northwest corner of Teague and Fowler Avenues in the County of Fresno.

For purposes of this analysis, an assumption has been made that approximately 150 acres may develop at a density 2.3 units per acre which equates to approximately 345 lots.

Amendments to change the density require a General Plan Amendment filed through the City of Clovis and any such approval would be followed by annexation of the Project from the County of Fresno to the City of Clovis through the LAFCo.

Impacts

The proposed Project may result in significant impacts if it physically divides an established community, conflicts with existing off-site land uses, causes substantial adverse change in the types or intensity of existing or planned land use patterns, or conflicts with any applicable City land use plan, policy or regulation.

a. The Project is located within a County area within the Sphere of Influence of Clovis. It is assumed that over time the County area would be annexed to the City of Clovis to provide for infrastructure necessary to accommodate urbanization of the area as well as connect the northwest growth area to the heart of Clovis. An annexation program is included in the Master Plan to project the scenarios over the next 20 years. The Project would not divide an established community, rather enhance the ability to develop Clovis as a seamless community.

b. The proposal to increase the density within the Sphere of Influence is not consistent with land use designation as provided in the General Plan. However the goals and Policies of the General Plan encourage a range of housing opportunities, and neighborhoods with a strong sense of place. The proposal to increase density and establish a master plan of Focus Area 7 will provide a diversity of housing and provide for branding of the County area.

c. There are no habitat conservation plans or natural community conservation plans within the City of Clovis Sphere of Influence.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.11 Mineral Resources *Will the proposal:*				
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?	❒	❒	❒	■
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?	❒	❒	❒	■

Environmental Setting

The Clovis General Plan states, "The Clovis Project area does not contain those mineral resources that require managed production, according to the State Mining and Geology Board"

Impacts

The Project would create significant impacts if it results in the loss of availability of a known mineral resource with future value.

a-b. The proposed Project would not use or extract any mineral or energy resources and would not restrict access to known mineral resource areas.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.12 Noise *Will the proposal result in:*				
a. 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?	❒	❒	■	❒
b. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	❒	❒	■	❒
c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	❒	❒	■	❒
d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	❒	❒	■	❒
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?	❒	❒	■	❒
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?	❒	❒	❒	■

Environmental Setting

The ambient noise environment in the immediate Project vicinity is defined primarily by local traffic, animals, residents and natural noise associated with a rural residential environment. The Clovis Development Code (Section 9.22.080) sets forth land use compatibility criteria for various community noise levels.

Impacts

CEQA guidelines, the City of Clovis General Plan Noise Element, and the Clovis Development Code

have been used to establish impact standards for this section. Implementation of the Project would result in significant noise impacts if the Project would result in exposure of persons to or generation of noise levels in excess of standards established in the City of Clovis General Plan and Development Code. For this Project, the standards to be applied are 65 CNEL at existing residences in the Project vicinity, and 65 CNEL for the park area.

a. The construction of the proposed Project may result in temporary construction-related noise impacts. Construction noise would be short-term in nature and only occur for a limited duration. These impacts have been addressed in the General Plan PEIR. The development of the tentative map would place housing and rear yards along the Fowler Avenue Arterial. Noise levels from Fowler Avenue may impact residents. The developer is required to construct a six-foot high masonry all along the back yards along Fowler Avenue, and is also provide an additional 15 feet of landscape on the east side of the wall. Impacts are less than significant.

b. Potential groundborne vibration or groundborne noise levels would most likely occur as part of construction activities associated with the Project. The construction activities would be temporary in nature and no persons would be exposed for extended periods of time.

c. The proposed Project could result in a permanent increase in the ambient noise levels due to increased traffic, population and equipment related to a single-family development. Traffic noise was previously evaluated with the General Plan PEIR with assumptions that Fowler and Sunnyside Avenues would be major connecting streets from north to south.

d. A temporary increase in ambient noise levels would occur in association with construction activities. However, construction noise would be short-term in nature and only occur for a limited duration per the City of Clovis Municipal Code.

e. The proposed Project site is not located within an airport land use plan area. The proposed Project site is approximately one mile north of the Fresno Yosemite International Airport. The Noise Element specifies that residential land uses are considered normally acceptable in exterior noise levels of up to 65CNEL without the need for noise mitigation.

f. The Project is not located within the vicinity of a private airstrip.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.13 Population and Housing *Would the Project:*				
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)?	❒	❒	■	❒
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	❒	❒	❒	■
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	❒	❒	■	❒

Environmental Setting

The Project consists of a request to re-designate approximately 48.61 acres from Rural Residential (1 unit per 2 acres) to Low Residential (2.1 to 4 lots per acre), prezone approximately 48.61 acres from the County R-R (Rural Residential) Zone District to the R-1 (Single-Family Residential) Zone District, prezone approximately 9.52 acres from the County R-R Zone District to the City R-R Zone District, approve a master plan for Focus Area 7, approve a vesting tentative tract map for a 95-lot single-family subdivision, and annex 58.13 acres for properties at the northwest corner of Teague and Fowler Avenues in the County of Fresno.

For purposes of this analysis, an assumption has been made that approximately 150 acres may develop at a density 2.3 units per acre which equates to an approximately 345 lots.

Impacts

The Project may result in significant impacts if it induces substantial growth, displaces a large number of people, or contributes to a job-housing imbalance.

a. The Project could add 95 homes to the area equating to approximately 270 new residents. It is anticipated that this development would introduce a number of new citizens to the City of Clovis, however according to a letter dated April 4, 2016, from the Clovis Unified School District, the District can accommodate students as a result of the Project.

b-c. The Project includes a few existing homes in which property owners have requested inclusion into the Project. Property owners in the project area volunteered to sell the homes by choice, therefore not creating a substantial dispersion of housing and if approved, the Project would generate an increase in housing product to infill the area.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.14 Public Services *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:*				
a. Fire protection?	❒	❒	■	❒
b. Police protection?	❒	❒	■	❒
c. Schools?	❒	❒	■	❒
d. Parks?	❒	❒	■	❒
e. Other public facilities?	❒	❒	■	❒

Environmental Setting

The Project consists of a request to re-designate approximately 48.61 acres from Rural Residential (1 unit per 2 acres) to Low Residential (2.1 to 4 lots per acre), prezone approximately 48.61 acres from the County R-R (Rural Residential) Zone District to the R-1 (Single-Family Residential) Zone District, prezone approximately 9.52 acres from the County R-R Zone District to the City R-R Zone District, approve a master plan for Focus Area 7, approve a vesting tentative tract map for a 95-lot single-family subdivision, and annex 58.13 acres for properties at the northwest corner of Teague and Fowler Avenues in the County of Fresno.

The development of the site will necessitate the demolition of structures, wells and septic systems, and removal of several trees. The Project will also include site grading, installation of off-site improvements including right-of-way acquisition, and infrastructure to accommodate a 95-lot single-family planned residential development with landscaping, and street improvements. The Project will be required to be annexed from the County of Fresno to the City of Clovis and detachment from the Fresno County Fire Protection District and the Kings River Conservation District.

The Project is located within an area which remains in the County of Fresno but within the Clovis Sphere of Influence. The County area is approximately 795 acres and is described as Focus Area 7 in the General Plan. The General Plan describes the land use as rural residential which permits one unit per two acres. The General Plan also requires a master plan to be developed as part of the first development to be requested in Focus Area 7. The Project includes a master plan which provides a branding for the area and memorializes the land use designations.

For purposes of this analysis, an assumption has been made that approximately 150 acres may develop at a density 2.3 units per acre which equates to an approximately 345 lots. This document as well as the supporting studies have considered the cumulative impacts related to a buildout of the County area using this assumption.

Safety services for the area is served primarily by Fresno County Fire and Fresno County Sheriff with mutual aid from City of Clovis. Water and sewer for each property are currently being served with on-site wells and septic systems. Annexation of the Project would place the City of Clovis Fire and Police Departments as the primary safety services with mutual aid from Fresno County. The area is within the Clovis Unified School District boundaries. The Clovis Unified School District has indicated that their schools can accommodate the projected growth.

Impacts

The Project may result in significant public service impacts if it substantially and adversely alters the delivery or provision of fire protection, police protection, schools, facilities maintenance, and other governmental services.

a. The Project will have a less than significant increase in demand for fire protection services. In the event that a fire occurs during construction, the Clovis Fire Department would respond. First response would generally come from Fire Station No. 3 and 5, which are both within 2 miles of the Focus Area, Fresno County Fire Station No. 85 is south of Nees within .2 mile of the area and would provide mutual aid. No additional personnel or equipment would be needed as a result of the Project. In the event a development is approved with privacy gates, the Fire Department would require all entry gates to meet Fire Department Standards. The circulation system within the Dry Creek preserve area is adequate to provide emergency vehicle access within the Department's target response times.

b. The project is located near the northern area of the City and within the Community Facilities District (CFD). The CFD is an assessment district designed to provide additional funding for safety services for residential development in Clovis' growth areas. The Police Department states that this area is already served through mutual aid and can provide superior response time for new development. Additionally, improved streets with wider lanes, defined traffic control and street lighting will provide safer intersections.

c. The Project site is located within the Clovis Unified School District. The Clovis Unified School District levies a fee for residential facilities. According to a letter from the Clovis Unified School District, dated April 4, 2016, the District can accommodate the new students as a result of additional housing.

d. Development of this site with 95 single-family homes will introduce new residents to the community. The Parks and Recreation Element of the General Plan requires a specific ratio of park area to residents. A park impact fee is required for each new unit and is then used to construct community parks to meet these goals. The impacts in this category are less than significant since all units built in this subdivision will contribute to the park funds. There are no neighborhood parks included in General Plan for this area, however there are community parks and trails within walking and biking distance of the Focus Area.

e. The City of Clovis will eventually annex this County area resulting in higher demand on Clovis public services. As the demand increases, the impact to public facilities will increase as well. The City anticipates growth throughout the Sphere of Influence and budgets for maintenance of existing facilities as well as expansion. The development of the tentative map as well as future urbanization in the area will not have a significant impact to public facilities. Buildout of the Dry Creek Preserve area at a Rural Residential density will have a less than significant impact. The Master Plan limits future development with specific criteria to no more than 2.3 units per acre. Any development at a density of more than one unit per two acres would require a General Plan Amendment, including a specific analysis to determine public service impacts. As development occurs, each project will contribute a proportionate share toward street and infrastructure improvements.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.15 Recreation *Will the proposal:*				
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?	❒	❒	■	❒
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	❒	❒	❒	■

Environmental Setting

The proposed Project includes 95 new residential units which will add users to City parks and facilities. There are over 150 acres within Focus Area 7 which may develop at 2.3 units per acre, resulting in an additional 345 lots. The City of Clovis has several neighborhood and community parks as well as recreation facilities to serve the growing community.

Impacts

The Project may create significant impacts if it creates demand for new expanded parks and recreation facilities, or substantially affects existing recreational opportunities.

a-b. The proposed Project would not 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, require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment. It is anticipated that the 20-year buildout of the Dry Creek Preserve Area could (would require a General Plan Amendment) include approximately 150 acres which equates to 345 new homes and 1,000 people. The introduction of 1000 people in an area of 795 acres would be a less than significant impact.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.16 Transportation/Circulation *Will the proposal result in:*				
a. Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designed in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	❒	❒	■	❒
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?	❒	❒	■	❒
c. Result in a change in traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	❒	❒	■	❒
d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	❒	❒	■	❒
e. Result in inadequate emergency access?	❒	❒	■	❒
f. Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	❒	❒	❒	■

Environmental Setting

The Project consists of a request to re-designate approximately 48.61 acres from Rural Residential (1 unit per 2 acres) to Low Residential (2.1 to 4 lots per acre), prezone approximately 48.61 acres from the County R-R (Rural Residential) Zone District to the R-1 (Single-Family Residential) Zone District, prezone approximately 9.52 acres from the County R-R Zone District to the City R-R Zone District, approve a master plan for Focus Area 7, approve a vesting tentative tract map for a 95-lot single-family subdivision, and annex 58.13 acres for properties at the northwest corner of Teague and Fowler Avenues in the County of Fresno.

During the initial review of the Project, it was brought to staff's attention that there are a number of properties outside the proposed Vesting Tentative Map area (within the County area) that are either owned by developers, in contract with developers, or in discussion with other developers for future development at a higher density than the existing Rural Residential designation. There is currently one map in process as part of this Project and it is important to assume that there may be other development requests in the future. Because this is a County area surrounded almost completely by

the City of Clovis, infrastructure such as sewer, water, and streets will need to be designed to connect Clovis' growth areas to the north. As a County area, there are no taxes or fees collected to support infrastructure to, from or through the area.

For purposes of this analysis, an assumption has been made that approximately 150 acres may develop at a density 2.3 units per acre which equates to approximately 345 lots. This document as well as the supporting studies have considered the cumulative impacts related to a buildout of the County area using this assumption.

A traffic analysis was conducted by Peters Traffic Engineers for the entire Dry Creek Preserve area and considering cumulative impacts with nearby projects as well Heritage Grove Urban Growth Area to the north. The study concluded that development at 2.3 units per acre within the Dry Creek preserve will not impact streets beyond significant thresholds. The study also concluded that traffic will increase on Sunnyside and Fowler Avenues even if additional development did not occur with the Dry Creek Preserve. Most of the traffic impacts are pass thru drivers heading north or south of the area. The current travel lanes can accommodate the current and future traffic and major streets would be improved as development occurs along the frontage.

Roadways are the primary existing transportation facilities in the vicinity of the Project area. Although, non-automobile travel does occur in the area, separate facilities for transit, bicycles, or pedestrians are limited. The General Plan and Herndon Shepherd Specific Plan classify major streets in the area as well as designate where bike lanes and pedestrian paths will occur. Implementation of improvements generally occur with development or in the case of streets within County areas, through government funded projects in cooperation with the County.

Impacts

The Project may result in significant transportation/circulation impacts if it:

- Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designed in a general plan policy,
- Conflict with an applicable congestion management program
- Result in a change in traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks
- Substantially increase hazards due to a design feature
- Result in inadequate emergency access
- Conflict with adopted policies, plans, or programs supporting alternative transportation

a. The site is currently designated Rural Residential. The Project proposal includes a 95-lot single-family development and potential higher density development within Focus Area 7, which will introduce additional traffic to the area. Peters Traffic Engineers, analyzed the impacts of the vesting tentative map including the assumption that 150 acres or more could develop at a higher density up to 2.3 units per acre. The analysis also considered additional growth in areas around the Dry Creek Preserve at a normal pace. Peters Traffic engineers concluded that the current and proposed improvements with the project can be accommodated with the proposed and required improvements to the circulation system.

b. Peters Traffic Engineers, analyzed the Project including the assumption that 150 acres or more could develop at a higher density up to 2.3 units per acre. The analysis also considered additional growth in areas around the Dry Creek Preserve at a normal pace, and concluded that the current and proposed improvements with the project can accommodate the additional traffic and the Project will not have a significant impact on service levels in or around the area. Traffic will increase on surrounding streets but will not cause substantial safety risks.

c. The proposed Project may result in a temporary change in traffic patterns due to construction; however, the Project will be required to comply with Section 7.15 Traffic Control, Public Convenience, and Safety of the Clovis Standard Specification and Standard Drawings will reduce impacts to a less than significant level. Road improvements as a requirement of the Project will include widening of streets, striping, signage and lighting to reduce safety risks along roadways and intersections.

d. The City Engineer states that the location of drive access points are adequate in addressing the City Standards and has determined that impacts in this category are less than significant.

e. The development will be served by Fire Station 3 and 5 which are both located within 2 miles (by road). The streets serving the development meet City and/or County standards and can accommodate the movement of safety vehicles. Impacts are considered less than significant.

f. The development of the Projects as well as future development at a higher density of 2.3 units per acre would not Conflict with adopted policies, plans, or programs supporting alternative transportation.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.17 Tribal Cultural Resources *Would the project cause a substantial adverse change in the significance of a Tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape sacred place, or object with cultural value to a California Native American tribe, and that is:*				
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?	❒	❒	■	❒
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American Tribe?	❒	❒	■	❒

Environmental Setting

On September 25, 2014, Governor Jerry Brown signed Assembly Bill AB52, which intends to protect a new class of resource under CEQA. This new class is Tribal Cultural Resources and provides an avenue to identify Tribal Cultural resources through a consultation process, similar to SB18. However, unlike SB18, where consultation is required for all General Plan and Specific Plan Amendments, AB52, applies to all projects where a Notice of Determination is filed. Furthermore, the consultation process is required to be complete prior to filing a Notice of Intent.

The Project was mailed to each interested Tribe listed on the latest Tribal Consultation list provided by the Native American Heritage Commission using registered US Mail. The Tribes were provided a 30 day period (from receiving the City letter) in which to request consultation. Once the consultation period ran its course, the CEQA Initial Study was prepared and a Notice of Intent filed with the County Clerk and/or Office of Planning and Research.

Impacts

The Project may result in significant impacts if:

- The project causes a substantial adverse change in the significance of a Tribal cultural resource, as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources.
- The project causes a substantial adverse change in the significance of a Tribal cultural resource, as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape sacred place, or object with cultural value to a California Native American tribe, and that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant.

a. A cultural and historical analysis was prepared by Peak & Associates, Inc. (submitted April 13, 2016), for the project area. The analysis concluded that the Project is not listed in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k).

b. Per AB52, the Project was mailed to all Tribes listed on the Native American Heritage contact list, dated April 4, 2016. Tribes were provided an opportunity to request consultation. An informal meeting was requested with staff by Table Mountain Rancheria. The applicant agreed to meet on-site with the representative with Table Mountain which resulted in no significant issues. Although there were no significant issues identified, this does not imply that resources do not exist or will not be discovered during or prior to construction. The General Plan EIR includes existing standard measures which provide procedures in the case where resources are discovered. Therefore, impacts in this category are considered less than significant.

3.18 Utilities and Service Systems *Will the proposal:*	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	❒	❒	■	❒
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?	❒	❒	■	❒
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?	❒	❒	■	❒
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	❒	❒	■	❒
e. Result in a determination by the wastewater treatment provider that 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?	❒	❒	■	❒
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	❒	❒	■	❒
g. Comply with federal, state, and local statutes and regulations related to solid waste?	❒	❒	■	❒

Environmental Setting

The Project consists of a request to re-designate approximately 48.61 acres from Rural Residential (1 unit per 2 acres) to Low Residential (2.1 to 4 lots per acre), prezone approximately 48.61 acres from the County R-R (Rural Residential) Zone District to the R-1 (Single-Family Residential) Zone District, prezone approximately 9.52 acres from the County R-R Zone District to the City R-R Zone District, approve a master plan for Focus Area 7, approve a vesting tentative tract map for a 95-lot single-family subdivision, and annex 58.13 acres for properties at the northwest corner of Teague and Fowler Avenues in the County of Fresno.

During the initial review of the Project, it was brought to staff's attention that there are a number of properties outside the proposed Vesting Tentative Map area (within the County area) that are either owned by developers, in contract with developers, or in discussion with other developers for future development at a higher density than the existing Rural Residential designation. There are no current applications in process however, it is important to assume that there may be other development requests in the future. Because this is a County area surrounded almost completely by the City of Clovis, infrastructure such as sewer, water, and streets will need to be designed to connect Clovis' growth areas to the north. As a County area, there are no taxes or fees collected to support infrastructure to, from or through the area. The developers understand this and understand that development is one of the only means to fund infrastructure improvements within this area.

For purposes of this analysis, an assumption has been made that approximately 150 acres may develop at a density 2.3 units per acre which equates to approximately 345 lots. This document as well as the supporting studies have considered the cumulative impacts related to a buildout of the County area using this assumption.

Pacific Gas & Electric (PG&E) provides electricity and natural gas services in the City of Clovis. AT&T/SBC provides telephone service to the City.

The City's water supply sources include groundwater drawn from the Kings Sub-basin of the San Joaquin Valley Groundwater Basin and treated surface water from the Fresno Irrigation District (MID). Surface water is treated at the City of Clovis Surface Water Treatment Facility.

The City of Clovis provides sewer collection service to its residents and businesses. Treatment of wastewater occurs at the Fresno-Clovis Regional Wastewater Treatment Plant (RWTP). The Fresno-Clovis RWTP is operated and maintained by the City of Fresno and operates under a waste discharge requirement issued by the Central Valley Regional Water Quality Control Board. Additionally, the City of Clovis has completed a 2.8 mgd wastewater treatment/water reuse facility, which will service the City's new growth areas.

The City of Clovis provides and/or manages waste and recycle collection for the residents and businesses in the City of Clovis as well as operates its own landfill for disposal of waste. The City anticipates urbanization throughout the City Sphere of Influence

The Fresno Metropolitan Flood Control District (FMFCD) has the responsibility for storm water management within the Fresno-Clovis metropolitan area of the Project site. Stormwater runoff that is generated by land development is controlled through a system of pipelines and storm drainage detention basins.

Impacts

The Project may result in a significant impact if:

- It exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.
- It requires or results in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- It requires or results in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- If it does not have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed.
- It results in a determination by the wastewater treatment provider that 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.
- If the landfill does not have sufficient permitted capacity to accommodate the project's solid waste disposal needs.
- Does not comply with federal, state, and local statutes and regulations related to solid waste.

a. According to the City Engineer, the wastewater impacts were evaluated in accordance with the Waste Water Master Plan, evaluating the entire Master Plan as proposed for Focus Area No. 7 as well as cumulative impacts if additional lands were developed at a density of 2.3 units per acre.

The City Engineer concludes that although the Project is proposing to increase the density, the Project will not exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board. Impacts are considered less than significant.

b. The Project will not directly 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. According to the City Engineer, the current wastewater treatment plant has sufficient capacity to accommodate the Project as well as additional lands which were evaluated for a higher density of 2.5 units per acre.

c. The Project may result in the construction of new storm water drainage facilities. Conversion to a higher density residential category may induce more storm run-off into the master planned system. The Fresno Metropolitan Flood Control District has policies for this type of conversion. According to a letter from the FMFCD dated May 23, 2016, the district can accommodate the proposed project.

d. According to a study performed by Provost and Pritchard, the Project will not require new or expanded entitlements and resources. The site is also within the Fresno Irrigation District and will turn over the water rights to the City of Clovis upon development.

e. The Project will not require a determination by a wastewater treatment provider (see item b above).

f. According to the Solid Waste Division, the Project will contribute to the landfill, however, the impacts are less than significant.

g. The Project will comply with federal, state, and local statutes as well as regulations related to solid waste by the City of Clovis. The City Engineer states that impacts in this category are less than significant.

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3.19 Mandatory Findings of Significance				
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?	❒	■	❒	❒
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)?	❒	❒	■	❒
c. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	❒	■	❒	❒

Environmental Setting

The Project consists of a request to re-designate approximately 48.61 acres from Rural Residential (1 unit per 2 acres) to Low Residential (2.1 to 4 lots per acre), prezone approximately 48.61 acres from the County R-R (Rural Residential) Zone District to the R-1 (Single-Family Residential) Zone District, prezone approximately 9.52 acres from the County R-R Zone District to the City R-R Zone District, approve a master plan for Focus Area 7, approve a vesting tentative tract map for a 95-lot single-family subdivision, and annex 58.13 acres for properties at the northwest corner of Teague and Fowler Avenues in the County of Fresno.

During the initial review of the Project, it was brought to staff's attention that there are a number of properties outside the proposed Vesting Tentative Map area (within the County area) that are either owned by developers, in contract with developers, or in discussion with other developers for future development at a higher density than the existing Rural Residential designation. There are no current applications in process however, it is important to assume that there may be other development requests in the future. Because this is a County area surrounded almost completely by the City of Clovis, infrastructure such as sewer, water, and streets will need to be designed to connect Clovis' growth areas to the north. As a County area, there are no taxes or fees collected to support infrastructure to, from or through the area. The developers understand this and understand that development is one of the only means to fund infrastructure improvements within this area.

For purposes of this analysis, an assumption has been made that approximately 150 acres may develop at a density 2.3 units per acre which equates to an approximately additional 345 lots. This document as well as the supporting studies have considered the cumulative impacts related to a buildout of the County area using this assumption.

Impacts

The Project may result in a significant impact if:

- Based on the analysis provided in Initial Study the Project has 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.
- Based on the analysis provided in this Initial Study, the project would result in any significant cumulative impacts relative to other current projects, or the effects of probable future projects.
- The project would have environmental effect that will cause substantial adverse effects on human beings, either directly or indirectly.

4.0 CUMULATIVE IMPACTS

This section addresses the Project's potential to contribute to cumulative impacts in the region. CEQA Guidelines Section 15355 defines cumulative impacts as "two or more individual affects that, when considered together, are considerable or which compound or increase other environmental impacts." The individual effects may be changes resulting from a single project or several projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the Project when added to other closely related past, present, and reasonably foreseeable future projects. Cumulative impacts can result from individually minor yet collectively significant projects taking place over a period of time.

The cumulative setting for the proposed Project is the build-out of the City of Clovis General Plan which was adopted in 2014. The City has processed several General Plan Amendments since 2014, all of

which were included in the Project's analysis related to water, sewer, traffic, air quality, and greenhouse gas impacts.

Based on comments from the property owners and the applicant, a number of parcels in this County area are either under contract or in discussion with developers, are owned by developers, or are properties which were identified to be developable land at a higher density in the future. These properties consist of approximately 150 acres, which equates to approximately 345 lots at 2.3 units per acre. The studies and analysis performed for this project considered additional development in the area, even though there are no General Plan Amendment requests at this time.

Aesthetics

a-c. The proposed Project as well as potential urbanization of the County area at a higher density of 2.3 units per acre, is not expected to result in significant cumulative visual resource impacts with mitigation. Street lighting for the area could add additional light pollution to the area. A mitigation measure to shield lighting to reduce the potential for up-lighting the night sky has been incorporated. The development of single-family homes would not degrade the quality of the environment. With incorporation of measures such as natural sidewalk paving materials, rather than concrete in developed areas, no sidewalks, curbs or gutters in areas that remain Rural Residential, split rail type fencing, homes facing Teague Avenue, and restriction of two-story homes within 100 feet of rural residential properties, the impacts are less than significant.

Agriculture and Forest Resources

a-c. The proposed Project would not substantially contribute to the conversion of agricultural land or forest land to urban or other uses. There are no forest lands in the adjacent to or in the immediate vicinity. None of the properties in the Project area in including lands identified and potentially developable at a higher density of 2.3 units per acre, are classified as Prime Farmland or Farmland of Statewide Importance, therefore, the Project would result in a less than significant cumulative agricultural or forest resources impact.

Air Quality

a-c. Implementation of the Project could result in cumulative short-term construction air quality impacts associated with increased emissions. The Project would not result in cumulative air quality impacts to the region. Existing standard measures are incorporated to address Air Quality Standards during construction. The Project would result in less than significant cumulative air quality impacts.

Biological Resources

a-c The Project could result in significant impacts to nesting migratory and nongame birds without mitigation. The impact to biological resources was analyzed with the Project as well as other properties which could potentially develop at a higher density of 2.3 units per acre. According to an analysis prepared by Argonaut Ecological Consulting, Inc., the Project will have a less than significant impact to cumulative biological resources with existing standard and project level mitigation measures incorporated.

Cultural Resources

a-c. The proposed Project is not anticipated to contribute to any potential impacts related to cultural and/or paleontological impacts. Any impacts would be site specific and would not contribute to cumulative impacts. Therefore, the Project would have a less than significant impact to cumulative cultural resources with project level mitigation included.

Geology and Soils

a-c. Project impacts associated with geology and soils would be site-specific and implementation of the Project would not contribute to cumulative seismic hazards. Therefore, the Project would create no impact to cumulative geophysical conditions.

Greenhouse Gas Emissions

a-c. As discussed under Section 3. Greenhouse Gas Emissions, implementation of the proposed Project would contribute to GHG emissions, which is inherently a cumulative issue. The emissions from construction would be short-term (during construction) as a result of various fossil fuel-based construction equipment. Since these impacts are short-term and the contributions to GHG emissions would be minor when compared to the State's GHG emissions target, the construction related greenhouse gas emissions of this Project would be considered a less than significant cumulative impact.

The operational emissions from the Project would be as the result of indirect emissions from electricity usage of the well pump, emissions resulting from the occasional operation of the emergency back-up diesel generator when the power fails, and emissions from maintenance vehicles. These emissions would not be substantial and are considered less than significant. The Project's related GHG emissions would not contribute significantly to global climate change and would not impede the State's ability to meet its greenhouse gas reduction targets under AB 32.

Hazards & Hazardous Materials

a-c The proposed Project is not expected to have significant impacts as the result of hazards or hazardous materials; therefore, the Project is expected to have a less than significant impact to cumulative hazards and hazardous materials impacts.

Hydrology/Water Quality

a-c. The proposed Project would not contribute to cumulative surface water quality impacts associated with construction and operational activities. As described in Section 3.3 Hydrology/Water Quality, The proposed Project would not substantially alter the direction of groundwater flows, or result in a substantial change in the quantity of groundwater. The Project was analyzed using the assumption that 150 acres or more would develop at a higher density of 2.3 units per acre, resulting in a conclusion that there is a less than significant impact to cumulative water conditions.

Land Use Planning & Population/Housing

a-c With the implementation of the standard mitigation measures identified in Sections 3.1 (Aesthetics), land use impacts would be less than significant. The Project as well as other properties that have potential to develop at a higher density of 2.3 units per acre will not have significant impacts to housing or population. The proposed Project is not expected to result in substantial cumulative impacts to land use planning, population or housing.

Mineral Resources

a-c. The proposed Project is expected to have no impact to any site-specific mineral resources; therefore, the Project is expected to have a less than significant impact to cumulative mineral resource impacts.

Noise

a-c. As described in Section 3.9 Noise, the Project as well as other properties which have a potential to develop at a higher density of 2.3 units per acre, could result in increased construction noise as well as long-term traffic noise impacts. These impacts are less than significant and would not contribute to any cumulative impacts creating a level of significance.

Public Services

a-c The proposed Project creates additional homes and residents but as identified in the initial study, would not result in significant impacts to public services. The City anticipates urbanization of areas within the City's Sphere of Influence and will budget for additional personnel and maintenance and expansion of facilities to accommodate growth. As the City grows, there will be additional impacts on public safety. Annexed areas within the DCP will be served by the Clovis Fire and Police Departments. Although development is eminent, the density of 2.3 units per acre will have a less than significant impact on services. The Project was analyzed with an assumption that 150 acres could potentially develop at a higher density of 2.3 units per acre, and concluded that there would be a less than significant cumulative impact to public services.

Recreation

a-c. The proposed Project creates additional homes and residents but as identified in the initial study, would not result in significant impacts to recreation and/or resources. Even with the assumption that an additional 150 acres beyond the tract map were to develop at a higher density of 2.3 units per acre, impacts would be less than significant.

Transportation/Circulation

a-c. The Project was analyzed by Peters Traffic Engineers assuming that 150 acres or more of the County area could develop at a higher density of 2.3 units per acre. The analyses generally confirms the roadway designations and planned lane configurations as set forth in the city of Clovis General Plan. The General Plan does not specify intersections configurations; the configurations suggested previously in this report should be used as a guide and should be updated as necessary when traffic studies are performed for specific development projects. The study found that ultimate roadway configurations included in the City of Clovis General Plan include sufficient reserve capacity to accommodate residential development within the DPC area. The analyses suggest that a vast majority of the additional trips expected to occur on Fowler Avenue and on Sunnyside Avenue will be the result of regional growth primarily expected to occur north of Shepherd Avenue.

As development occurs, street improvements will be necessary. Development is required to pay its proportionate share to construct roads and infrastructure to accommodate growth.

Tribal Cultural

a-c. Tribal Cultural resources are site specific. The proposed Project would not cause a substantial adverse change in the significance on a cumulative Tribal cultural resource.

Utilities and Service Systems

a-c. The proposed project was analyzed with respect to the proposed master plan and research of surrounding recent and foreseeable projects including the potential that over 150 acres within the Focus Area 7, could develop at a higher density of 2.3 units per acre. The analysis concludes that the Project would not have a significant cumulative impact on utility and service system demands.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, as indicated by the checklist and corresponding discussion in this Initial Study.

The environmental factors checked below would be potentially affected by this Project. None of these factors represents a "Potentially Significant Impact" as indicated by this Initial Study.

☒Aesthetics	☒Agriculture and Forest Resources	☒Air Quality
☒ Biological Resources	☒Cultural Resources	☐Geology/Soils
☒ Greenhouse Gas Emissions	☒Hazards & Haz Materials	☒Hydrology / Water Quality
☒Land Use / Planning	☐Mineral Resources	☒Noise
☒Population / Housing	☒Public Services	☒Recreation
☒Transportation/Traffic	☒Tribal Cultural	☒Utilities / Service Systems
☒Mandatory Findings of Significance		

5.0 Determination Findings

The potential impacts identified in this Initial Study are considered to be less than significant since they will cease upon completion of construction, or do not exceed a threshold of significance with mitigation. Therefore, a Mitigated Negative Declaration is the appropriate level of documentation for this project.

According to the analysis in this Initial Study, based on substantial evidence in the public record, the City of Clovis finds:

- This Initial Study, prepared pursuant to CEQA Section 15063, has identified potentially significant environmental effects that would result from the project.
- The City has reviewed the proposed project impacts and has determined the following mitigation measures will address the identified impacts and reduce impacts to the level required by applicable standards:

e. The project area is predominately rural residential with existing homes. The implementation of the Project, consistent with the existing and proposed zoning as well as mitigation measures would reduce impacts to a less than significant level.

f. The Project will include on-site project and off-site street lighting, which would introduce a new source of light. The lighting is necessary to provide enough illumination at night for security and traffic purposes. All lighting will be installed per City and PG&E standards. A requirement to reduce up-lighting or shield lighting having direct impact to adjacent development is necessary to maintain the rural nature of the area. With the inclusion of the following Mitigation Measure, impacts in this category will be reduced to a less than significant impact.

- **Mitigation Measure 3.1-c:** The developer shall incorporate the following mitigation measures into the tentative map TM6154 design and construction:
  - Utilize natural sidewalk paving materials, rather than concrete in developed areas, and no sidewalks, curbs or gutters in areas that remain Rural Residential.
  - Utilize split rail type fencing in place of or outside of block sound walls along developed streets.
  - Place homes facing Teague Avenue.

- Restrict two-story homes within 100 feet of rural residential properties.
- Utilize rural landscaping materials along developed streets. Landscaping along undeveloped reaches remain as-is.

- **Mitigation Measure 3.1-d:** The developer shall direct all on-site lighting downward and provide physical shields to prevent direct view of the light source from adjacent residential properties. Street lighting shall be spaced in accordance with City Standards to reduce up-lighting. The applicant shall utilize a PG&E street light which directs light downward.
- **Mitigation Measure 3.4-a1:** Should project construction be scheduled to commence between March and the end of August, a pre-construction survey will be conducted by a qualified biologist for nesting raptors. This survey will occur within 30 days of the on-set of construction. All suitable habitats of the study are will be covered during this survey.
- **Mitigation Measure 3.4-a2:** If pre-construction surveys undertaken during the nesting season locate active nests within or near the construction zones, these nests, and an appropriate zone around them (as determined by a qualified biologist) will remain off limits to construction until the nesting season in over. Suitable setbacks from occupied nests will be established by a qualified biologist and maintained until the conclusion of the nesting season.
- **Mitigation Measure 3.4-a3:** The applicant shall conduct a pre-construction survey to assess any burrowing owl habitat. A licensed biologist will make a recommendation on measures necessary based on the findings of the survey.
- **Mitigation Measure 3.4-c:** A wetland delineation shall be conducted prior to permitting of development within areas described as potential wetland within the biological survey.
- **Mitigation Measure 3.4-d:** Project level habitat assessment for California Tiger Salamander, and Western Pond Turtle shall be conducted to cover areas of concern.
- **Mitigation Measure 3.5-a:** Project level studies shall be conducted before approval of specific projects on properties not previously covered by cultural resource studies. The studies shall research field surveys, and recordation and evaluation of any resources.

Signature _____ Date: March 15, 2018
Bryan Araki, City Planner

Applicant's Concurrence

In accordance with Section 15070 (b) (1) of the CEQA Guidelines, we hereby consent to the incorporation of the identified mitigation measures which are also contained in Exhibit B, Attached to this document.

Signature _____ Date: 3/27/18

6.0 MITIGATION MONITORING
EXHIBIT B

City of Clovis Mitigation Monitoring and Reporting Program
Dry Creek Preserve Master Plan, General Plan Amendment GPA2016-06, Prezone R2016-07, Vesting Tentative Map TM6154, Reorganization RO296
Dated March 5, 2018

This Mitigation Monitoring and Reporting Program (MMRP) has been prepared pursuant to Section 21081.6 of the California Public Resources Code, which requires public agencies to "adopt a reporting and monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment." A MMRP is required for the proposed project because the Mitigated Negative Declaration has identified significant adverse impacts, and measures have been identified to mitigate those impacts.

The MMRP, as outlined in the following table, describes mitigation timing, monitoring responsibilities, and compliance verification responsibility for all mitigation measures identified in this Mitigated Negative Declaration.

The City of Clovis will be the primary agency, but not the only agency responsible for implementing the mitigation measures. The MMRP is presented in tabular form on the following pages. The components of the MMRP are described briefly below:

- **Mitigation Measures:** The mitigation measures are taken from the Mitigated Negative Declaration, in the same order that they appear in the Mitigated Negative Declaration.
- **Mitigation Timing:** Identifies at which stage of the project mitigation must be completed.
- **Monitoring Responsibility:** Identifies the department within the City responsible for mitigation monitoring.
- **Compliance Verification Responsibility:** Identifies the department of the City or other State agency responsible for verifying compliance with the mitigation. In some cases, verification will include contact with responsible state and federal agencies.

6.2 Mitigation Monitoring Program

Proposed Mitigation	Summary of Measure	Monitoring Responsibility	Timing	Verification (Date and Initials)
3.1 Aesthetics				
3.1-c	The developer shall incorporate the following mitigation measures into the tentative map TM6154 design and construction: ▪ Utilize natural sidewalk paving materials, rather than concrete in developed areas, and no sidewalks, curbs or gutters in areas that remain Rural Residential. ▪ Utilize split rail type fencing in place of or outside of block sound walls along developed streets. ▪ Place homes facing Teague Avenue. ▪ Restrict two-story homes within 100 feet of rural residential properties. ▪ Utilize rural landscaping materials along developed streets. Landscaping along undeveloped reaches remain as-is.	City of Clovis Planning	*Prior to Permits and During Construction*	
3.1-d	The developer shall direct all lighting downward and provide physical shields to prevent direct view of the light source from adjacent residential properties.	City of Clovis Planning	*Prior to Permits and During Construction*	
3.4 Biological				
3.4-a1	Should project construction be scheduled to commence between March and the end of August, a pre-construction survey will be conducted by a qualified biologist for nesting raptors. This survey will occur within 30 days of the on-set of construction. All suitable habitats of the study are will be covered during this survey.	City of Clovis Planning	*Prior to Permits and During Construction*	

3.4.a2	If pre-construction surveys undertaken during the nesting season locate active nests within or near the construction zones, these nests, and an appropriate zone around them (as determined by a qualified biologist) will remain off limits to construction until the nesting season in over. Suitable setbacks from occupied nests will be established by a qualified biologist and maintained until the conclusion of the nesting season.	City of Clovis Planning	*Prior to Permits and During Construction*	
3.4-a3	The applicant shall conduct a re-construction survey to assess any burrowing owl habitat. A licensed biologist will make a recommendation on measures necessary based on the findings of the survey.	City of Clovis Planning	*Prior to Permits and During Construction*	
3.4-c	A wetland delineation shall be conducted prior to permitting of development within areas described as potential wetland.	City of Clovis Planning	*Prior to Permits*	

3.5 Cultural Resources				
3.5-a	Project level studies shall be conducted before approval of specific projects on properties not previously covered by cultural resource studies. The studies shall research field surveys, and recordation and evaluation of any resources.	City of Clovis Planning	*Prior to Permits*	

7.1 **Report Preparers**

CITY OF CLOVIS- LEAD AGENCY
PLANNING DIVISION
Bryan Araki, Environmental Coordinator
1033 Fifth Street
Clovis, CA 93612
(559) 324-2346
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Appendix A

Environmental Studies

Blair, Church & Flynn
CONSULTING ENGINEERS

Karl E. Kienow, PE, Principal · kkienow@bcf-engr.com
451 Clovis Ave, Suite 200 · Clovis CA 93612 · Tel (559) 326-1400

TECHNICAL MEMORANDUM

File No. 214-0139

REGISTERED PROFESSIONAL ENGINEER
KARL E. KIENOW
No. 51,615
CIVIL
STATE OF CALIFORNIA

To: Mike Harrison
Sean Smith
City of Clovis

From: Karl Kienow
Blair, Church & Flynn

Date: July 19, 2016

Subject: Wastewater Service Considerations for Tentative Tract 6154 Located in the Rural Residential Area Generally Bounded by Nees Avenue, Big Dry Creek and the Enterprise Canal

INTRODUCTION

The area that is bounded by Nees Avenue, Big Dry Creek, and the Enterprise Canal is often referred to as the "Sea of Clovis" or the "Dry Creek Preserve" (DCP). Most of the DCP area lies outside of the current city limits, but all of the DCP area lies within the City Sphere of Influence. The DCP area encompasses approximately 824 acres and includes areas of undeveloped land, existing rural residential properties that are currently being served by private septic systems, and two existing residential subdivisions of 31 lots and 14 lots respectively that are served by City of Clovis sewers.

Most of the DCP area is currently planned for Rural Residential (RR) land use in the 2014 Clovis General Plan (General Plan), as it also was in the prior general plan. As such, sewer service was not planned for the DCP area in the 2008 Wastewater Master Plan Update, Phase 2 and prior wastewater master planning efforts. When the City completed the 2014 General Plan, the city did plan on the DCP area eventually building out at 2.5 units per acre. The DCP is included in the Wastewater Master Plan Update, Phase 3, which is now being developed by Blair, Church & Flynn.

A 96-lot tentative residential subdivision is under consideration in DCP, identified as Tentative Tract No. 6154, as shown on Exhibit A-1. The proposed subdivision lies within the portion of DCP that would be tributary to the Herndon Service Area. At the request of the City of Clovis, this area was analyzed by Blair, Church & Flynn to evaluate the implications of providing sewer service to Tentative Tract No. 6154.

ANALYSIS

Development Flows

Blair, Church & Flynn prepared for the City a Technical Memorandum (TM) dated April 6 2015 with the subject line "City of Clovis Wastewater Master Plan Update Phase 3, Flow Monitoring Results and Analysis" (Flow Monitoring TM). The TM may be viewed or downloaded at the following URL address: http://bcf-ftp.com/espacePrive/BCF/214139_Flow_Monitoring_Tech_Memo.pdf. The TM reported on flow monitoring conducted for three Clovis residential subdivisions, and provided a recommendation that an average residential wastewater flow generation rate of 210 gallons per day (gpd) per SFR unit should be used for the evaluation of interim sewer service for the Northwest Service Area. For comparison, the 2008 Wastewater Master Plan Update, Phase 2 used a residential wastewater flow generation rate of 270 gpd/SFR. It is possible or likely that the Wastewater Master Plan Update, Phase 3 now being developed will ultimately incorporate residential wastewater flow generation rates less than 210 gpd/SFR. The recommendation of the April 6 2015 TM, 210 gpd/SFR, was used for the purposes of this analysis.

Blair, Church & Flynn estimates that Tentative Tract No. 6154 has the potential to generate average wastewater flows of 20,160 gallons per day, or 0.020 million gallons per day (MGD) tributary to the Herndon Trunk Sewer.

Flow Capacity Constraints

The Herndon Trunk Sewer and the Fowler Trunk Sewer, together with certain tributary sewers within their respective service areas, were analyzed to determine if adequate capacity is available in the existing sewer system to accommodate potential wastewater flow from Tentative Tract No. 6154. It was determined that adequate capacity is available in both the Herndon Service Area sewers and the Fowler Service Area sewers to accommodate all tributary flows from Tentative Tract No. 6154.

Regional Capacity Constraints

According to the Fresno-Clovis Regional Sewerage System Joint Powers Agreement, Clovis is allowed to discharge up to 6.0 MGD average daily flow into the regional Fowler Trunk Sewer. The City of Clovis has already acquired 3.0 MGD of average daily flow wastewater treatment capacity for the Fowler Service Area, and may purchase additional treatment capacity at 1.0 MGD increments until the current upper limit 6.0 MGD capacity is reached.

The hydraulic model now being developed for the Wastewater Master Plan Update Phase 3, currently requires additional calibration efforts for the Fowler Service Area prior to relying on it for the purposes of a regional capacity analysis, so it was supplemented by the use of manual spreadsheet-based calculations for this analysis. The average daily flow for the Fowler Trunk Sewer discharge was calculated to be 4.181 MGD at build-out. This indicates that adequate regional wastewater flow capacity exists for the

Fowler Service Area to accommodate wastewater generated within Tentative Tract No. 6154.

The Joint Powers Agreement allows up to 2.8 MGD average flow to be discharged into the Herndon Trunk Sewer, with a peak flow that may not exceed 4.0 MGD. The hydraulic model now being developed for the Wastewater Master Plan Update Phase 3, currently requires additional calibration efforts for the Herndon Service Area prior to relying on it for the purposes of a regional capacity analysis, so it was supplemented by the use of manual spreadsheet-based calculations.

The average daily flow for the Herndon Trunk Sewer discharge was calculated to be 2.379 MGD at build-out. This indicates that adequate regional wastewater ***average*** flow capacity exists for the Herndon Service Area to accommodate wastewater generated within Tentative Tract No. 6154.

Similarly, the calculated peak flow is 3.738 MGD at build-out, which is below the allowable peak flow of 4.0 MGD. This indicates that adequate regional wastewater ***peak*** flow capacity exists for the Herndon Service Area to accommodate wastewater generated at full build out within Tentative Tract No. 6154. For peak flow calculations, a peaking factor of 1.571 was applied to the average flow. This peaking factor was developed based on the hydraulic model now being developed for the Wastewater Master Plan Update Phase 3 and flow meter data recently provided by the City of Clovis.

Wastewater Collection System Facilities Necessary to Serve Tentative Tract No. 6154

As previously noted in this TM, the provision of sewer service has not been heretofore planned for DCP, which includes Tentative Tract No. 6154. As a result, some major storm drain facilities were designed and constructed without consideration for the future presence of sanitary sewers, particularly in Fowler Avenue.

Blair, Church & Flynn attempted to develop a conceptual design for a gravity flow sewer system tributary to the Herndon Service Area that could provide sewer service for Tentative Tract No. 6154, and for other DCP areas. For estimated wastewater flows in conventionally sized gravity flow sewers with corresponding minimum slopes, it was found that significant conflicts occurred relative to the existing storm drains.

Blair, Church & Flynn met with the City to discuss initial findings for this analysis, and presented three alternatives for dealing with the storm drain conflicts.

1. Plan for sanitary sewer "penetrations" of the storm drains, such that the conventionally sized sanitary sewer would cross through the existing storm drains at new specially designed manhole structures. While not unheard of, this approach would probably not be received favorably by Fresno Metropolitan Flood Control District.
2. Plan for conventionally sized sanitary sewers installed deep enough to cross beneath storm drains, resulting in the need for a permanent wastewater pump station to "lift" wastewater flow into a receiving sewer. This has the disadvantage of requiring a permanent pump station facility.

3. Plan for construction of some sewers as "oversized" sanitary sewers, having diameters one nominal pipe size larger than conventionally sized sewers, with "flatter" minimum slopes to result in sewer depths that would avoid storm drain conflicts without requiring a pump station. This has the disadvantage of requiring some oversized pipes that could potentially result in increased sewer cleaning needs, particularly in early years of service when wastewater flows are at their lowest.

The City provided direction that the wastewater collection facilities that could ultimately serve Tentative Tract No. 6154 and other DCP areas should be planned using the oversized sewer approach of Item 3 above. Exhibit A-1 shows the resulting conceptual wastewater collection facilities that could ultimately provide sewer service for Tentative Tract No. 6154 and other areas of DCP.

In order to provide gravity flow sewer service to the Herndon Trunk Sewer for Tentative Tract No. 6154, approximately 1.75 to 2.00 miles of offsite sewers ranging in size from 10 to 15 inches in diameter would have to be constructed from a point near Fowler and Teague, extending downstream to Nees and Minnewawa, via Teague, Sunnyside and Nees Avenues. The actual length required would depend on the design of the onsite sewers in the tentative tract.

It is understood that the developer of Tentative Tract No. 6154 has proposed to provide a temporary wastewater pump station and force main system that would temporarily convey wastewater generated within the proposed subdivision into the Fowler Service Area, where it would be discharged into an existing sewer in Teague Avenue. Exhibit A-1 shows a possible configuration for the temporary pump station and force main facilities. The Fowler Service Area sewers that would temporarily receive and convey wastewater from the proposed subdivision have sufficient flow capacity to do so. The temporary pump station and force main facilities would be retired when other sewers tributary to the Herndon Service Area are in place and could provide gravity sewer service for the proposed subdivision.

FINDINGS AND RECOMMENDATIONS

The Herndon Trunk Sewer currently has sufficient wastewater flow capacity to accommodate development in Tentative Tract No. 6154. Approximately 1.75 to 2.00 miles of new offsite sewers ranging in size from 10 to 15 inches in diameter would have to be constructed to provide gravity flow sewer service. The sewers would extend from a point near Fowler and Teague downstream to Nees and Minnewawa, via Teague, Sunnyside and Nees Avenues to provide sewer service to the Herndon Trunk Sewer. The actual length required would depend on the design of the onsite sewers in the tentative tract.

As an interim alternative to the construction of the offsite sewers, and as proposed by the developer, a temporary wastewater pump station and force main system could be constructed that would temporarily convey wastewater generated within the proposed subdivision into the Fowler Service Area, where it would be discharged into an existing sewer in Teague Avenue. The Fowler Service Area sewers that would temporarily receive wastewater flow from Tentative Tract No. 6154 have sufficient capacity for that

purpose. If this alternative is implemented, the temporary pump station and force main facilities should be retired when other sewers tributary to the Herndon Service Area are in place and can provide gravity sewer service for the proposed subdivision.

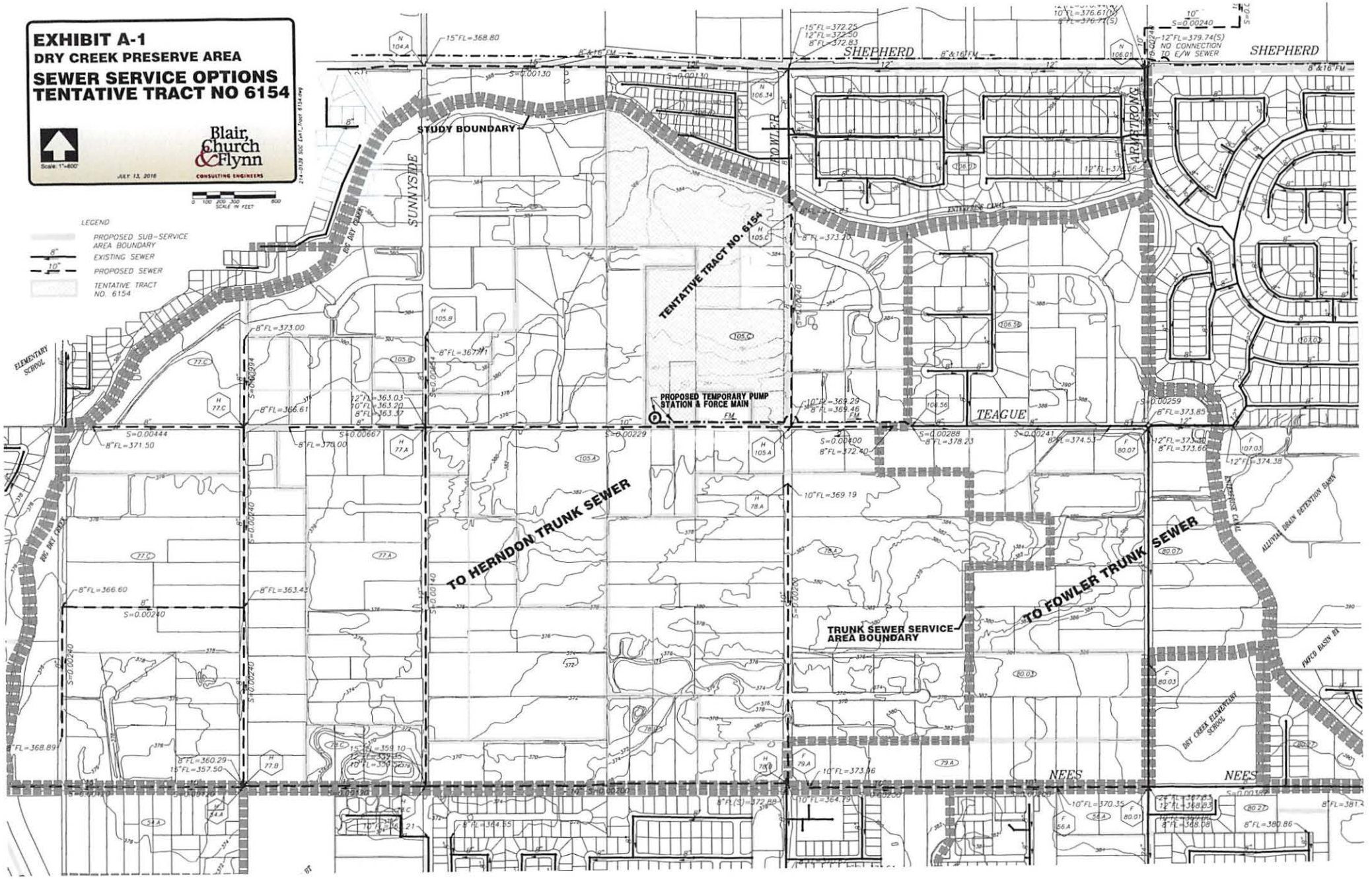


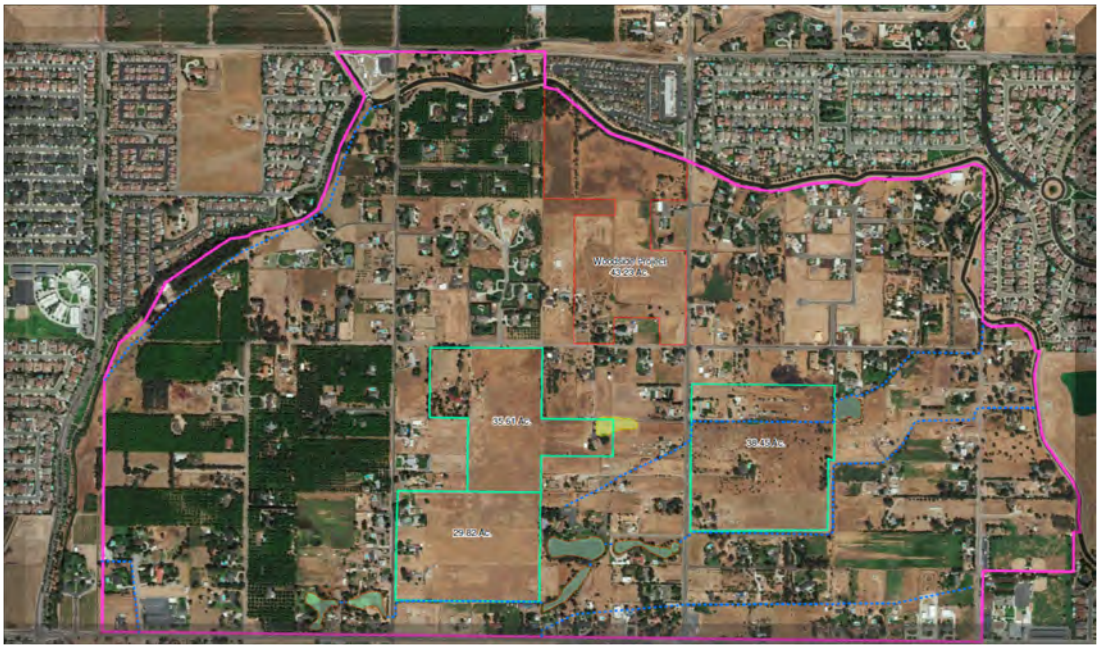
EXHIBIT A-1
DRY CREEK PRESERVE AREA
SEWER SERVICE OPTIONS
TENTATIVE TRACT NO 6154
Scale: 1"=600'
JULY 13, 2016
Blair, Church & Flynn
CONSULTING ENGINEERS
SCALE IN FEET
LEGEND
PROPOSED SUB-SERVICE AREA BOUNDARY
EXISTING SEWER
PROPOSED SEWER
TENTATIVE TRACT NO. 6154
STUDY BOUNDARY
TENTATIVE TRACT NO. 6154
PROPOSED TEMPORARY PUMP STATION & FORCE MAIN
TO HERNDON TRUNK SEWER
TO FOWLER TRUNK SEWER
TRUNK SEWER SERVICE-AREA BOUNDARY
SHEPHERD
SUNNYSIDE
TO WEBER
ARMSTRONG
TEAGUE
NEES
ELEMENTARY SCHOOL
DRY CREEK ELEMENTARY SCHOOL
ALLIVIAL DRAIN DETENTION BASIN
PAPCO BASIN DR
12"FL=379.74(S)
NO CONNECTION TO E/W SEWER

BIOLOGICAL HABITAT ASSESSMENT

OF THE

DRY CREEK PRESERVE MASTER PLAN AREA

CLOVIS, FRESNO COUNTY, CALIFORNIA



January 18, 2018

BIOLOGICAL HABITAT ASSESSMENT

OF THE

Dry Creek Preserve Master Plan Area

Clovis, Fresno County, California

Prepared For:

Woodside Homes
9 River Park Place East Suite 430
Fresno, CA 93720

Prepared By:

ARGONAUT ECOLOGICAL CONSULTING, INC.

2377 Gold Meadow Way, Suite 100
Gold River, CA 95670

January 18, 2018

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Appendix A Dry Creek Master Plan Area Habitat Map
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SECTION 1 EXEUCTIVE SUMMARY AND INTRODUCTION

1.1 EXECUTIVE SUMMARY

Argonaut Ecological, Inc. conducted a biological review of the 795-acre Dry Creek Preserve Master Plan Area located in Fresno County, California. The Master Plan Area is primarily bordered by Dry Creek and the Enterprise Canal south of E. Shepherd Avenue and extends south to E. Nees Avenue. The area is a primarily rural residential. Within the Master Plan Area is the 45-acre "Woodside Project" which is proposed for development. Two other smaller areas identified within the Master Plan area may be developed in the future. The Woodside Project area was the subject of a previous, project-level biological evaluation in 2016. The other areas potentially planned for development have not been evaluated on a project-level basis and would need further evaluation. This focus of this technical study (e.g.,biological study) described in this report is a planning level study of the entire Master Plan Area focused on mapping existing habitat types based on limited field work, aerial photographs, and other published reports and available data. This technical study is intended to provide the City of Clovis with a planning tool that describes the habitat types present, the potential for planning area to support sensitive species (species afforded legal protection or consideration) and sensitive biological communities/habitats, such as wetlands or other waters, and recommendations for project-level studies.

The findings of this report are that the study area may support some jurisdictional and non-jurisdictional wetland features, but based on studies to date the features are most likely limited to man-made ditches/channels, ponds, and other non-natural features. None of these features are located within the Woodside Project area. In particular, and as described in the Woodside Homes project level study in 2016 a seasonal wetland that was historically present within the Woodside Project area was eradicated around 2005. A wetland delineation performed on that area as part of this current evaluation confirmed that no wetland remains.

The potential for the Master Plan Areas to support species of concern is low because of the lack of suitable habitat and the recurring property use and maintenance (grazing, mowing, disking, etc.). However, lands within the Study Area could provide suitable breeding/nesting habitat for raptors, and other nesting birds, a special status species of turtle (Western pond turtle), and potentially, some areas have a low potential to support special status plants. Recommendations for project-level assessments to determine whether suitable habitat is present is included in Section 3.3 of this report. Additional recommendations for pre-construction surveys to confirm no occupation by a sensitive species just prior to ground disturbance is also presented in Section 3.3. The only additional studies recommended for the Woodside Project area, and as recommended in the 2016 project level biological evaluation, is a pre-construction survey for burrowing owl. A pre-construction nesting bird survey (for other raptors and migratory birds) is also recommend if any trees are to be removed during the nesting season (February – August).

1.2 INTRODUCTION

The Dry Creek Preserve is a 795-acre Master Plan area located in the City of Clovis' Sphere of Influence. In 1972, Local Agency Formation Commissions (LAFCOs) throughout the State of California were granted authority to determine spheres of influence for cities. A Sphere of Influence (SOI) is a planning boundary outside of the City limit that designates the City's probable future boundary and service area. It is updated on a regular basis as the City grows and future growth plans become better defined. Projects proposed within the Sphere of Influence as usually referred to the City for planning and consideration. This area was specifically mentioned in the 2014 General Plan Update as Focus Area No. 7.

Creation of the Master Plan will ensure that the area's unique historical and agricultural heritage is recognized and maintained as development occurs. Currently the land parcels within the Master Plan area are designated as Rural Residential, in accordance with the Herndon-Shepherd Specific Plan's Land Use Designations. One 31-acre development area, the Whisper Creek project, was previously annexed to the City of Clovis and has been subdivided into approximate three-quarter acre home sites, pursuant to a 2010 General Plan Amendment.

The proposed Master Plan boundaries are generally Nees Avenue on the South, and the Enterprise and Dry Creek Canals on the North, East, and West. The area lies atop a broad alluvium and has fertile loamy soils suitable for agriculture. About one half of the Master Plan area is managed as orchards, pastureland or other agricultural uses. A wide variety of livestock are also kept on various size parcels throughout the area. The remaining area is principally developed into single family residences on Rural Residential sized lots. Area housing and demographics are widely varied, with many different values and styles of homes situated on parcels which range from one acre to about 20 acres in size. (There is a scattering of older, legally "non-conforming" parcels of less than two acres, which were formed prior to the Rural Residential designation by Fresno County.)

1.3 STUDY OBJECTIVES

The purpose of this technical report is to present the finding of a biological assessment conducted on the Master Plan area. The biological assessment was conducted at a planning level, meaning the area as a whole was evaluated but individual parcels were not surveyed or studied. This technical study is intended to provide the City of Clovis with a planning tool that describes the habitat types present, the potential for planning area to support sensitive species (species afforded legal protection or consideration) and sensitive biological communities/ habitats, such as wetlands or other waters, and recommendations for project-level studies. This review relied heavily on review of available information, aerial photography review, and a reconnaissance level field survey. The field survey was done to verify the aerial photography and provide a preliminary evaluation of the potential for the Study Area to support habitat that may be used or occupied by special status plant and animal species. The study also is designed to determine the approximate extent of potential wetland habitat on the site. "Wetland habitat" includes those areas that may be considered both "Waters of the U.S., as defined by the U.S. Army Corps of Engineers, and/or

wetlands as defined by the Army Corps and the State of California. As described in Section 1.2, wetlands are a subset of "Waters of the U.S." under the Federal Clean Water Act.

This report can be used to assess the potential effects on biological resources if the current land use changes. The specific type of land use change would dictate the type of regulatory approvals or permits required. This review focused on the extent of the Waters of the U.S., including any wetlands that would potentially be subject to regulation under Section 404 of the Clean Water Act or by the State of California Wetland Policy (Resolution 2008-0026) which is designed to protect all waters of the State, including wetlands dredge and fill discharges. These reviews also focused on assessing and identifying any potential impacts site development may have on species protected by the Federal Endangered Species Act or protected under the California Environmental Quality Act.

1.4 REGULATORY JURISDICTION AND BACKGROUND

Regulatory jurisdiction over biological resources within the Study Area is shared by several agencies. The following is a brief description of the primary agencies and their respective jurisdiction.

Wetland Protection

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (Army Corps) and the U.S. Environmental Protection Agency regulates placement of fill into the Waters of the U.S under Section 404 of the Federal Clean Water Act and Section 10 of the Rivers and Harbor Act. The term "Waters of the U.S." Include wetlands, special aquatic sites, and other non-wetland waters such as bays, rivers, and lakes. The jurisdictional limit of tidal Waters of the U.S. under Section 10 of the Rivers and Harbor Act is the Mean High-Water line. However, Section 404 of the Federal Clean Water Act extends the jurisdictional limit to the High Tide line. The High Tide Line is the highest elevation of the tide in a normal year, excluding storm events. Wetlands adjacent to the Mean High-Water line or High Tide Line are also under the USACE jurisdiction. For purposes of this document, the term "Waters of the U.S." is legally defined under Section 404 of the Federal Clean Water Act. It includes seasonal drainages that have a defined channel and support wetland species, but lack positive indicators of wetland soils.

As previously stated Waters of the U.S. includes wetlands. The Army Corps defines wetland as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (Environmental Laboratory 1987). Seasonally inundated areas that meet the criteria of all three wetland parameters as defined in the recently issued Wetland Delineation Manual for the Arid West (USACE 2006) are also considered jurisdictional wetlands. However, drainage ditches excavated on dry land that do not convey flows from historical streams and/or channels are usually considered non-jurisdictional as defined in Title 33 CFR Part 328.3 (a). A determination of whether any particular area is considered non-jurisdictional varies on a case-by-case basis.

Since 2001, the U.S. Supreme Court found in several court rulings that regulation of isolated intrastate waters by the Army Corps under the Migratory Bird Rule and other arguments is unconstitutional and impinges on state rights to regulate intrastate commerce. The decisions, which include both *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (SWANCC) and *Rapanos v. United States* (Rapanos) limited the scope of federal jurisdiction under the Federal Clean Water Act and excluded many California wetlands from federal regulation.

In May 2015 the U.S. Environmental Protection Agency and the U.S. Army finalized the "Clean Water Rule "with the intent of clarifying what constitutes a waters of the U.S., and presumably, acts to more precisely define and making permitting more predictable, thus less costly and easier. The rule was not intended to create any new permitting requirements for agriculture and maintains all previous exemptions and exclusions. The new Clean Water Rule went in effect at the end of August, 2015. On October 9, 2015 the Sixth U.S. Circuit Court of Appeals issued a nationwide stay of the rule pending further court action. Therefore, currently, application of the Clean Water Rule is not enforced and the current regulatory definition of waters of the U.S. remains unchanged.

Executive Order 11990

Executive Order 11990 (signed May 24, 1977) directs all federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately-owned wetlands. It further requires that federal agencies support a policy to minimize the destruction, loss, or degradation of wetlands. A federal project that encroaches on wetlands may not be undertaken unless the agency in question has determined that: (1) there are no practicable alternatives to such construction; (2) the project includes all practicable measures to minimize harm to wetlands that would be affected by the project; and (3) the resulting impact will be minor.

The Executive Order, the Order does not apply to issuance by Federal Agencies of permits, licenses, or allocation to private parties for activities involving wetland on non-Federal property. Executive Order 1190 is also not intended to be applied on a project by project basis. Section 1 of the order states the following: "*This Order does not apply to the issuance by Federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-Federal property.*"

California State Water Resources Control Board

Since 1993, California has had a Wetlands Conservation Policy (a.k.a., the Executive Order W-51 59-93). Commonly referred to as the *No Net Loss Policy* for wetlands, this order establishes for the State the mandate that it develops and adopts a policy framework and strategy to protect the State's wetland ecosystems.

The State Water Board's Policy is only proposed and no new regulatory authority has been granted to the State of California to regulate wetlands other than what currently exists. Bring a uniform regulatory approach between the State Water Resources Control Board, other agencies involved in aquatic resource protection and the Federal Clean Water Act Section 404 program for dredge and fill discharges by establishing procedures and criteria for the application, review and approval of permits to discharge dredged or fill material to waters of the State.

Under the State's 401 Water Quality Certification and Wetland Program, the state provides certification for any proposed fill of waters of the U.S. Although the State has not historically regulated fills of wetlands/waters of the state, they have boldly asserted they have the regulatory authority to regulate fills of isolated wetlands/waters under the Porter-Cologne Water Quality Control Act.

Under California's Porter-Cologne Water Quality Control Act (Porter-Cologne), the regional boards regulate the "discharge of waste" to "waters of the state". All parties proposing to discharge waste that could affect waters of the state must file a report of waste discharge with the appropriate regional board. The regional board will then respond to the report of waste discharge by issuing waste discharger requirements (WDRs) in a public hearing, or by waiting WDRs for the proposed discharge.

Both of the terms "discharge of waste" and "waters of the state" are broadly defined in Porter-Cologne, such that discharges of waste include fill, any material resulting from human activity, or any other "discharge" that may directly or indirectly impact "waters of the state". While all "waters of the United States" that are within the borders of California are also "waters of the state", the converse is not true - "waters of the United States" is a subset of "waters of the state." However, a recent court case has provided clarity with respect to the limit to the Regional Boards jurisdiction. The California Superior Court in December 2017 (*John D. Sweeney and Point Duck Club, LLC vs. San Francisco Bay Conservation and Development Commission and the San Francisco Regional Water Quality Control Board*, *FCS048136*). In that case the court found that "the California Water Code (Porter-Cologne) §13304 does not give the State the authority (in this case the California Regional Water Quality Control Board) to regulate discharges into areas that are not "waters of the State" and found that "waters of the State" are not areas that are considered dry land (defined as an area that does not have perennial, ephemeral, or intermittent surface waters). The court ruling also made clear that vegetation removal from a waters is not "fill" or "discharge" that can be regulated by the State. At this time, it is unknown how this court ruling will, or will not, change how the Regional Boards proceed with respect to wetland regulation.

It is important to note that, while Section 404 permits and 401 certifications are required when the activity results in fill or discharge directly below the ordinary high water line of waters of the United States, any activity that results or may result in a discharge that directly or indirectly impacts waters of the state or the beneficial uses of those waters are subject to waste discharge requirements (WDRs). In practice, most regional boards rely on applications for 401 certification to determine whether WDRs need also be issued for a proposed project.

Listed Protected Species and Habitat Protection

U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) implements the Migratory Bird Treaty Act (16 USC Section 703-711), Bald and Golden Eagle Protection Act (16 United States Code [USC] Section 668), and Federal Endangered Species Act (FESA; 16 USC § 153 *et seq.)*. Projects that would result in "take" of any federally-listed threatened or endangered species are required to obtain authorization from the USFWS through either Section 7 (interagency consultation) or Section 10(a) (incidental take permit) of FESA, depending on whether the federal government is involved in permitting or funding the project. The authorization process is used to determine if a project would jeopardize the continued existence of a listed species and what mitigation measures would be required to avoid jeopardizing the species.

"Take" under the federal definition means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. "Candidate species" do not have the full protection of FESA. However, the USFWS advises project applicants that it is prudent to address these species since they could be elevated to "listed status" prior to completion of projects with long planning or development schedules.

The **Migratory Bird Treaty Act (MBTA**) was first enacted in 1916 in order to implement the convention for protection of migratory birds between the United States and Great Britain (acting on behalf of Canada). The MBTA makes it illegal for anyone to take, possess, import, transport, purchase, barter or offer for sale or purchase any migratory birds, its nests or eggs unless a permit has been issued by the federal agency. The USFWS has statutory authority and responsibility for enforcing the MBTA. In accordance with the MBTA Reform Act (MBTARA) of 2004 all species native to the U.S. or its territories which occur as a result of natural biological or ecological processes (70 FR 12710, March 15, 2005) and does not include nonnative species whose occurrences in the US are solely the result of intentional or unintentional human introduction. The USFWS maintains a list of bird species protected under the MCTA and the MBTRA. However, on December 22, 2017 the Deputy Solicitor General issued an opinion (Order 3345) that the MBTA does not prohibit "incidental take" of a migratory bird as the result of an otherwise lawful activity.

California Department of Fish and Wildlife

The California Department of Fish and Wildlife (CDFW), formally known as the California Department of Fish and Game, is a Trustee Agency with responsibility under the CEQA for

commenting on projects that could impact plant and wildlife resources. In addition, pursuant to the Fish and Game Code Section 1802, the CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of those species. The California Fish and Game Code also provide authority for the CDFW to regulate projects that could result in the "take" of any species listed by the State as threatened or endangered (Section 2081).

Perennial and intermittent streams also fall under the jurisdiction of CDFW pursuant to Sections 1601-1603 of the Fish and Game Code (Streambed Alteration Agreements). The CDFW's jurisdiction over work within the stream zone includes, but is not limited to, the diversion or obstruction of the natural flow or changes in the channel, bed, or bank of any river, stream or lake. Prior to issuing a 1601 or 1603 Streambed Alteration Agreement, the CDFW must demonstrate compliance with CEQA. In most cases, CDFW relies on the CEQA review performed by the local lead agency. However, in cases where no CEQA review was required for the project, CDFW would act as the lead agency under CEQA.

The CDFW also has authority for protection state-listed species issues Section 2081 Incidental Take Permit if a project has the potential to negatively affect state-protected plant or animal species or their habitats, either directly or indirectly. Protected species include those "listed" by the state as endangered or threatened. Besides listed species, there are other categories of species protection, including "fully protected" and California Species of Special Concern (CSC). Adverse impacts to species that have the "fully protected" designation is prohibited.

Under current California Fish & Game Code (FGC Section 3503) "it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird…" Birds of prey (falcons, hawks, owls, and eagles) get extra protection under the law (FGC Section 3503.5).

California Endangered Species Act

The California Endangered Species Act (CESA) provides protection for candidate plants and animal species as well as those listed as rare, threatened, or endangered by the California Department of Fish and Game (CDFG). This act prohibits the take of any such species unless authorized. Section 2081 authorizes the state to issue incidental take permits. The state definition of take applies only to acts that result in the death of or adverse impacts to protected species.

California Environmental Quality Act

The CEQA Guidelines require review of projects to determine their environmental effects and to identify mitigation for significant effects. The Guidelines state an effect may be significant if it affects rare and endangered species. Section 15380 of the Guidelines defines *rare* to include listed species, and allows agencies to consider rare species other than those designated as State or Federal threatened or endangered, but that meet the standards for rare under the Federal or State endangered species acts. On this basis, plants designated as rare by non-regulatory organizations (e.g., California Native Plant Society), species of special concern as defined by CDFW,

candidate species as defined by USFWS and other designations may need to be considered in CEQA analyses.

City of Clovis

The Study Area falls within the Sphere of Influence for the City of Clovis, California. The City is responsible for all local land use decisions within its jurisdictional boundary. Future annexation of the lands within the area identified in this report as the "Annexation Area" would require formal annexation. However, for general discussion, any project review would require the local land use agency as defined by CEQA to perform an environmental review.

SECTION 2 METHODS

The following section describes the methods used to assess the Study Area, which includes a combination of data review and evaluation, field studies, and aerial photograph interpretations.

2.1 DATA AND LITERATURE REVIEW

The approximately 795-acre Study Area is located within a historically developed area with rural residential and agricultural that has been undergoing redevelopment into higher density residential within the City of Clovis, California. The following documents and/or sources were used in preparing this report.

- U.S. Department of Agricultural, Natural Resources Conservation Service, Soil Survey of Fresno Area (Soils mapper).
- Aerial photography (Google Earth®, Bing®, and historic aerials dating back to 1983).
- The California Department of Fish and Game, California Natural Diversity Database (CNDDB/RareFind - Recent version with updates).
- U.S. Fish and Wildlife Service National Wetland Inventory Map
- U.S. Fish and Wildlife Service Information for Planning and Conservation (IPaC)
- U.S. Geologic Survey, Historic topographic Map, Clovis Quadrangle, 1919, University of Texas, Austin, Perry-Castañeda Map Collection
- Biological Assessment of the Teague Avenue Annexation Area Properties, Fresno County (Argonaut Ecological, Inc., April 2016).
- Biological Assessment of the Fowler Avenue Annexation Area Properties, Fresno County (Argonaut Ecological, Inc., April 2016)
- Previous experience with biological studies, CEQA reviews, and wetland delineation work on lands adjacent to the Study Area.

2.2 AERIAL PHOTOGRAPHY AND WETLAND MAPPING

A series of aerial photographs of the Study Area were reviewed to assess changes in land use over time, dating back to 1998. Specifically, black and white and color aerial photographs ranging in resolution from 0.5 meters to 1.0 meter. We also reviewed wetland mapping and the aerials to determine if the Study Area recently supported wetlands.

2.3 FIELD RECONNAISSANCE

Prior to conducting a site review, we reviewed the California Natural Diversity Database/ Rarefind (CNDDB/Rarefind). The CNDDB includes records of reported observations for special status plant and animal species. A search radius that included up to nine USGS quadrangles was employed. The results of the CNDDB/RareFind were reviewed to identify which species would present the greatest likelihood of being present on the site based on the distance of the site from known records and the similarity in habitats between the Study Area and the habitats that the species required and/or preferred. Also prior to the field work, high resolution aerials photographs were reviewed to determine if there are any areas on the site that appear to support

waters of the U.S., or other water features.

In early January 2018, a field reconnaissance was performed. The primary objective of the field work was to identify any areas on the site, or immediately adjacent to the site, that potentially supports habitat for sensitive species or aquatic habitat. A combination of walking and driving around the Study Area was done to verify what was shown on the aerials. Areas that could be observed by walking along public roadways and Dry Creek and the Enterprise were inspected. Access to interior parcels was not possible. Access to the Woodside Homes property was possible. Argonaut had performed a detailed field survey of the Woodside Property last year. Our field work in January included conducting a wetland delineation at the feature that was mapped on the Wetland Inventory Map.

SECTION 3 RESULTS

The following section describes the physical (i.e., topography, drainage, and soils) and the biological resources present, or potentially present, within the Study Area. Section 3.1 describes the physical components (i.e., soils, hydrology, etc.) of the Study Area. The physical components strongly influence the types of plants and animals present. Section 3.2, is an overview of the resources and habitats present within the Study Area, including descriptions of the specific biological resources observed.

The information presented is not an exhaustive inventory of plants or animals present. Rather it is designed to provide sufficient information to identify what, if any, biological resources are present that may be considered unique, sensitive, or protected by current law and the potential impacts to those resources if the site is developed.

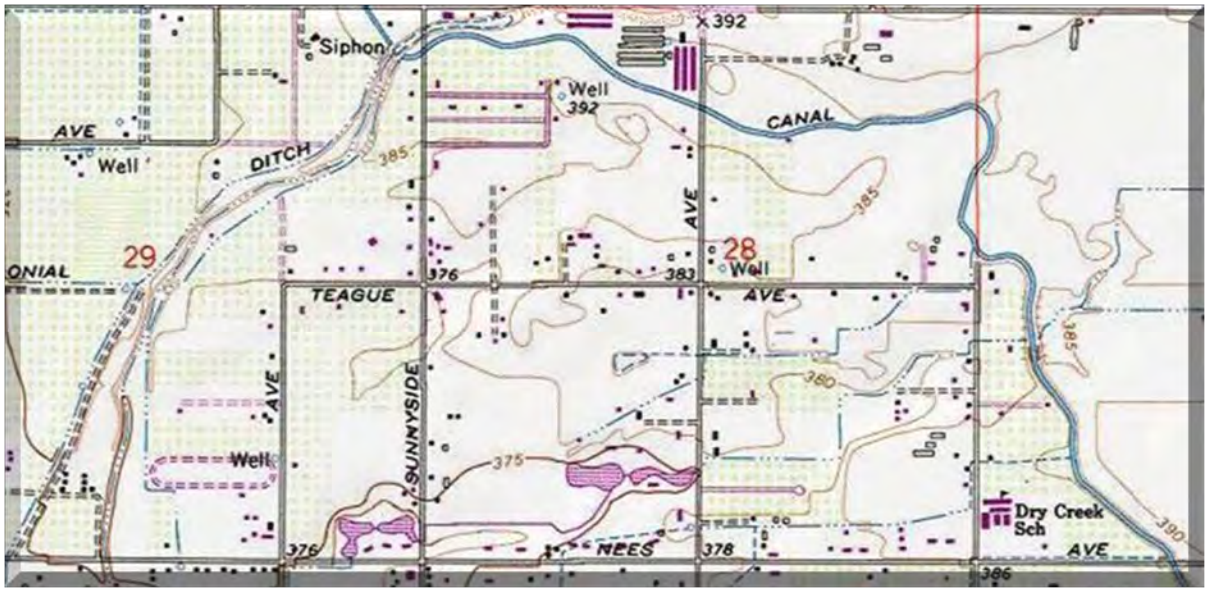
3.1 PHYSICAL RESOURCES AND ELEMENTS

Land Use and Habitat Types

The Dry Creek Preserve Master Plan Area is a unique collection of rural residential properties surrounded by a densely populated, and more urbanized areas. The properties range from approximately two acre parcels to up to 20 or more acres parcels and retain a rural character that reflects the historic settlement of the area. There are some non-residential uses scattered within the Master Plan Area (e.g., church and school sites). The lands are used for residential home sites surrounded by orchards, livestock pasture, row crops, wooded areas, and fallow farmland.

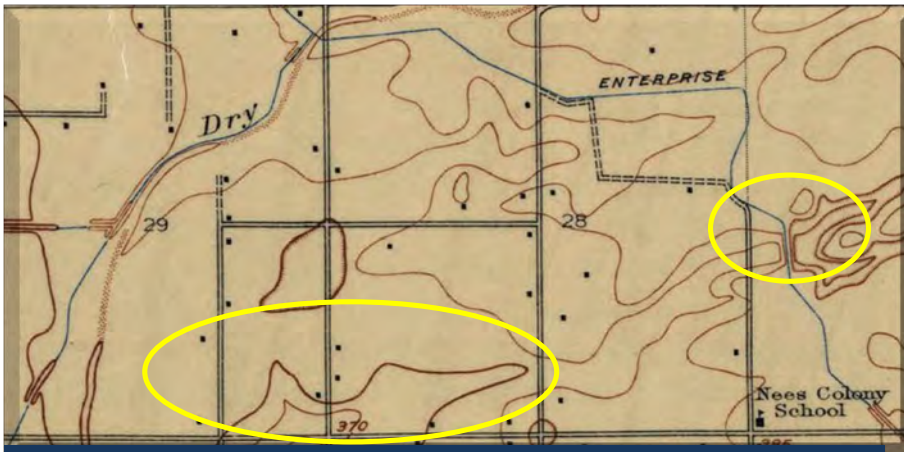
Site Topography

The property lies within the Central Valley. The Study Area is relatively flat with very little slope. Elevations range from roughly 365 feet above mean sea level (msl) to 385 feet above msl. Agricultural practices and other farming has modified the topography in localized areas. Construction of the Enterprise Canal, sometime prior to 1919, created elevated embankments along the eastern side of the Study Area. Dry Creek borders the west side of the Study Area.



USGS Topographic Map

Drainage and Watershed and Wetlands. Historically the Study Area drained to the southwest. The project lies within the Dry Creek Watershed. The site is fairly flat and there were historically no drainages crossing through either the Annexation area or the Study Area. A topographic map from 1919 (below) shows the general vicinity of the Study Area. The Study Area historically drained to the west toward Dry Creek. It does not appear that any other streams (perennial or ephemeral), other than Dry Creek and the Enterprise Canal crossed through the Study Area. There are some topographic features that may be indicative of drainage swales or depressional swales. One of the drainage features may have been separated when the Enterprise Canal was constructed sometime prior to 1919 (small area shown above). The other potential drainage area appears to be located near Nees Avenue (larger area circled, above).



USGS Historical Topographic Map (1919)

A query of the National Wetland Inventory Map (shown below) shows two freshwater emergent wetlands within the Study Site. (See map below). There are several man-made landscape ponds shown on the map as freshwater ponds within the Study Area. These areas correspond to the drainage swale/feature shown above. The National Wetland Inventory Map code is "PUBHx" which correlates to "palustrine, unconsolidated bottom, permanently flooded, excavated". The wetland map also shows two freshwater emergent wetlands located near the center of the site. One of the wetlands is shown within the Woodside Homes Property. This wetland area was investigated as part of the field study since access to the property was available.

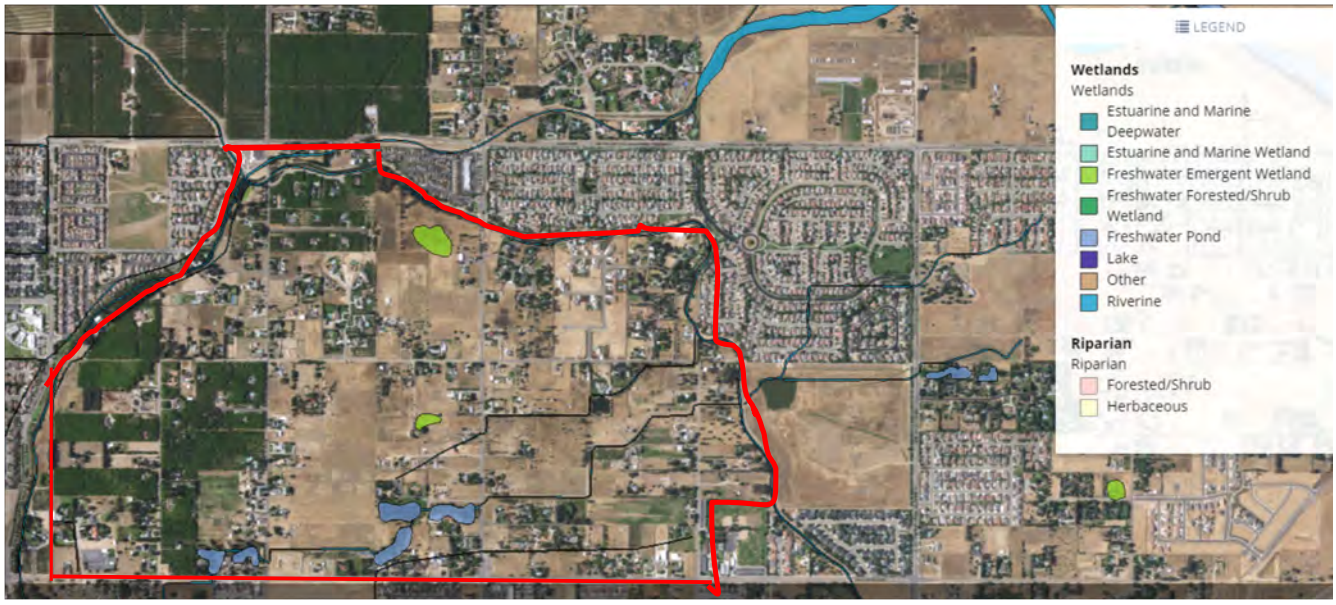


Figure 2 - U.S. Fish and Wildlife Service National Wetland Inventory Map

Climate/Soil

Climate in the Study Area is typical of the central San Joaquin Valley with summers that are long, hot, and dry and winters that are cool and mild. Rainfall in the winter averages approximately 10.9 inches per year, falling mainly between November and April (Western Regional Climate Center, 2004).

The Natural Resources Conservation Service (NRCS) soil survey mapped nineteen soils types within the Study Area. Nine of the mapped soils are considered hydric soils. Hydric soil is readily formed under ponded condition and is a strong indicator of areas experiencing prolonged ponding (e.g., wetlands). The presence of mapped hydric soils may indicate that the soils could support wetlands; but, there is not a direct correlation. Wetlands can occur in areas where no hydric soil are mapped and may be absent in areas mapped as hydric soils. The following is a summary of the soil types present.

Table 1
NRCS Soils Within Dry Creek Master Plan Area

Map Unit Symbol	Map Unit Name	Hydric		Approx. Acres in Area of Interest	% Area of Interest
		Yes	No		
AoA	Atwater loamy sand, 0 to 3 percent slopes		✓	21.1	2.5%
AoB	Atwater loamy sand, 3 to 9 percent slopes		✓	48.5	5.7%
ArA	Atwater sandy loam, 0 to 3 percent slopes		✓	108.0	12.5%
ArB	Atwater sandy loam, 3 to 9 percent slopes		✓	17.8	2.1%
AtA	Atwater sandy loam, moderately deep, 0 to 3		✓	138.1	16.3%
CzaB	Cometa sandy loam, 3 to 9 percent slopes	✓		18.2	2.1%
DhA	Delhi loamy sand, 0 to 3 percent slopes	✓		42.8	5.1%
Gf	Grangeville fine sandy loam, 0 to 1 percent slopes	✓		17.6	2.1%
Gta	Greenfield sandy loam, 0 to 3 percent slopes		✓	12.0	1.4%
GuA	Greenfield sandy loam, moderately deep, 0 to 3		✓	12.2	1.4%
Ha	Hanford coarse sandy loam		✓	46.9	5.5%
Hc	Hanford sandy loam		✓	33.5	4.0%
Hm	Hanford fine sandy loam	✓		0.2	0.0%
Mc	Madera loam	✓		18.0	2.1%
Ra	Ramona sandy loam		✓	111.7	13.2%
ScA	San Joaquin sandy loam, 0 to 3 percent slopes	✓		162.6	19.2%
SeA	San Joaquin loam, 0 to 3 percent slopes	✓		0.4	0.0%
TzbA	Tujunga loamy sand, 0 to 3 percent slopes	✓		35.0	4.1%
VaA	Visalia sandy loam, 0 to 3 percent slopes	✓		3.6	0.4%
Totals for Area of Interest (not exact – Study Area is 795 acres)				850	**100.0%**

3.2 RESULTS OF SITE INVESTIGATION

Habitats and Waters of the U.S. and Waters of the State

The general habitats of the Master Plan Study Area were mapped (See Appendix A - Habitat Map). Habitats within the Woodside Property (See Figure 1- Site Location Map) and a portion of the other lands that would likely be developed in the near future were mapped in detail in previous biological assessment conducted in 2016 (Argonaut Ecological, Inc. 2016). The following provides a description of the habitats present and incorporates findings from detailed habitat assessments performed in 2016 on some parcels within the Master Plan Area. Appendix C- Photographs provides some representative pictures of features within the Master Plan Area.

Nearly the entire Study Area is made up of rural residential homes, pasture, small plots of crops, orchards, fallow cropland, non-native grassland, landscaped lawns (mowed) and ruderal habitat (disturbed). This habitat is characterized by both dense and sparse cover of annual flowering grasses between 0.2m-0.5m high. Characteristic species of this habitat include wild oats (*Avena* spp.), brome (*Bromus* spp.), filaree (*Erodium* spp.), *Gilia* spp., *Lasthenia* spp., daisies (*Layia* spp.), *Lupinus* spp., owl's clover (*Orthocarpus* spp.), and tansy (*Phacelia* spp.). The remainder is composed farm residence, out buildings, landscaping, horse paddock(s), parking areas (compacted ground) and access roads. Edges of the properties have some weedy species (ruderal plant community) including wild oats (*Avena* sp.), filaree (*Erodium* sp.), fiddleneck (*Amsinckia* sp.), bermuda grass (*Cynodon dactylon),* brome, star thistle, storksbill,etc. There are large trees near the homes. There are areas surrounding outbuilding and roads that have bare ground and no vegetative cover.

Based on a review of historical records, readily available wetland mapping databases, and a site review, our field investigation confirmed the accuracy of the U.S. Fish and Wildlife Service's Wetland Inventory Map with at least one exception. The large seasonal wetland shown within the Woodside property within the Study Area (See Figure 1 and Figure 2) is no longer present. As described in a detailed biological assessment of this property (Fowler Avenue Annexation Area, Argonaut 2016) states:

"… the seasonal wetland was filled in sometime around 2005 by the landowner at the time. The source of the fill material is a portion of the same property (west side) that in 2004 was nearly level ground but in 2016 is now a large excavated area. It appears the soils were excavated from the west side "borrow area" and moved to fill in the emergent wetland. Close inspection of the area in 2016 where the former wetland occurred found no evidence of any remaining wetland habitat. The wetland appears to have been deep ripped prior to filling because there is no evidence to suggest the area ponds water for any duration. We are unaware of whether the wetland was filled by legal means (i.e., any required permits were obtained). However, the wetland is no longer present and further modification of the property would not require any further action by Woodside Homes with respect to obtaining any wetland fill permit (retroactively)."

During our January 2018 field review of the Study Area we inspected this area (Woodside property) again and collected data to definitively determine whether any of the former wetland is still present. Our results indicate the area where the wetland had once been is no longer wetland. The area/former feature is now upland habitat (as a result of habitat conversion years ago) and there is no evidence of hydric soils, predominance of plants, or evidence of prolonged ponding that would be indicative of wetland habitat[1]. The wetland delineation confirms that the area does not support a wetland. The USFWS wetland mapping also shows a small wetland feature (0.95 acres) located south of, and outside of Woodside Project area. Further investigation will need to be done to determine if that feature is intact and, in fact, wetland if that parcel is ever proposed to be developed.

The 2018 field review did not attempt to delineate any other waters of the U.S. wetland features within the Master Plan Area but, instead, relied on aerial photography, the reconnaissance level field review and other studies performed in the area to identify potential waters and/or wetlands. Scattered throughout portions of the Master Plan Area, and outside of the Woodside Project area, are small patches of wetland plants surrounding leaking irrigation equipment, thus providing a steady supply of water to support a plant commonly found in moist soils. However, that alone is not indicative of a wetland. In different locations within the Study Area there are small man-made drainage channels that receive surface water runoff from the area and convey it into a larger conveyance ditch located on the east side of the Study Area (See Habitat Map). It is assumed this drainage feature conveys stormwater into the Fresno Metropolitan Flood Control District's regional retention pond that is located immediately east of the Enterprise Canal via a siphon. There is roughly 22,800 lineal feet of drainage features within the Master Plan Area. None of the ditch features occur within the Woodside Project area. Normally drainage ditches are not regulated as jurisdictional waters, but a determination would need to be made on a case-by-case basis.

The freshwater ponds located just north of Nees Avenue appear to be man-made ponds and operated and maintained for recreation/aesthetes and/or a source of water for livestock. These ponds cover a total of 6.75 acres (See Appendix A – Habitat Map). These ponds are normally perennial (filled year-round) and have some wetland habitat along the edges. These ponds likely provide habitat to some waterfowl (likely ducks), frogs (bull frogs in all likelihood), and may be stocked with small fish, including mosquito fish. The Fresno Mosquito and Vector Control Agency likely provides vector control within these ponds.

A determination of whether these man-made ponds would be considered jurisdictional waters of the U.S. and/or waters of the State would depend on whether the ponds were excavated within a historic drainage. There is some evidence to suggest that the area where the ponds are located were within a drainage swale/depression but it does not appear that was a historic waters within the swale. More detailed investigation and research would be needed on these features before a determination could be made on their potential jurisdictional status. If future development of these parcels is envisioned, then additional habitat and biological studies would also need to be conducted to determine whether these ponds support habitat for any special status species. The

1 We conducted a wetland delineation in accordance with the U.S. Army Corps of Engineers 1987 Delineation Method. That method requires the presence of positive indicators for wetland soils, a predominance of wetland vegetation, and evidence of inundation or prolonged ponding.

large drainage channel located on the eastern half of the Study Area does appear to have been excavated within a historic drainage and modification to that channel would likely require permits.

Special Status Species

The California Natural Diversity Database (CNDDB) was reviewed to determine which special status species could be present within the Study Area. There is no critical habitat for any listed species within or near the Master Plan Area. Table 2 provides a summary of the species identified in the CNDDB and by the by the U.S. Fish and Wildlife Service that would have the highest likelihood of being present based on habitat requirements. Appendix B – Data Query Results provides the complete data records for the Study Area.

Although the database did not include all migratory birds and raptors, such species could use the site to forage for food or nesting in the large trees adjacent to the residential homes. Since the Study Area has numerous large, mature trees, these trees could provide suitable nesting habitat for raptors. Areas within the Study Area that have soft soils and a ground squirrel population could provide suitable habitat for Western burrowing owl. Recurring disturbance may preclude burrowing owl occupation but the species could be present. Burrowing owls are opportunistic nesters and will nest in any area that provides suitable prey base and sufficient ground cover.

Table 2
Summary of Potential Special Status Species Impacts
Dry Creek Master Plan Area

Common Name	*Scientific Name*	*Status*[1]	*Effects*[2]	*Occurrence in the Study Area*[3]
Birds[2]				
Black-chinned Sparrow	*Spizella atrogularis*	BCC	NE	**Absent.** Typically found on mountain slopes, open chaparral and sagebrush. Suitable habitat not present.
Burrowing owl	*Athene cunicularia*	BCC	ME	**Potentially Present.** Study Area may support suitable nesting habitat/burrows
Clark's grebe	*Aechmophorus clarkii*	BCC	NE	**Likely Absent.** Requires marshes for breeding. Study Area lacks suitable marsh habitat.
Lawrence's goldfinch	*Carduelis lawrencei*	BCC	ME	**Likely Absent.** No individuals in area of effect but suitable habitat for wintering and migration is present
Least Bell's vireo	*Vireo bellii pusillus*	CE, FE	NE	**Likely Absent:** No known to occur in Fresno County. Breeds in riparian habitat primarily in southern Ca.
Lewis's woodpecker	*Melanerpes lewis*	BCC	NE	**Likely Absent.** Found in open woodlands. Suitable habitat not present within Study Area.
Mountain plover	*Charadrius montanus*	BCC	ME	**Likely Absent.** Breeds in short grassland and relies upon ground squirrel population for nest sites. Marginal suitable habitats present. Unlikely present but historically found in Fresno County.
Rufous Hummingbird	*Selasphorus rufus*	BCC	NE	**Likely Absent.** Breeds in a wide variety of habitats but typically restricted to western Fresno County.
Swainson's hawk	*Buteo swainsoni*	CT	ME	**Potentially Present.** Suitable foraging, breeding, and migratory habitat is present
Tricolored blackbird	*Agelaius tricolor*	BCC	ME	**Potentially Present.** Some suitable nesting and foraging habitat may be present within water ponds
Western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	CE, FT	NE	**Absent.** Suitable habitat not present within Study Area
Yellow-billed magpie	*Pica nuttalli*	BCC	ME	**Absent.** No individuals in area of effect but suitable foraging and breeding habitat is present
Mammals				
Fresno kangaroo rat	*Dipodomys nitratoides*	CE, FE	NE	**Absent**. No individuals in area of effect

2 Not all bird species that were listed in the CNDDB quad searches and/or USFWS list are included if they were coastal or mountain species, or required other nesting habitat no potentially present (e.g. desert/coastal shrub).

San Joaquin kit fox	*Vulpes macrotis mutica*	CT, FE	ME	**Absent**. No individuals in area of effect. No suitable habitat present to support species. Unlikely visitor even for hunting because site is surrounded by dense urban areas.
Amphibians				
California tiger salamander	*Ambystoma californiense*	CT, FT	ME	**Present.** Study Area unlikely to support suitable breeding habitat because of the lack of seasonal wetlands. However, individual parcels would have to be evaluated on a project basis to determine if suitable breeding habitat is present.
California red-legged frog	*Rana draytonii*	N/A, FT	ME	**Likely Absent.** Species likely extripated from the Central Valley floor. Some breeding components may be present (ponds) but suitable upland dispersal appears absent. Individual parcels should be evaluated to determine if suitable breeding habitat criteria is potentially present.
Reptiles				
Blunt-nosed leopard Lizard	*Gambelia silus*	CT, FE	NE	**Likely Absent.** Suitable habitat not present. Requires semiarid grassland, alkali flats and washes.
Giant garter snake	*Thamnophos gigas*	CT, FT	NE	**Absent.** Suitable habitat not present.
Western pond turtle	*Emys marmorata*	None	ME	**Potentially Present.** Suitable habitat present to support species
Plants				
Hartweg's golden sunburst	*Pseudobahia bahiifolia*	CE, FE 1B	ME	**Likely Absent.** Suitable habitat not likely present but survey may be needed on some parcels
San Joaquin adobe sunburst	*Pseudobahia peirsonii*	CE, FT 1B	ME	**Likely Absent.** Suitable habitat not likely present but surveys may be needed on some parcels.
Hairy Orcutt grass	*Orcuttia pilosa*	CE, FE 1B	NE	**Likely Absent.** The site does not support suitable habitat. Requires deep vernal pools with prolonged period of inundation.
San Joaquin Valley Orcutt grass	*Orcuttia inaequalis*	CE, FT 1B	ME	**Likely Absent.** Site likely does not support suitable habitat but surveys may be needed on some parcels.
Succulent owl's-clover	*Castilleja campestris* ssp. *succulenta*	CE, FT 1B	NE	**Likely Absent.** Site likely does not support suitable habitat (vernal pools) but surveys may be needed if vernal pools are found.
Greene's Tuctoria	*Tuctoria greenei*	CE, FE 1B	NE	**Likely Absent.** Site likely does not support suitable habitat (vernal pools) but surveys may be needed if vernal pools are found.

California jewelflower	*Caulanthus californicus*	CE, FE 1B	NE	**Likely Absent.** Site likely does not support suitable habitat.
Sanford's arrowhead	*Sagittaria sanfordii*	1B	ME	**Potentially Present.** Occurs in slow moving waters and irrigation canals, ditches, and detention basins around the Fresno/Clovis Area (CNDDB 2012)
Fish				
Delta smelt	*Hypomesus transpacificus*	CE, FT	NE	**Absent.** Suitable habitat not present within Study Area
Invertebrates				
Conservancy Fairy Shrimp	*Branchinecta conservatio*	FE	NE	**Likely Absent.** Study Area does not appear to support suitable habitat. Individual parcels may need to be evaluated for suitable habitat.
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT	NE	**Likely Absent.** Listing status no longer applies to Fresno County.
Vernal Pool Fairy Shrimp	*Branchinecta lynchi*	FT	NE	**Likely Absent.** Study Area does not appear to support suitable habitat. Individual parcels may need to be evaluated for suitable habitat.

1 Status= Listing of special status species, unless otherwise indicated
CE: California listed as Endangered
CT: California listed as Threatened
FE: Federally listed as Endangered
FT: Federally listed as Threatened
BCC: Bird of Conservation Concern
USFWS = U.S. Fish and Wildlife Service
2 Effects = Effect determination
NE: No Effect
ME: May effect, not likely to adversely affect
3 Definition Of Occurrence Indicators
Present: Species recorded in area
Absent/Likely Absent: Species not recorded in study area and/or
CNDDB = California Natural Diversity Database provided by CDFG
CNPS Categories for Plant Species:
1A - Presumed extinct in California
1B - Rare or endangered in California and elsewhere;

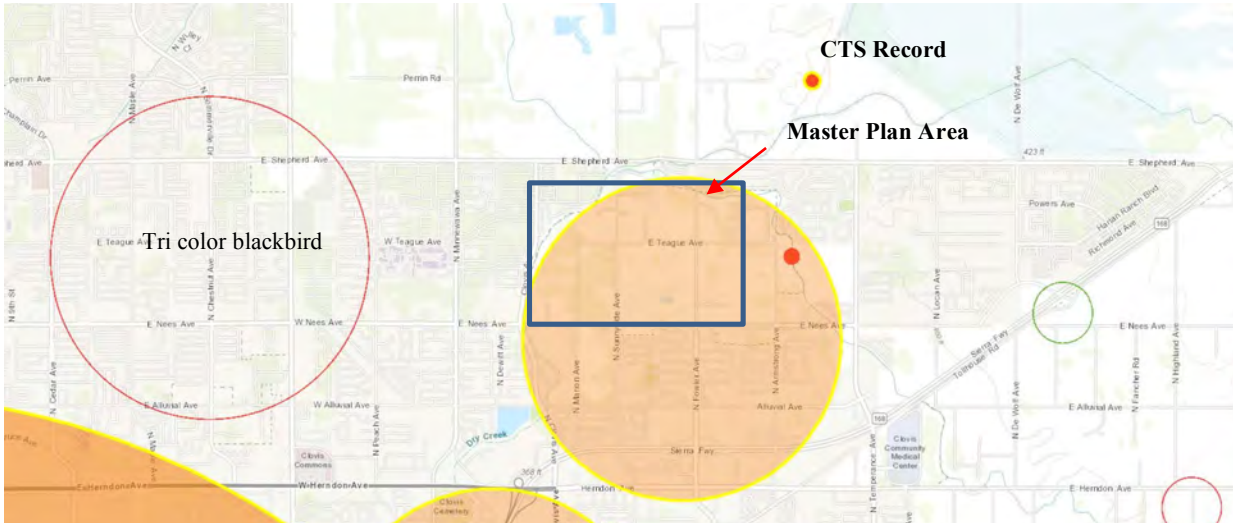


Figure 3- CNDDB Bio Mapping Showing Records of Known Species

California tiger salamander (considered extirpated)

Western pond turtle

California Tiger Salamander

California tiger salamander (*Ambystoma californiense)* (CTS) is listed as both federally threatened and state threatened. The CTS is located in areas where vernal pools (and other suitable breeding habitat) are located within extensive open grassland habitats, within Madera and Fresno Counties. The majority of their adult and sub adult lives are spent in upland habitats. Vernal pools that hold water for 3-4 months of winter and spring provide the breeding habitat for the CTS. Salamanders will migrate to their breeding sites from November to December (Barry and Shaffer 1994). CTS may migrate up to a mile between upland habitat and breeding sites. The larvae mature in these pools as they begin to dry in April and May and leave in search of upland habitat. There appears to be a strong association between grazed communities, burrowing mammals, and the presence of CTS (USDOI 2009). Adults will find burrows dug by California ground squirrels (*Otospermophilus beecheyi*) and pocket gophers (*Thomomys bottaeto*) to aestivate (oversummer) (Barry and Shaffer 1994, Trenham 2001).

CTS is endemic to California and the historical presence of it likely includes grassland habitats that are found throughout the state. The primary cause for decline in populations has been habitat loss and fragmentation due to urban and agricultural development, land conversion, and other human-caused factors. It does not appear that there vernal pools located within the Study Area

but low spots in the project area may pond water in years of greater than average rainfall. Normally shallow depressions formed during higher precipitation years have a hydrologic regime that is too "flashy" (the areas dry out too quickly). CTS requires several weekas of ponding duration to successfully complete breeding and metamorphosis.

There is no critical habitat for CTS in the Master Plan Area. The nearest critical habitat is located north of the San Joaquin River. The CNDDB identified one record of CTS within the vicinity of the Master Plan Area (somewhere within the shaded area shown in map (previous page and Appendix B, record # 613). This record from was 1974 and the CTS was located within a vernal pool but since that time the occurrence is assumed to be extirpated/eradicated (Jennings). The accuracy of this record was identified as a 1 mile radius. The nearest known intact record is located just below the Big Dry Creek Reservoir. It is not known whether the Master Plan Area supports suitable habitat but the likelihood is low given several factors, namely the following factors:

1) the level of disturbance to the land within the Study Area may have removed any habitat that may have been suitable historically;

2) ongoing disturbance from farming and ranching activities may preclude occupation of upland habitat and 4) the freshwater ponds within the Study Area;

3) the freshwater ponds may be occupied with species known to prey upon CTS larva (namely bull frogs and mosquitofish and pond management may preclude occupation (application of insecticides and algaecides);

4) occupation of the area as upland aestivation habitat is unlikely because of the number of physical barriers between the known breeding habitat to the north (north of Shepherd Avenue), which include several major roadways, urbanized residential areas to the north of the Study Area, the Enterprise Canal, and Dry Creek to the west.

The 2016 biological studies of the Woodside Property and portions of the parcels that may be developed in the near future did not find any potential for occupation by CTS on those lands within the Master Plan Area because of the lack of suitable breeding or aestivation habitat.

Western Pond Turtle

Western pond turtle (*Emys marmorata)* (WPT) is the only native aquatic and freshwater turtle in California. It normally associates with permanent or nearly permanent aquatic habitats including streams, lakes, and ponds (Live Oak Associates, Inc. 2013). WPT occurs in aquatic areas with basking sites, dense stands of vegetation, abundant aquatic invertebrates, suitable nesting sites nearby, and a lack of predators, both native and exotic (Jennings and Hayes 1994). The ponds in the project area may provide suitable habitat for WPT depending on how the ponds are managed. There is one known record for Western pond turtle in the vicinity of the Study Area.

Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is state threatened and is a migrant species that spends much of the spring, summer, and early fall in California's Central Valley. Their preferred nesting

habitat consists of valley oaks, cottonwoods, and other tall trees adjacent to both agricultural fields and grasslands. They have been observed more frequently in recent years within the Central Valley. Due to the recent expansion of their population, it is possible that agricultural, grassland, and rural residential areas may support foraging and possibly nesting hawks.

Burrowing Owl

Burrowing owl (*Athena cunicularia*) is a species of concern in California. It is a small owl that lives in grassland habitats of the Central Valley region that also support California ground squirrels. The owl seeks shelter in the ground squirrel burrows from February to July. Although the numbers of owls have declined in some parts of California over the past 20 years, their numbers have increased greatly in some agricultural areas. In Fresno County, the species mostly occurs on the valley floor. The grassland areas of the project site provide suitable foraging and nesting habitat for the species but there is no critical habitat in the site. While no owls have been observed on the site during limited field surveys they have been observed in grasslands within the region. Portions of the Study Area support potential suitable nesting habitat based on the studies performed within the Master Plan Area in 2016 (Woodside Property, etc.). Prior to any future ground disturbance associated with land conversion (from any existing use), habitat assessments and, if needed, pre-construction surveys for burrowing owl should be performed.

Other Migratory Nesting Birds

There are several species of migratory and resident nesting birds that could potentially use the Study Area for nesting area. The USFWS lists 23 migratory bird species in the area however the project site does not support the habitat needed by every species for breeding or wintering. The following selected species are representative of the variety of species identified in the CNDDB and USFWS list.

The California thrasher (*Toxostoma redivivum*) is a resident bird that lives in parks and gardens and foothills. It rarely wanders from this breeding area. The Study Area does provide this type of habitat however no critical habitat is in the Study Area.

Lawrence's goldfinch (*Spinus lawrencei*) winters and migrates in weedy fields, farmland, and streamsides. Given this migratory and wintering habitat the project area provides suitable habitat for the species. There is no critical habitat for this species in the Study Ar4ea.

The mountain plover (*Charadrius montanus*) winters in California usually in desert flats and plowed fields. The project site provides suitable habitat for the species to winter there but there is no critical habitat in the Study Area.

The tricolored blackbird (*Agelaius tricolor*) uses open habitats such as farm fields, pastures, and large lawns for its foraging and breeding sites. There is no critical habitat in the Study Area but it does provide suitable habitat.

The yellow-billed magpie (*Pica nuttalli*) does not migrate. It usually lives in areas with groves of trees along streams that border open country such as pastures and farmland. The Study Area provides this habitat near Dry Creek but there is no critical habitat in the site.

Plant Species

There are several special status plant species that could be preset within the Master Plan Area. There are several species associated with vernal pools, ponds, and seasonal drainages/wetlands and if that type of habitat is determined to be present, then those features should be surveyed for those species during the appropriate bloom period (generally spring to early summer). There are some upland species that are likely not present because on recurring disturbance associated with farming and ranching operations within the Study Area, but botanical surveys may be warranted in the larger tracks of non-native grassland habitat to confirm absence (or presence). The timing of those surveys should occur just before any land conversion occurs, which means development plans would need to accommodate a 3-4 month survey window starting in early spring prior to ground disturbance.

3.3 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The Study Area has been in continuously developed as rural residential (starting in the 1920s) and has undergone changes over the years. The Study Area property has been maintained as rural residential, mowed, used for pasture, put into and out of agricultural production over the years, had ditches dug and relocated, etc. The study area may support some jurisdictional and non-jurisdictional wetland features, but based on studies to date the features are most likely limited to man-made ditches/channels, ponds, and other non-natural features.

The potential for the Master Plan Areas to support species of concern is low because of the lack of suitable habitat and the recurring property maintenance (grazing, mowing, disking, etc.). However, lands within the Study Area could provide suitable breeding/nesting habitat for raptors and other nesting birds and potentially have areas with special status plants. As future modification to the Master Plan Area occurs, any lands slated for land conversion (from an existing use to a different use) should be evaluated at a project-level basis to determine whether any potential sensitive biological resources are present. Depending on the biological habitats present, the following additional surveys may need to be performed:

- Project level wetland delineation to determine jurisdictional status of any waters and/or wetlands;
- Project level habitat assessments for CTS assessment, burrowing owl, and Western pond turtle).
- Preconstruction burrowing owl surveys if suitable habitat is present.
- Preconstruction raptor nesting surveys
- Preconstruction surveys for Western pond turtle (if suitable habitat is present)
- Botanical survey (protocol levels surveys that meet CDFW guidelines for surveys)

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Holland, R.F. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California

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Trenham, P.C. 2001. Terrestrial habitat use by adult California tiger salamanders. Journal of Herpetology 35:343-346.Shaffer, H. B., R. N. Fisher, and S. E. Stanley. 1993. Status report: the California tiger salamander (Ambystoma californiense). Final report to the California Department of Fish and Game, Inland Fisheries Division, Rancho Cordova California, under Contracts (FG9422 and 1383).

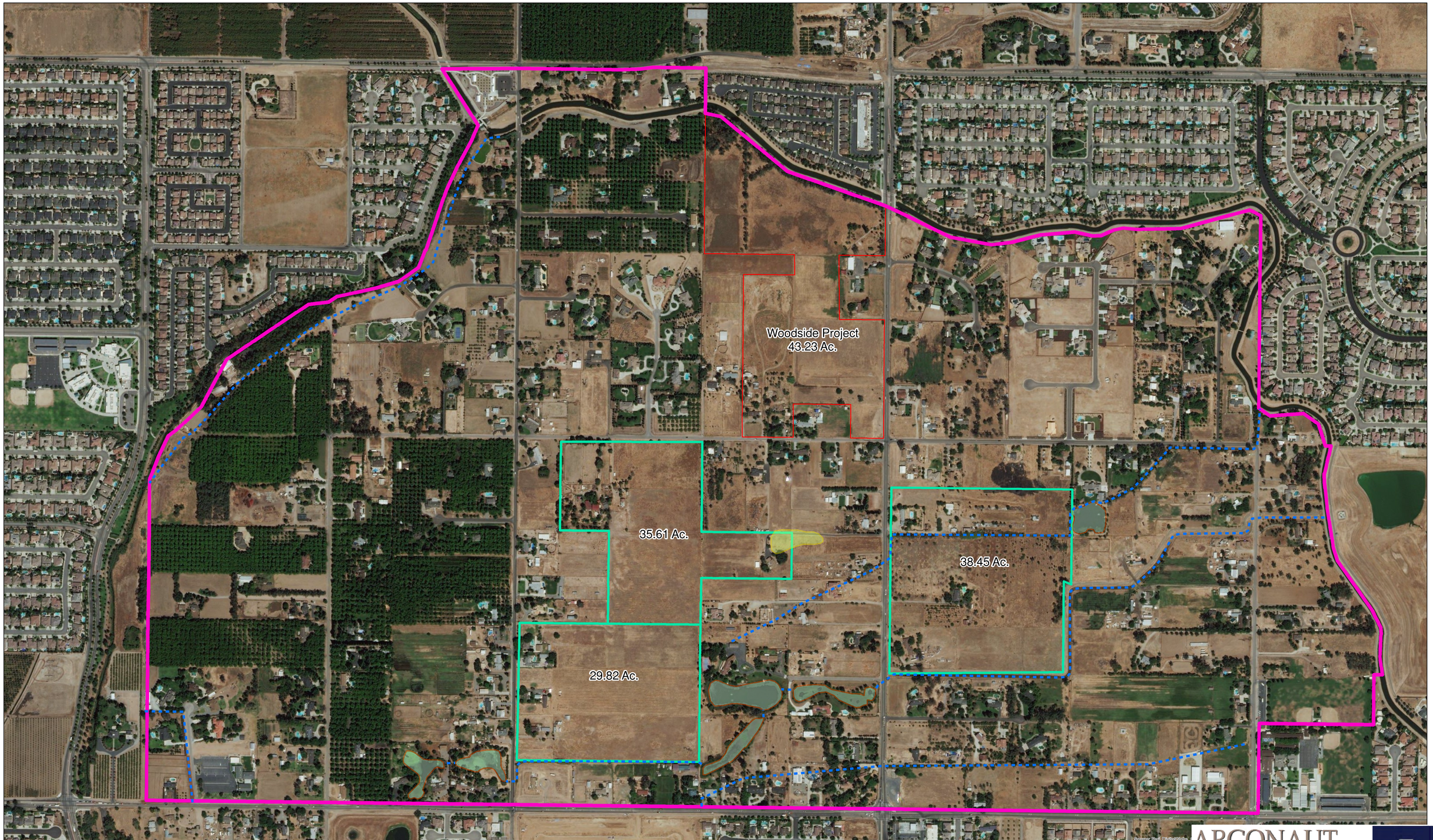
U.S. Department of the Interior. 2009. Enterprise Canal at Big Dry Creek Improvement Project Fresno Irrigation District Fresno County California.

Appendix A – Dry Creek Reserve Master Plan Habitat Map

HABITAT MAP

Dry Creek Preserve Master Plan Area

PROJECT LOCATION: Part of Sections 27, 28, & 29 T. 12S., R.21E., Mount Diablo Base and Meridian
Fresno County California,



N

600 300 0 600 Feet

1 in = 300 ft

Legend

- Potential Wetland (+/-0.95 Acres)
- Aquatic (+/-6.75 Acres)
- Drainage (+/-22,795 LF)
- Dry Creek Preserve
- Probable Developement
- Woodside Project

Date: 1/11/2018

ARGONAUT ECOLOGICAL CONSULTING, INC.

Appendix B –
Data Base Query Results

Multiple Occurrences per Page

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Lanes Bridge (3611987) OR Friant (3611986) OR Academy (3611985) OR Fresno North (3611977) OR Clovis (3611976) OR Round Mountain (3611975) OR Fresno South (3611967) OR Malaga (3611966) OR Sanger (3611965))
 AND Taxonomic Group IS (Dune OR Scrub OR Herbaceous OR Marsh OR Riparian OR Woodland OR Forest OR Alpine OR Inland Waters OR Marine OR Estuarine OR Riverine OR Palustrine OR Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects OR Ferns OR Gymnosperms OR Monocots OR Dicots OR Lichens OR Bryophytes OR Fungi)
 AND Federal Listing Status IS (Endangered OR Threatened) AND State Listing Status IS (Endangered OR Threatened)

Ambystoma californiense

Element Code: AAAAA01180

California tiger salamander

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G2G3
	State:	Threatened		**State:**	S2S3
	Other:	CDFW_WL-Watch List, IUCN_VU-Vulnerable			
Habitat:	**General:**	CENTRAL VALLEY DPS FEDERALLY LISTED AS THREATENED. SANTA BARBARA AND SONOMA COUNTIES DPS FEDERALLY LISTED AS ENDANGERED.			
	Micro:	NEED UNDERGROUND REFUGES, ESPECIALLY GROUND SQUIRREL BURROWS, AND VERNAL POOLS OR OTHER SEASONAL WATER SOURCES FOR BREEDING.			

Occurrence No.	49	**Map Index:**	14529	**EO Index:**	28414	**Element Last Seen:**	1974-04-02
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1974-04-02
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-06-15

Quad Summary: Lanes Bridge (3611987), Gregg (3611988), Little Table Mtn. (3711917)

County Summary: Madera

Lat/Long:	36.99354 / -119.87261	**Accuracy:**	nonspecific area
UTM:	Zone-11 N4098014 E244355	**Elevation (ft):**	383
PLSS:	T11S, R19E, Sec. 11, SE (M)	**Acres:**	1910.0

Location: THE GENERAL AREA EAST OF ROAD 36 AND NORTH OF AVE 16. WEST OF FRIANT.

Detailed Location: 3 SITES: NE OF AVE 16 & ROAD 37; 0.5 MI NW OF AVE 16 & ROAD 37; & 0.5 MI S AND 1.6 TO 2.6 MILES SW OF HWY 145 & ROAD 38.

Ecological: 2009 AERIAL PHOTO SHOWS THAT THIS AREA HAS UNDERGONE SIGNIFICANT DEVELOPMENT. THERE IS STILL HABITAT IN SURROUNDING AREAS.

General: L. DUNN FIELD NOTES #2 & 3 FROM 13 FEB 74 & NOTE #12 FROM 2 APRIL 1974.

Owner/Manager: UNKNOWN

Occurrence No.	71	**Map Index:**	15013	**EO Index:**	28394	**Element Last Seen:**	2006-03-20
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-03-20
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-04

Quad Summary: Academy (3611985)

County Summary: Fresno

Lat/Long:	36.87941 / -119.60412	**Accuracy:**	nonspecific area
UTM:	Zone-11 N4084662 E267906	**Elevation (ft):**	462
PLSS:	T12S, R22E, Sec. 19, NE (M)	**Acres:**	46.0

Location: APPROXIMATELY 3.5 MLES WSW OF ACADEMY, NEAR MILEPOST 013.26 ALONG THE FRIANT-KERN CANAL.

Detailed Location: INITIALLY OBSERVED IN AREA ON WEST SIDE OF CANAL IN 1974 (DUNN POND #19). OBSERVED ON EAST SIDE OF CANAL IN 2006 AND MAPPED TO PROVIDED COORDINATES (SITE ID FKC-L-013.26.1).

Ecological: 1974 HABITAT DESCRIBED AS A VERNAL POOL W/ MURKY WATER, 1.0-1.5 FT DEEP, GOOD VERNAL POOL HABITAT. 2006 HABITAT DESCRIBED AS A TEA-COLORED VERNAL POOL W/ MIMA MOUNDS SURROUNDING POOL & ADJACENT LEMON ORCHARD. EMERGENT JUNCUS AT POOL EDGE.

General: UKN # OBSERVED ON 2 MAY 1974 BY L. DUNN. SITE CONSIDERED EXTIRPATED BY M. JENNINGS & M. HAYES (1992). UKN # OF LARVAE ABOUT 1-2 WEEKS OLD OBSERVED ON 20 MAR 2006 BY K. TOMLINSON (VP FAIRY SHRIMP & CA LINDERIELLA ALSO OBSERVED).

Owner/Manager: USBOR, PVT

Occurrence No.	76	**Map Index:**	37893	**EO Index:**	32900	**Element Last Seen:**	1973-03-28
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1973-03-28
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-06-17

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.98483 / -119.66352	**Accuracy:**	3/5 mile
UTM:	Zone-11 N4096505 E262939	**Elevation (ft):**	680
PLSS:	T11S, R21E, Sec. 10 (M)	**Acres:**	0.0

Location: ALONG MILLERTON ROAD, SOUTH OF MILLERTON LAKE STATE RECREATION AREA, EAST OF FRIANT.

Detailed Location:

Ecological: 2009 AERIAL PHOTO SHOWS THAT THIS AREA IS STILL NATURAL HABITAT WITH MINIMAL DISTURBANCES.

General: J. BRODE FIELD NOTES #186.

Owner/Manager: UNKNOWN

Occurrence No.	91	**Map Index:**	14875	**EO Index:**	28383	**Element Last Seen:**	2005-04-21
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-04-21
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-09

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.95062 / -119.69310	**Accuracy:**	specific area
UTM:	Zone-11 N4092784 E260198	**Elevation (ft):**	475
PLSS:	T11S, R21E, Sec. 29, NE (M)	**Acres:**	5.0

Location: POOL ON EAST SIDE OF FRIANT-KERN CANAL AT MILEPOST 003.73, 1 AIR MILE NW OF THE CANAL/AUBERRY RD X-ING, SE OF FRIANT.

Detailed Location: 1974 OBS DESCRIBED AS "VERNAL POND ABOUT 0.12 ACRE & 3-4 FT DEEP, APPROX 2.5 MI SSW OF FRIANT, ON E SIDE OF FRIANT-KERN CANAL" (DUNN POND #5). REMAPPED TO 2005 ESRP COORDINATES (SITE ID FKC-L-003.73.1) WHICH IS SIMILAR TO DUNN'S MAP.

Ecological: CATTLE PRESENT (1974). HABITAT DESCRIBED AS A TURBID VERNAL POOL WITH CATTLE DISTURBANCE (2005).

General: LARVAE OBSERVED AS PRESENT ON 1 MAY 1974. AT LEAST ONE OBSERVED ON 21 APR 2005 BY J. KOKX.

Owner/Manager: USBOR, PVT

Occurrence No.	93	**Map Index:**	14918	**EO Index:**	28376	**Element Last Seen:**	1974-05-01
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1974-05-01
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-06-17

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.96216 / -119.66070	**Accuracy:**	1 mile
UTM:	Zone-11 N4093983 E263120	**Elevation (ft):**	600
PLSS:	T11S, R21E, Sec. 22, NE (M)	**Acres:**	0.0

Location: 3.4 ROAD MILES ON DIRT ROAD OFF MILLERTON RD, 3 AIR MILES SE OF FRIANT.

Detailed Location:

Ecological: VERNAL POOL. 2009 AERIAL PHOTO SHOWS THAT THIS AREA IS STILL PRIMARILY NATURAL HABITAT WITH MINIMAL DISTURBANCES.

General: L. DUNN FIELD NOTES #13.

Owner/Manager: UNKNOWN

Occurrence No.	94	**Map Index:**	14592	**EO Index:**	28380	**Element Last Seen:**	1995-04-04
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	1995-04-04
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2012-01-20

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.96855 / -119.84268	**Accuracy:**	nonspecific area
UTM:	Zone-11 N4095160 E246936	**Elevation (ft):**	375
PLSS:	T11S, R19E, Sec. 13, SE (M)	**Acres:**	127.6

Location: 2-3 MI W OF HWY 41 ON THE N SIDE OF AVE 15, W OF LITTLE TABLE MOUNTAIN.

Detailed Location: SITE IS LOCATED ON A SIX-SECTION PIECE OF PROPERTY WHICH IS QUITE NEAR TWO PROPOSED NEW CITIES, RIO MESA AND CASTLE COOK DEVELOPMENT.

Ecological: HABITAT DESCRIBED AS CLAYPAN VERNAL POOLS & SWALES IN NON-NATIVE GRASSLAND. OTHER TAXA PRESENT INCLUDE SCAPHIOPUS HAMMONDII, BUFO BOREAS, HYLA REGILLA, BRANCHINECTA LYNCHI, & LINDERIELLA OCCIDENTALIS.

General: UNKNOWN NUMBER OBSERVED ON 2 APR 1974, 3 MI W OF HWY 41 (L. DUNN FIELD NOTES #11). UNKNOWN NUMBER OBSERVED DURING SPRING OF 1993. 4 LARVAE OBS IN ONE POOL & 3 IN ANOTHER POOL 0.4 MI W OF RD 39-1/2 ON 4 APR 1995.

Owner/Manager: PVT

Occurrence No.	124	**Map Index:**	32551	**EO Index:**	1755	**Element Last Seen:**	1992-XX-XX
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1992-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-05-29

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.91077 / -119.73529	**Accuracy:**	specific area
UTM:	Zone-11 N4088468 E256314	**Elevation (ft):**	375
PLSS:	T12S, R20E, Sec. 01, SE (M)	**Acres:**	5.6

Location: 1.2 KM SOUTH OF WILLOW AVENUE X FRIANT ROAD; 10 KM SSW OF FRIANT.

Detailed Location: 3 POOLS AT SITE: 1 LARGE POOL IN NORTHERN REGION AND 2 SMALL POOLS IN SOUTHERN REGION.

Ecological: 1992: HABITAT IS LARGER POOL IN NORTHERN AREA OF SITE (~1 ACRE) IN NON-NATIVE GRASSLAND. ROLLING HILL TOPOGRAPHY. DEGRADED BY CONSTRUCTION OF RESIDENTIAL ROAD. 2009 AERIAL PHOTO SHOWS SITE DEVELOPED BY GOLF COURSE & RURAL RESIDENTIAL.

General: "MANY" OBSERVED; WESTERN SPADEFOOT TOAD AND BRANCHINECTA LYNCHI ALSO OBSERVED AT SITE.

Owner/Manager: PVT

Occurrence No.	125	**Map Index:**	22172	**EO Index:**	18452	**Element Last Seen:**	1992-XX-XX
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	1992-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1993-02-18

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.98955 / -119.69674	**Accuracy:**	80 meters
UTM:	Zone-11 N4097113 E259997	**Elevation (ft):**	580
PLSS:	T11S, R21E, Sec. 08, NE (M)	**Acres:**	0.0

Location: ON THE SOUTH SIDE OF MILLERTON ROAD, 0.75 MILE EAST OF FRIANT.

Detailed Location:

Ecological: HABITAT CONSISTS OF A CATTLE POND SURROUNDED BY NON-NATIVE GRASSLAND HABITAT.

General: "MANY" OBSERVED.

Owner/Manager: PVT

Occurrence No.	126	**Map Index:**	22173	**EO Index:**	27243	**Element Last Seen:**	2008-03-13
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2008-03-19
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-12-03

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.98523 / -119.68572	**Accuracy:**	1/5 mile
UTM:	Zone-11 N4096605 E260964	**Elevation (ft):**	575
PLSS:	T11S, R21E, Sec. 09, SW (M)	**Acres:**	0.0

Location: ON THE SOUTH SIDE OF MILLERTON ROAD, 1.25 MILES EAST OF FRIANT.

Detailed Location:

Ecological: HABITAT CONSISTS OF 3 VERNAL POOLS SURROUNDED BY NON-NATIVE GRASSLAND HABITAT (1992). ON 13 MAR 2008, VERNAL POOL W/CTS HAD AN AVERAGE DEPTH OF 2 INCHES. VISIBLE DISTURBANCE CONSISTED OF A DIRT ROAD RUNNING E-W THROUGH VERNAL POOL/SWALE.

General: IN 1992, "MANY" OBSERVED. 30 LARVAE & 5 EGGS OBSERVED IN ONE VERNAL POOL WITHIN VERNAL POOL/SWALE COMPLEX ON 13 MAR 2008. POOL WAS DRY ON 19 MAR 2008.

Owner/Manager: DPR-MILLERTON LAKE SRA

Occurrence No.	127	**Map Index:**	22171	**EO Index:**	18450	**Element Last Seen:**	2008-03-12
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	2008-03-12
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-11

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.97664 / -119.71324	**Accuracy:**	specific area
UTM:	Zone-11 N4095722 E258487	**Elevation (ft):**	400
PLSS:	T11S, R21E, Sec. 18 (M)	**Acres:**	708.9

Location: BELOW FRIANT DAM. EAST OF FRIANT ROAD AND WEST OF THE FRIANT-KERN CANAL, SOUTH OF FRIANT.

Detailed Location:

Ecological: SALAMANDERS FOUND IN AN EXTENSIVE VERNAL POOL HABITAT IN GRASSLAND. SPADEFOOT TOADS ALSO VERY COMMON. WESTERN TOAD LARVAE & LINDERIELLA OCCIDENTALIS ALSO OBSERVED.

General: MVZ 164875 COLL 25 MAR 1973 FROM THIS AREA. 5 APR 1992: ~100 ADULTS & 500 JUV OBS IN 7 POOLS. 20+ LARVAE OBS 19 MAR 1993 & A 3" LONG ADULT OBS 30 MAR 1993, IN ONE OF LARGEST POOLS IN COMPLEX. 10 LARVAE OBS IN LARGE VERNAL POOL 12 MAR 2008.

Owner/Manager: PVT-FRIANT RANCH LLC

Occurrence No.	135	**Map Index:**	24097	**EO Index:**	18715	**Element Last Seen:**	1993-03-17
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	1993-03-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1993-09-08

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.95557 / -119.71450	**Accuracy:**	specific area
UTM:	Zone-11 N4093387 E258308	**Elevation (ft):**	440
PLSS:	T11S, R21E, Sec. 19, SE (M)	**Acres:**	32.7

Location: 1 MILE ESE OF LOST LAKE, 2 MILES SOUTH OF FRIANT.

Detailed Location:

Ecological: HABITAT CONSISTS OF A VERNAL POOL COMMUNITY, VEGETATED BY PLAGIOBOTHRYS SP, BRODIAEA PULCHELLUM, ESCHSCHOLZIA SP, ETC.

General: 5 JUVENILES OBSERVED IN 1993.

Owner/Manager: UNKNOWN

Occurrence No.	163	**Map Index:**	24430	**EO Index:**	6581	**Element Last Seen:**	2004-03-17
Occ. Rank:	Poor			**Presence:**	Presumed Extant	**Site Last Seen:**	2004-03-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-03

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.96414 / -119.76555	**Accuracy:**	specific area
UTM:	Zone-11 N4094469 E253789	**Elevation (ft):**	439
PLSS:	T11S, R20E, Sec. 23, NW (M)	**Acres:**	8.0

Location: ALONG MADERA CANAL, 0.3 MILE N OF RD 204, ALONG SOUTH END OF LITTLE TABLE MOUNTAIN, ABOUT 3.1 MILES SW OF THE FRIANT PO.

Detailed Location: 2004: MAPPED TO PROVIDED COORDINATES; SITE NAME MAC-R-005.66.1 AT CANAL MILEPOST 005.66.

Ecological: HABITAT IN 2004 DESCRIBED AS A CLEAR VERNAL POOL AT CANAL ROAD EDGE (DAMMED BY ROAD); DRAINS INTO CULVERT WHEN FULL; EMERGENT VEG INCL JUNCUS SP. & ERYNGIUM SP; WATER CLEAR-BRACKISH & DEEP; GOOD FOR CTS.

General: 1993: ONE JUVENILE OBSERVED; SITE QUALITY DIMINISHED BY CONCRETE BLOCKS PILED ALONG THE BANK. 2004: DATA NOT CLEAR AS TO WHEN OR HOW MANY WERE PRESENT, BUT ASSUME AT LEAST ONE WAS OBSERVED ON 17 MAR 2004 BY J. KOKX.

Owner/Manager: USBOR

Occurrence No.	164	**Map Index:**	24601	**EO Index:**	6394	**Element Last Seen:**	1993-03-24
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1993-03-24
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1993-09-16

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.99778 / -119.80560	**Accuracy:**	80 meters
UTM:	Zone-11 N4098306 E250333	**Elevation (ft):**	420
PLSS:	T11S, R20E, Sec. 05, SE (M)	**Acres:**	0.0

Location: ALONG MADERA CANAL, 0.6 MILE WEST OF HWY 41 AND 2.2 MILES NORTH OF AVENUE 15, WEST OF LITTLE TABLE MOUNTAIN.

Detailed Location:

Ecological:

General: ONE JUVENILE OBSERVED IN 1993.

Owner/Manager: USBOR

Occurrence No.	222	**Map Index:** 25584	**EO Index:**	5486		**Element Last Seen:**	1991-04-15
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	1991-04-15
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2012-01-20

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.98806 / -119.75621	**Accuracy:**	1/5 mile
UTM:	Zone-11 N4097099 E254698	**Elevation (ft):**	440
PLSS:	T11S, R20E, Sec. 11, SE (M)	**Acres:**	0.0

Location: WEST SIDE OF ROAD 204, 0.7 MILE SOUTH OF HWY 145, ON THE EAST SIDE OF LITTLE TABLE MOUNTAIN.

Detailed Location: SHAFFER SITE #107. LOCATED ON THE URRUTINA RANCH.

Ecological: HABITAT CONSISTS OF A VERNAL POOL.

General: THERE IS A VERY GENERALIZED RECORD OF CTS LARVA OBSERVED BY DUNN IN A VERNAL POOL ABOUT 3 MILES WEST OF FRIANT DURING SPRING 1969. CTS PRESENT ON 15 APR 1991; NUMBER AND LIFESTAGE UNKNOWN.

Owner/Manager: PVT

Occurrence No.	223	**Map Index:** 24599	**EO Index:**	5487		**Element Last Seen:**	2005-03-03
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	2005-03-03
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2012-01-20

Quad Summary: Friant (3611986), Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.97667 / -119.75240	**Accuracy:**	specific area
UTM:	Zone-11 N4095826 E255000	**Elevation (ft):**	435
PLSS:	T11S, R20E, Sec. 14, NE (M)	**Acres:**	18.0

Location: IN THE AREA OF MADERA CANAL & ROAD 204, 1.5 MILES SOUTH OF HWY 145, ON THE SE SIDE OF LITTLE TABLE MOUNTAIN.

Detailed Location: JUST EAST OF ROAD 204 IN 1991; SHAFFER SITE #111; LOCATED ON THE URRUTINA RANCH. IN 2005, ABOUT 0.1 MILE EAST OF RD 204 ON N SIDE OF CANAL, MILE POST 4.06; POOL ID MAC-R-004.06.1.

Ecological: HABITAT CONSISTED OF AN ARTIFICIAL POND (1991). 2005: TEA-COLORED VERNAL POOL.

General: VERY GENERAL RECORD OF LARVAE OBS BY DUNN IN VERNAL POOL ABOUT 3 MILES W OF FRIANT DURING SPRING 1969. CTS PRESENT ON 15 APR 1991. LARVAL EGG MASSES PRESENT ON 3 MAR 2005.

Owner/Manager: USBOR, PVT

Occurrence No.	305	**Map Index:** 33052	**EO Index:**	3660		**Element Last Seen:**	1994-03-29
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	1994-03-29
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2009-06-18

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.83817 / -119.56935	**Accuracy:**	1/5 mile
UTM:	Zone-11 N4080001 E270883	**Elevation (ft):**	420
PLSS:	T12S, R22E, Sec. 33, SE (M)	**Acres:**	0.0

Location: NORTH SIDE OF HERNDON AVENUE, 0.75 MILE WEST OF ACADEMY AVENUE, 6 MILES EAST OF CLOVIS.

Detailed Location:

Ecological: 2009 AERIAL PHOTO SHOWS AREA SOUTH OF HERNDON AVENUE IS NOW LOW DENSITY RESIDENTIAL.

General: COLLECTION #MW-94-08 AND #MW-94-09, DEPOSITED AT UCD. CAS #199409, LARVA.

Owner/Manager: UNKNOWN

Occurrence No.	322	**Map Index:** 33076	**EO Index:**	19891		**Element Last Seen:**	1994-03-30
Occ. Rank:	Good		**Presence:**	Presumed Extant		**Site Last Seen:**	1994-03-30
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2001-09-10

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.96660 / -119.63658	**Accuracy:**	specific area
UTM:	Zone-11 N4094416 E265281	**Elevation (ft):**	660
PLSS:	T11S, R21E, Sec. 13, SW (M)	**Acres:**	9.7

Location: NORTH SIDE OF AUBERRY ROAD, 0.6 ROAD MILE WEST OF MILLERTON ROAD JUNCTION, APPROXIMATELY 4.5 MILES ESE OF FRIANT.

Detailed Location: 2 VERNAL POOLS NEAR ROAD AND OLD RAILROAD GRADE.

Ecological: VERNAL POOLS IN BLUE OAK WOODLAND, AUGMENTED BY RUNOFF FROM ROAD AND RAILROAD GRADE.

General: COLLECTION #RS-94-06, DEPOSITED AT DFG-IFD, AND #RS-94-07, DEPOSITED AT UCD. CAS #199424, LARVA. 800 TADPOLES OBSERVED (1994). POOLS ALSO CONTAIN SPADEFOOT TOAD TADPOLES. SITE COULD BE PROTECTED BY AN EASEMENT.

Owner/Manager: PVT

Occurrence No.	583	**Map Index:** 46277	**EO Index:**	46277		**Element Last Seen:**	1936-05-16
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1936-05-16
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2002-08-20

Quad Summary: Malaga (3611966), Fresno South (3611967), Clovis (3611976), Fresno North (3611977)

County Summary: Fresno

Lat/Long:	36.77388 / -119.77951	**Accuracy:**	5 miles
UTM:	Zone-11 N4073392 E251931	**Elevation (ft):**	300
PLSS:	T13S, R20E, Sec. 27 (M)	**Acres:**	0.0

Location: FRESNO.

Detailed Location:

Ecological:

General: 1879 RECORD FROM THE USNM (#11794), NO OTHER INFORMATION GIVEN. CORNELL UNIVERSITY MUSEUM OF VERTEBRATES #3017 (2 SPECIMENS) COLLECTED 16 MAY 1936 BY L.F. HADSELL. JENNINGS CONSIDERS THIS SITE EXTIRPATED.

Owner/Manager: UNKNOWN

Occurrence No.	613	**Map Index:**	46427	**EO Index:**	46427	**Element Last Seen:**	1974-05-03
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1974-05-03
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2001-11-07

Quad Summary: Clovis (3611976)

County Summary: Fresno

Lat/Long:	36.85063 / -119.68563	**Accuracy:**	1 mile
UTM:	Zone-11 N4081669 E260551	**Elevation (ft):**	380
PLSS:	T12S, R21E, Sec. 33 (M)	**Acres:**	0.0

Location: WEST SIDE OF THE FRIANT-KERN CANAL, 1.5 MILES NORTHWEST OF HWY 168. NORTH OF CLOVIS.

Detailed Location:

Ecological: VERNAL POOL.

General: OBSERVATION BY L.G. DUNN (DFG) DURING 1-3 MAY 1974 SURVEY. JENNINGS CONSIDERS THIS SITE EXTIRPATED.

Owner/Manager: UNKNOWN

Occurrence No.	624	**Map Index:**	46539	**EO Index:**	46539	**Element Last Seen:**	1984-03-13
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1984-03-13
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2009-05-21

Quad Summary: Friant (3611986), Millerton Lake West (3711916)

County Summary: Madera

Lat/Long:	36.99674 / -119.73696	**Accuracy:**	2/5 mile
UTM:	Zone-11 N4098012 E256439	**Elevation (ft):**	460
PLSS:	T11S, R20E, Sec. 01, SE (M)	**Acres:**	0.0

Location: NORTHWEST OF MADERA CANAL, EAST OF ROAD 204, VICINITY OF JUNCTION OF ROAD 205 AND 206.

Detailed Location: POOL IN VICINITY OF MADERA CANAL & ROAD 205, W OF FRIANT. POND AT JUNCTION OF ROADS 206 & 205, & AT ROAD 205, 0.5 MI EAST OF ROAD 204. WNW OF FRIANT.

Ecological: 2007 & 2009 AERIAL PHOTOS SHOW THAT THE SITE OF THIS OCCURRENCE HAS BEEN CONVERTED TO AGRICULTURE. THERE IS STILL HABITAT TO THE NORTH, ON THE NORTH SIDE OF ROAD 205.

General: FOR MADERA CANAL & ROAD 205 OBSERVATION, NO SPECIFIC DATE GIVEN, BUT PRIOR TO 1968. CAS #178430 COLLECTED 25 MAR 1982. UMMZ #188522 & 188523 COLLECTED 13 MARCH 1984 BY BOB HANSEN.

Owner/Manager: UNKNOWN

Occurrence No.	626	**Map Index:**	46543	**EO Index:**	46543	**Element Last Seen:**	2005-02-23
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2005-02-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-04

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.96183 / -119.68887	**Accuracy:**	80 meters
UTM:	Zone-11 N4094017 E260610	**Elevation (ft):**	475
PLSS:	T11S, R21E, Sec. 21, NW (M)	**Acres:**	0.0

Location: POOL ON EAST SIDE OF FRIANT-KERN CANAL AT MILEPOST 2.83, 1.4 AIR MILES NNW OF THE CANAL/AUBERRY RD INTERSECTION, FRIANT.

Detailed Location: ORIGINALLY MAPPED TO 1974 DESCRIPTION OF "VERNAL POOL ON EAST SIDE OF FRIANT-KERN CANAL, 2 MILES NW AUBERRY RD, 475 FT ELEV" AS A 600 M RADIUS CIRCLE. RE-MAPPED TO 2005 ESRP COORDINATES, SITE NAME FKC-L-002.83.1.

Ecological: HABITAT DESCRIBED AS A TEA-COLORED VERNAL POOL (2005).

General: UNKNOWN NUMBER OBSERVED ON 1-3 MAY 1974, & LATER CONSIDERED EXTIRPATED BY M. JENNINGS & M. HAYES (1992). AT LEAST ONE CTS LARVAE OBSERVED (2 CM LONG) ON 23 FEB 2005 BY F. VANG, & CONSIDERED EXTREMELY SMALL.

Owner/Manager: USBOR, PVT

Occurrence No.	628	**Map Index:**	46629	**EO Index:**	46629	**Element Last Seen:**	1993-XX-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	1993-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2001-11-28

Quad Summary: Academy (3611985)

County Summary: Fresno

Lat/Long:	36.90596 / -119.55987	**Accuracy:**	2/5 mile
UTM:	Zone-11 N4087501 E271931	**Elevation (ft):**	700
PLSS:	T12S, R22E, Sec. 10, NW (M)	**Acres:**	0.0

Location: ABOUT 1.75 MILES NORTHWEST OF THE INTERSECTION OF MADSEN RD AND TOLLHOUSE RD IN ACADEMY.

Detailed Location:

Ecological:

General: SURVEY DONE BY BIOSEARCH, BUT REPORTED BY LSA. UNKNOWN NUMBER OF LARVAE OBSERVED.

Owner/Manager: UNKNOWN

Occurrence No.	629	**Map Index:** 46630	**EO Index:**	46630		**Element Last Seen:**	1993-XX-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	1993-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2001-11-28

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.84168 / -119.53448	**Accuracy:**	2/5 mile
UTM:	Zone-11 N4080307 E274004	**Elevation (ft):**	470
PLSS:	T12S, R22E, Sec. 35, SE (M)	**Acres:**	0.0

Location: ABOUT 1.4 MILES SOUTHEAST OF INTERSECTION OF FRIANT-KERN CANAL & ACADEMY AVE. EAST OF MADSEN AVE.

Detailed Location: CONFLICTING INFORMATION IN THE SOURCE DOCUMENT. MAPPED ACCORDING TO THE T-R-S GIVEN, WHICH IS IN QUAD 3611975 NOT 3611985.

Ecological: 2009 AERIAL PHOTO SHOWS SOME LOW DENSITY RESIDENTIAL DEVELOPMENT WEST OF MADSEN AVE.

General: SURVEY DONE BY BIOSEARCH BUT REPORTED BY LSA. UNKNOWN NUMBER OF LARVAE OBSERVED.

Owner/Manager: UNKNOWN

Occurrence No.	656	**Map Index:** 47430	**EO Index:**	47430		**Element Last Seen:**	2002-02-23
Occ. Rank:	Excellent		**Presence:**	Presumed Extant		**Site Last Seen:**	2002-02-23
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2002-03-14

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.92358 / -119.71469	**Accuracy:**	specific area
UTM:	Zone-11 N4089837 E258190	**Elevation (ft):**	330
PLSS:	T12S, R21E, Sec. 06, SE (M)	**Acres:**	13.1

Location: SOUTH OF LITTLE DRY CREEK AND WEST OF AUBERRY ROAD, 4.5 MILES SOUTH OF FRIANT.

Detailed Location: SURROUNDING LAND IS DESTINED TO BECOME A MITIGATION BANK.

Ecological: HABITAT CONSISTS OF GRAZED ANNUAL GRASSLAND, WITH A RIPARIAN CORRIDOR CLOSE BY; TOPOGRAPHY IS MADE UP OF NUMEROUS MOUNDS/HARDPAN DEPRESSIONS, WITH SQUIRRELS AND GOPHERS. SITE IS WASHED OUT REGULARLY FROM PRECIPITATION OR SNOW-MELT RUN-OFF.

General: DOZENS OF JUVENILES OBSERVED ON 10 FEB 2002; COLLECTION MADE AND DEPOSITED AT CAS.

Owner/Manager: PVT

Occurrence No.	708	**Map Index:** 49019	**EO Index:**	49019		**Element Last Seen:**	2002-02-08
Occ. Rank:	Good		**Presence:**	Presumed Extant		**Site Last Seen:**	2002-02-08
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2002-10-15

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.92790 / -119.71173	**Accuracy:**	80 meters
UTM:	Zone-11 N4090309 E258467	**Elevation (ft):**	330
PLSS:	T11S, R21E, Sec. 31, SE (M)	**Acres:**	0.0

Location: 0.3 MILE WEST OF AUBERRY ROAD, SOUTH OF LITTLE DRY CREEK, 4 MILES SOUTH OF FRIANT.

Detailed Location: SITE IS PROPOSED FOR A MITIGATION BANK.

Ecological: HABITAT CONSISTS OF A FLOOD CONTROL THAT FLOWS FROM DRY CREEK RESERVOIR THROUGH ANNUAL GRASSLANDS; NUMEROUS MOUNDS AND HARDPAN DEPRESSIONS.

General: DOZENS OF LARVAE COLLECTED ON 8 FEB 2002, THEN DEPOSITED AT CAS (MRJ #1539).

Owner/Manager: PVT

Occurrence No.	732	**Map Index:**	41666	**EO Index:**	51282	**Element Last Seen:**	2001-02-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-02-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-05-15

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.94479 / -119.76380	**Accuracy:**	80 meters
UTM:	Zone-11 N4092317 E253883	**Elevation (ft):**	390
PLSS:	T11S, R20E, Sec. 26, SW (M)	**Acres:**	0.0

Location: WEST OF CREEK THAT DRAINS LITTLE TABLE MTN, 2 MILES SE OF ROAD 204 & HWY 41, 2.2 MILES NE OF AVENUE 12 & HIGHWAY 41.

Detailed Location: VERNAL POOL, CREEK DRAINS TO, AND IS 1 MILE NORTHWEST OF SAN JOAQUIN RIVER MILE 261.

Ecological: VERNAL POOL IN CURRENTLY-GRAZED NON-NATIVE GRASSLAND; SURROUNDING LAND USE IS AGRICULTURE, HOUSING DEVELOPMENT.

General: LARVAL CTS OBSERVED IN FEB 2001.

Owner/Manager: PVT

Occurrence No.	733	**Map Index:**	51283	**EO Index:**	51283	**Element Last Seen:**	2001-02-XX
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2001-02-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-05-15

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.93709 / -119.78719	**Accuracy:**	80 meters
UTM:	Zone-11 N4091523 E251774	**Elevation (ft):**	400
PLSS:	T11S, R20E, Sec. 33, NE (M)	**Acres:**	0.0

Location: 0.4 MILE EAST OF HIGHWAY 41 AND 0.9 MILE NORTH OF AVENUE 12, 14 MILES EAST OF MADERA.

Detailed Location:

Ecological: HABITAT CONSISTS OF A VERNAL POOL IN CURRENTLY-GRAZED NON-NATIVE GRASSLAND; SURROUNDING LAND USE IS AGRICULTURE AND COMMERCIAL/URBAN.

General: LARVAL CTS OBSERVED IN FEB 2001.

Owner/Manager: PVT

Occurrence No.	734	**Map Index:** 45182	**EO Index:**	51285		**Element Last Seen:**	2001-02-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	2001-02-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2003-05-15

Quad Summary:	Lanes Bridge (3611987)
County Summary:	Madera

Lat/Long:	36.90552 / -119.78512	**Accuracy:**	80 meters
UTM:	Zone-11 N4088015 E251857	**Elevation (ft):**	350
PLSS:	T12S, R20E, Sec. 09, NE (M)	**Acres:**	0.0

Location:	0.4 MILE EAST OF HIGHWAY 41 AND 0.3 MILE SOUTH OF AVENUE 11, 4.5 MILES NORTH OF PINEDALE.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF GRAZED NON-NATIVE GRASSLAND WITH VERNAL POOLS AND WETLAND DRAINAGES. GRASSLANDS NOW USED AS PASTURE; MOST WERE DRYLAND FARMED HISTORICALLY. SURROUNDING LANDS ARE AGRICULTURE, COMMERCIAL OR URBAN.
General:	LARVAL CTS OBSERVED DURING FEB 2001.
Owner/Manager:	PVT

Occurrence No.	735	**Map Index:** 51287	**EO Index:**	51287		**Element Last Seen:**	2001-02-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	2001-02-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2003-05-15

Quad Summary:	Lanes Bridge (3611987)
County Summary:	Madera

Lat/Long:	36.92715 / -119.77153	**Accuracy:**	80 meters
UTM:	Zone-11 N4090379 E253138	**Elevation (ft):**	350
PLSS:	T11S, R20E, Sec. 34, SE (M)	**Acres:**	0.0

Location:	1.3 MILES EAST OF HIGHWAY 41 AND 0.2 MILE NE OF AVENUE 12 "CURVE," 15 MILES EAST OF MADERA.
Detailed Location:	
Ecological:	HABITAT CONSISTS OF GRAZED NON-NATIVE GRASSLAND WITH VERNAL POOLS AND WETLAND DRAINAGES. GRASSLANDS NOW USED AS PASTURE; MOST WERE DRYLAND FARMED HISTORICALLY. SURROUNDING LANDS ARE AGRICULTURE, COMMERCIAL OR URBAN.
General:	LARVAL CTS OBSERVED DURING FEB 2001.
Owner/Manager:	PVT

Occurrence No.	887	**Map Index:** 66194	**EO Index:**	66274		**Element Last Seen:**	2005-05-01
Occ. Rank:	Good		**Presence:**	Presumed Extant		**Site Last Seen:**	2005-05-01
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2006-09-12

Quad Summary: Piedra (3611974), Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.80926 / -119.50036	**Accuracy:**	specific area
UTM:	Zone-11 N4076631 E276953	**Elevation (ft):**	490
PLSS:	T13S, R23E, Sec. 08, SW (M)	**Acres:**	2.0

Location: 0.5 MILE NORTH OF THE WATTS VALLEY ROAD CROSSING OVER FRIANT CANAL, 8 MILES NNE OF SANGER.

Detailed Location: MAPPED IN SW1/4 OF SW1/4 OF SECTION 8.

Ecological: HABITAT CONSISTS OF NON-NATIVE GRASSLAND. SURROUNDING LAND USE INCLUDES LIVESTOCK GRAZING, ORCHARDS, AND HOMES. 2009 AERIAL PHOTO SHOWS THE AREA IS STILL UNDEVELOPED.

General: 100'S OF ADULTS AND JUVENILES OBSERVED ON 1 MAY 2005.

Owner/Manager: PVT

Occurrence No.	888	**Map Index:** 66458	**EO Index:**	66562		**Element Last Seen:**	2006-02-26
Occ. Rank:	Good		**Presence:**	Presumed Extant		**Site Last Seen:**	2006-02-26
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2007-02-20

Quad Summary: Clovis (3611976)

County Summary: Fresno

Lat/Long:	36.87369 / -119.67091	**Accuracy:**	80 meters
UTM:	Zone-11 N4084192 E261935	**Elevation (ft):**	400
PLSS:	T12S, R21E, Sec. 22, NW (M)	**Acres:**	0.0

Location: NORTH SIDE OF A CONSTRUCTED FLOOD CONTROL CHANNEL, 0.25 MILE DOWNSTREAM OF BIG CREEK DAM, 3.5 MILES NE OF CLOVIS.

Detailed Location: THE SWALE THAT CONTAINED THE LARVAE WAS IMMEDIATELY ADJACENT TO A CHANNEL THAT FRESNO METROPOLITAN FLOOD CONTROL DISTRICT CONSTRUCTED AND USES TO RELEASE WATER DOWNSTREAM. SURROUNDING AREA CONTAINS SEASONAL WETLANDS AND VERNAL POOLS.

Ecological: HABITAT CONSISTS OF A SWALE CONTAINING ~3" OF WATER; SWALE APPEARS TO BE PART OF THE ORIGINAL CREEK MEANDER THAT WAS CUT OFF WHEN BIG CREEK DAM WAS CONSTRUCTED IN 1948. THE ADJACENT FLOOD CONTROL CHANNEL CONTAINS FISH AND BULLFROGS.

General: 2 CTS LARVAE OBSERVED ON 26 FEB 2006.

Owner/Manager: UNKNOWN

Occurrence No.	911	**Map Index:**	68133	**EO Index:**	68277	**Element Last Seen:**	2017-06-07
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2017-06-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-10-18

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.91633 / -119.70465	**Accuracy:**	specific area
UTM:	Zone-11 N4089008 E259062	**Elevation (ft):**	416
PLSS:	T12S, R21E, Sec. 5, SW (M)	**Acres:**	23.0

Location: ABOUT 0.75 MI NW-0.8 MI NNE OF MARIETTA AVE AT STETSON RD & 1.3-1.9 MI NE OF COPPER AVE AT AUBERRY RD, 5 MI S OF FRIANT.

Detailed Location: SALAMANDERS AND LARVAE SALVAGED FROM WORKSITE IN 2016-2017 WERE RELOCATED TO A DESIGNATED RELEASE SITE ON PRIVATE PROPERTY LESS THAN A MILE TO THE SOUTHEAST (OCCURRENCES #1255 & 1258)

Ecological: 2006: VERNAL POOL LOCATED IN MIDDLE OF A DRY FARMED FIELD. 2016-2017: SITE OF CITY OF FRESNO PIPELINE PROJECT; ADULTS WERE FOUND DURING EXCAVATION & RELOCATED TO PROPERTY TO THE SE; LARVAE FOUND IN SEASONAL POOLS, ALSO RELOCATED.

General: 5 LARVAE OBSERVED ON 22 FEB 2006. 1 JUVENILE INJURED BY CONSTRUCTION 1 AUG 2016, TREATED & RELOCATED. 1 ADULT FOUND DEAD ON 9 NOV 2016. 27 LARVAE DIPNETTED & RELOCATED MAR 2017. 1 SUBADULT UNEARTHED & RELOCATED 7 JUN 2017.

Owner/Manager: PVT

Occurrence No.	1027	**Map Index:**	72280	**EO Index:**	73096	**Element Last Seen:**	2004-03-11
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2004-03-11
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-15

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.89482 / -119.63740	**Accuracy:**	specific area
UTM:	Zone-11 N4086453 E264987	**Elevation (ft):**	465
PLSS:	T12S, R21E, Sec. 13, NW (M)	**Acres:**	9.0

Location: FRIANT-KERN CANAL @ MILEPOSTS 010.17, 010.24 (E OF BRIDGE), 2.4MI S OF OWENS MT, 1.1MI NE OF N DEWOLF AVE @ BEHYMER AVE.

Detailed Location: SERIES OF TWO POOLS; WEST POOL ON SOUTH SIDE OF CANAL (POOL IDS FKC-R-010.17.1) AND EAST POOL ON NORTH SIDE OF CANAL (ID FKC-L-010.24.1). MAPPED TO PROVIDED COORDINATES IN ESRP SHAPEFILE.

Ecological: WEST POOL: CLEAR POOL W/ JUNCUS SP, & GRASSES IN SURROUNDING AREA. EAST POOL: TEA COLORED & VERY DEEP (2005); AND VERY CLEAR, LONG & NARROW VERNAL POOL WITH LOTS OF EMERGENT VEG (2004).

General: 2 SMALL LARVAE (1-2 DAYS OLD) WERE IDENTIFIED IN VERNAL POOL SAMPLES FROM EAST POOL FROM 11 MAR 2004 BY J. KOKX.

Owner/Manager: USBOR, PVT

Occurrence No.	1028	**Map Index:** 72139	**EO Index:**	73099		**Element Last Seen:**	2004-03-11
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	2004-03-11
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2008-09-04

Quad Summary: Academy (3611985)

County Summary: Fresno

Lat/Long:	36.89717 / -119.61844	**Accuracy:**	80 meters
UTM:	Zone-11 N4086668 E266684	**Elevation (ft):**	462
PLSS:	T12S, R22E, Sec. 07, SW (M)	**Acres:**	0.0

Location: FRIANT-KERN CANAL AT MILEPOST 11.39, 2.6 MILES SSE OF OWENS MT, 2 MILES NE OF N DE WOLF AVE AT BEHYMER AVE, CLOVIS.

Detailed Location: MAPPED TO PROVIDED COORDINATES. SITE NAME FKC-L-011.39.1.

Ecological: HABITAT DESCRIBED AS A LARGE, CIRCULAR, TURBID, & MUDDY-BOTTOMED POOL; EDGE OF POOL ADJACENT TO RIGHT-OF-WAY FENCELINE. CATTLE DISTURBANCE AT POOL.

General: AT LEAST ONE OBSERVED ON 11 MAR 2004 BY J. KOKX.

Owner/Manager: USBOR, PVT

Occurrence No.	1029	**Map Index:** 72141	**EO Index:**	73101		**Element Last Seen:**	2006-03-20
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	2006-03-20
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2008-09-10

Quad Summary: Academy (3611985)

County Summary: Fresno

Lat/Long:	36.88961 / -119.61054	**Accuracy:**	specific area
UTM:	Zone-11 N4085810 E267366	**Elevation (ft):**	455
PLSS:	T12S, R22E, Sec. 18 (M)	**Acres:**	13.0

Location: ALONG EAST SIDE OF FRIANT-KERN CANAL, 3.3 MILES SSE OF OWENS MT, 2.2 MILES ENE OF N DEWOLF AVE AT BEHYMER AVE.

Detailed Location: SERIES OF 3 VERNAL POOLS AT CANAL MILEPOSTS 012.05 (NORTH), 012.19 (MID), & 012.25 (SOUTH), WITH POOL IDS FKC-L-012.05.1, FKC-L-012.19.1, & FKC-L-012.25.1, RESPECTIVELY. MAPPED TO PROVIDED COORDINATES IN SHAPEFILE.

Ecological: N POOL: TEA COLORED VERNAL POOL W/ VETCH, NON-NATIVE GRASSES, & JUNCUS SP. MID POOL: LARGE, TURBID VERNAL POOL W/ HEAVY CATTLE DISTURBANCE W/ JUNCUS, DUCKWEED, NON-NATIVE GRASSES. S POOL: TURBID POOL W/ ALGAE & CATTLE DISTURBANCE.

General: HEAVY LOAD OF LARVAE OBSERVED ON 11 MAR 2004 BY K. GARCIA-TOMLINSON (MIDDLE POOL). LARVAE (UKN #) ROUGHLY 2.5 WKS OLD & 2 INCHES LONG OBSERVED ON 20 MAR 2006 BY K. GARCIA-TOMLINSON (NORTH POOL). NOTE: B. LYNCHI & L. OCCIDENTALIS IN S POOL.

Owner/Manager: USBOR, PVT

Occurrence No.	1030	**Map Index:**	72148	**EO Index:**	73115	**Element Last Seen:**	2006-03-21
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-03-21
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-05

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.87410 / -119.59645	**Accuracy:**	80 meters
UTM:	Zone-11 N4084054 E268575	**Elevation (ft):**	469
PLSS:	T12S, R22E, Sec. 20, SW (M)	**Acres:**	0.0

Location: E SIDE OF FRIANT-KERN CANAL AT MILEPOST 13.93, 0.6 MILE N OF TOLLHOUSE RD (BM 462) ALONG CANAL, 6.6 MILES NE OF CLOVIS.

Detailed Location: MAPPED TO PROVIDED COORDINATES; POOL ID FKC-L-013.93.1.

Ecological: HABITAT DESCRIBED AS A TURBID VERNAL POOL WITH EMERGENT JUNCUS SP.

General: AT LEAST ONE OBSERVED ON 21 MAR 2006 BY K. GARCIA-TOMLINSON.

Owner/Manager: USBOR, PVT

Occurrence No.	1031	**Map Index:**	72149	**EO Index:**	73116	**Element Last Seen:**	2006-03-27
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-03-27
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-05

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.85612 / -119.57528	**Accuracy:**	specific area
UTM:	Zone-11 N4082008 E270408	**Elevation (ft):**	465
PLSS:	T12S, R22E, Sec. 28, S (M)	**Acres:**	8.0

Location: FRIANT-KERN CANAL AT MILEPOST 015.68, 0.6 MILE SE OF DOG CREEK, & 1 MILE NW OF BENCH MARK 461, CLOVIS.

Detailed Location: TWO POOLS, 1 EACH ON SW & NE SIDES OF CANAL, POOL IDS FKC-R-015.68.2 (SW) & FKC-L-015.68.1 (NE); MAPPED TO PROVIDED COORDINATES IN SHAPEFILE.

Ecological: SW POOL: LARGE, SEMI-TURBID VERNAL POOL ALONG FENCELINE. 80% ON PRIVATE PARCEL. NE POOL: TEA-COLORED VERNAL POOL W/ EMERGENT JUNCUS SP; PART OF LARGE VERNAL POOL COMPLEX; MAY BE HYDROLOGICALLY CONNECTED AT HIGHER INUNDATION.

General: 4 LARVAE CAUGHT IN SWIPE OF SW POOL ON 22 FEB 2005 & NOTED MANY LARVAE IN POOL W/ CTS [ADULTS?] OBS BY K. GARCIA-TOMLINSON (ONLY BRANCHIOPODS IN 2004). AT LEAST ONE OBSERVED IN NE POOL ON 27 MAR 2006 BY K. GARCIA-TOMLINSON.

Owner/Manager: USBOR, PVT

Occurrence No.	1032	**Map Index:**	72150	**EO Index:**	73117	**Element Last Seen:**	2006-03-27
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2006-03-27
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-11

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.85127 / -119.56001	**Accuracy:**	specific area
UTM:	Zone-11 N4081433 E271755	**Elevation (ft):**	461
PLSS:	T12S, R22E, Sec. 34, N (M)	**Acres:**	22.0

Location: 0.5 MILE WEST & 0.05 MILE EAST OF ACADEMY AVE (BM 461) ALONG THE FRIANT-KERN CANAL, 2.7 MILES SSW OF ACADEMY.

Detailed Location: SERIES OF 5 POOLS AT CANAL MILEPOSTS 016.29 (W), 0.16.48 (MID-W), 016.64 (MID), 016.82 (MID-E), & 016.85 (E), W/ POOL IDS FKC-L-016.29.1, FKC-L-016.48.1, FKC-R-016.64.1, FKC-L-016.82.1, & FKC-L-016.85.1, RESPECTIVELY. MAPPED TO SHAPEFILE.

Ecological: WEST POOL: TURBID VERNAL POOL W/ JUNCUS SP; CATTLE SALT LICK 40 M AWAY. MID-W POOL: TEA-COLORED VERNAL POOL W/ JUNCUS SP, ALSO VETCH, POPCORN FLOWER, NON-NATIVE GRASSES, LUPINUS, & ERODIUM; BI-SECTED BY RIGHT-OF-WAY; POOL RELATIVELY SMALL.

General: IN WEST POOL, LARVAE 6CM LONG W/ EMERGED LEGS OBSERVED; ALSO NOTED COLORATION OF CTS LIGHTER W/ RICH COLOR IN EXTERNAL GILLS. AT LEAST ONE OBSERVED IN MIDDLE-WEST POOL. BOTH POOLS SAMPLED ON 27 MAR 2006 BY K. GARCIA-TOMLINSON.

Owner/Manager: USBOR, PVT

Occurrence No.	1050	**Map Index:**	72374	**EO Index:**	73338	**Element Last Seen:**	2007-12-28
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	2007-12-28
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2008-09-23

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.84964 / -119.59308	**Accuracy:**	80 meters
UTM:	Zone-11 N4081332 E268801	**Elevation (ft):**	444
PLSS:	T12S, R22E, Sec. 32, NE (M)	**Acres:**	0.0

Location: 0.85 MILE NORTH OF HERNDON AVE AT DEL REY AVE, ABOUT 0.4 MILE EAST OF DOG CREEK.

Detailed Location: MAPPED TO PROVIDED COORDINATES AND MAP. POOL #19.

Ecological: HABITAT DESCRIBED AS NON-NATIVE GRASSLAND WITH UNDULATING TOPOGRAPHY, WITH SHEEP GRAZING TO WEST, CATTLE GRAZING TO EAST, AGRICULTURE TO NORTH, AND RESIDENTIAL TO SOUTH.

General: CTS LARVAE WERE OBSERVED IN POOL 19 ON 28 DEC 2007 DURING SURVEYS CONDUCTED WINTER 2007-08; 92 POOLS SURVEYED.

Owner/Manager: PVT-ESTILL

Occurrence No.	1051	**Map Index:** 72376	**EO Index:**	73339		**Element Last Seen:**	2007-12-28
Occ. Rank:	Excellent		**Presence:**	Presumed Extant		**Site Last Seen:**	2007-12-28
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2008-09-23

Quad Summary:	Round Mountain (3611975)
County Summary:	Fresno

Lat/Long:	36.84469 / -119.58852	**Accuracy:**	80 meters
UTM:	Zone-11 N4080771 E269193	**Elevation (ft):**	
PLSS:	T12S, R22E, Sec. 32, E (M)	**Acres:**	0.0

Location:	0.55 MILE NNE OF HERNDON AVE AT DEL REY AVE, ABOUT 0.9 MILE EAST OF DOG CREEK.
Detailed Location:	MAPPED TO PROVIDED COORDINATES AND MAP. POOL #54.
Ecological:	HABITAT DESCRIBED AS NON-NATIVE GRASSLAND WITH UNDULATING TOPOGRAPHY, WITH SHEEP GRAZING TO WEST, CATTLE GRAZING TO EAST, AGRICULTURE TO NORTH, AND RESIDENTIAL TO SOUTH.
General:	CTS LARVAE WERE OBSERVED IN POOL 54 ON 28 DEC 2007 DURING SURVEYS CONDUCTED WINTER 2007-08; 92 POOLS SURVEYED.
Owner/Manager:	PVT-ESTILL

Occurrence No.	1229	**Map Index:** A0906	**EO Index:**	102467		**Element Last Seen:**	2016-03-09
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	2016-03-09
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2016-07-01

Quad Summary:	Lanes Bridge (3611987)
County Summary:	Madera

Lat/Long:	36.93149 / -119.79364	**Accuracy:**	specific area
UTM:	Zone-11 N4090919 E251182	**Elevation (ft):**	390
PLSS:	T11S, R20E, Sec. 33, N (M)	**Acres:**	9.0

Location:	EAST SIDE OF HIGHWAY 41, 0.6 MILE NORTH OF ITS INTERSECTION WITH AVENUE 12, NORTH OF FRESNO.
Detailed Location:	MAPPED TO PROVIDED COORDINATES. SOUTH SITE AT "POND 1," NORTH SITE AT "POND 2."
Ecological:	POND 1: 300' X 150' X 2.5' DEEP, RELATIVELY TURBID, SPARSELY VEGETATED. POND 2: 200X900'X2' DEEP, RELATIVELY TURBID, 50% VEGETATED. PONDS FED BY INLETS FROM NORTH. IN FALLOW OR ACTIVE AGRICULTURAL FIELDS, ADJACENT TO HEAVILY-TRAVELLED ROAD.
General:	16 LARVAE FOUND ON 9 MAR 2016.
Owner/Manager:	PVT

Occurrence No.	1236	**Map Index:**	A2288	**EO Index:**	103897	**Element Last Seen:**	2017-01-08
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2017-01-08
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-06-22

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.815 / -119.55984	**Accuracy:**	specific area
UTM:	Zone-11 N4077408 E271663	**Elevation (ft):**	427
PLSS:	T13S, R22E, Sec. 10, SE (M)	**Acres:**	8.0

Location: JUST EAST OF POINSETTIA AVE, ABOUT 0.5 MILES NNW OF THE INTERSECTION OF SHAW AVE AND ACADEMY AVE, CLOVIS.

Detailed Location: MAPPED TO PROVIDED COORDINATES. 2016: BACKYARD OF 5478 POINSETTIA AVE.

Ecological: 2016: FOUND IN SMALL, PARTIALLY-FILLED ORNAMENTAL POND; SURVEYOR ASSUMED THE INDIVIDUAL HAD DISPERSED FROM HABITAT TO THE EAST; RELOCATION SITE AT BACK OF PROPERTY, ADJACENT TO NON-NATIVE GRASSLAND/VERNAL POOL HABITAT.

General: 1 JUVENILE FOUND IN ORNAMENTAL POOL ON 30 JUN 2016 AND RELOCATED TO GROUND SQUIRREL BURROW. 1 ADULT FOUND IN SWIMMING POOL ON 8 JAN 2017 AND RELEASED IN ADJACENT HABITAT.

Owner/Manager: PVT

Occurrence No.	1246	**Map Index:**	A5059	**EO Index:**	106758	**Element Last Seen:**	2016-04-XX
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-04-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-06-15

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.97742 / -119.87096	**Accuracy:**	specific area
UTM:	Zone-11 N4096220 E244448	**Elevation (ft):**	367
PLSS:	T11S, R19E, Sec. 14, NW (M)	**Acres:**	10.0

Location: 0.4 MI SE TO 0.5 MI ESE OF RD 37 AT AVE 16, NE OF MADERA.

Detailed Location: MAPPED TO PROVIDED LOCATIONS. POOLS A AND Z.

Ecological: VERNAL POOLS/SWALES ON ROLLING GRASSLAND USED FOR GRAZING. SITE OF PROPOSED MITIGATION BANK. SPADEFOOT TOADS, CHORUS FROGS, AND WESTERN TOADS ALSO OBSERVED. NON-NATIVE WEATHER LOACH FOUND IN 2 ADJACENT POOLS ON THE PROPERTY.

General: EGGS/LARVAE DETECTED IN NE-MOST POOL, JAN 2013. METAMORPHS DETECTED IN BOTH POOLS, APR 2016.

Owner/Manager: PVT

Occurrence No.	1247	**Map Index:**	A5061	**EO Index:**	106760	**Element Last Seen:**	2016-04-XX
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-04-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-06-15

Quad Summary:	Lanes Bridge (3611987)
County Summary:	Madera

Lat/Long:	36.97445 / -119.86304	**Accuracy:**	80 meters
UTM:	Zone-11 N4095870 E245143	**Elevation (ft):**	372
PLSS:	T11S, R19E, Sec. 14, NW (M)	**Acres:**	5.0

Location:	ABOUT 0.8 MI SE OF RD 37 AT AVE 16 & 0.9 MILES NE OF RD 37 AT AVE 15, NE OF MADERA.
Detailed Location:	MAPPED TO PROVIDED LOCATION. POOL G.
Ecological:	VERNAL POOLS/SWALES ON ROLLING GRASSLAND USED FOR GRAZING. SITE OF PROPOSED MITIGATION BANK. SPADEFOOT TOADS, CHORUS FROGS, AND WESTERN TOADS ALSO OBSERVED. NON-NATIVE WEATHER LOACH FOUND IN 2 POOLS ON PROPERTY.
General:	METAMORPHS DETECTED APR 2016.
Owner/Manager:	PVT

Occurrence No.	1248	**Map Index:**	A5062	**EO Index:**	106762	**Element Last Seen:**	2016-04-XX
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	2016-04-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-06-15

Quad Summary:	Lanes Bridge (3611987)
County Summary:	Madera

Lat/Long:	36.97026 / -119.8737	**Accuracy:**	specific area
UTM:	Zone-11 N4095434 E244180	**Elevation (ft):**	351
PLSS:	T11S, R19E, Sec. 14, NW (M)	**Acres:**	11.0

Location:	ABOUT 0.7-0.8 MI SSE OF RD 37 AT AVE 16 & 0.25-0.3 MILES NNE OF RD 37 AT AVE 15, NE OF MADERA.
Detailed Location:	MAPPED TO PROVIDED LOCATIONS. POOLS E, F, & 437.
Ecological:	VERNAL POOLS/SWALES ON ROLLING GRASSLAND USED FOR GRAZING. SITE OF PROPOSED MITIGATION BANK. SPADEFOOT TOADS, CHORUS FROGS, AND WESTERN TOADS ALSO OBSERVED. NON-NATIVE WEATHER LOACH FOUND IN 2 POOLS ON PROPERTY.
General:	EGGS/LARVAE DETECTED IN 2 POOLS JAN 2013. METAMORPHS DETECTED IN 2 POOLS APR 2016.
Owner/Manager:	PVT

Occurrence No.	1253	**Map Index:**	A6431	**EO Index:**	108190	**Element Last Seen:**	2017-02-10
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2017-02-10
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-09-19

Quad Summary: Fresno North (3611977)

County Summary: Fresno

Lat/Long:	36.79258 / -119.87053	**Accuracy:**	nonspecific area
UTM:	Zone-11 N4075708 E243869	**Elevation (ft):**	297
PLSS:	T13S, R19E, Sec. 23 (M)	**Acres:**	35.0

Location: VICINITY OF N BLYTHE AVE ABOUT 0.2 MI NNW OF THE W AUSTIN WAY JUNCTION, & 0.1 MI SE OF THE W ASHLAN AVE JCT IN FRESNO.

Detailed Location: NORTH POLYGON IS APPROXIMATE LOCATION OF DETECTION SITE. SOUTH POLYGON IS APPROXIMATE LOCATION OF RELOCATION SITE.

Ecological: FOUND ON GROUNDS OF APARTMENT COMPLEX. RELOCATED TO OPEN SPACE WITH ALFALFA AND GRASS, STANDING WATER IN SPRING, AND MANY BURROWS PRESENT. INDIVIDUAL MAY REPRESENT REMNANT POPULATION THAT HAS LOST TOO MUCH HABITAT TO BE VIABLE.

General: 1 ADULT FOUND ON GROUNDS OF APARTMENT COMPLEX BY LANDSCAPE MAINTENANCE CREW ON 17 FEB 2017. THE ANIMAL WAS DELIVERED TO A LOCAL BIOLOGIST, WHO RELOCATED IT TO NEARBY OPEN SPACE.

Owner/Manager: PVT

Occurrence No.	1255	**Map Index:**	A6561	**EO Index:**	108323	**Element Last Seen:**	2017-06-07
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2017-06-07
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-10-18

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.90821 / -119.69266	**Accuracy:**	nonspecific area
UTM:	Zone-11 N4088077 E260105	**Elevation (ft):**	395
PLSS:	T12S, R21E, Sec. 9, NW (M)	**Acres:**	23.0

Location: 0.1 MI NNW TO 0.4 MI NE OF STETSON RD AT HACIENDA AVE & 1.4 TO 1.7 MI NE OF COPPER AVE AT AUBERRY RD, N OF CLOVIS.

Detailed Location: MAPPED TO PROVIDED COORDINATES. SW POLYGON REPRESENTS 2015 DETECTION. NE-MOST POLYGON REPRESENTS RELOCATION SITE FOR SALAMANDERS SALVAGED FROM WORKSITE AT OCCURRENCE #911 DURING 2016-2017.

Ecological: 2015: RURAL RESIDENTIAL PROPERTY CONTIGUOUS WITH EXPANSIVE GRASSLAND. 2016-2017: APPROVED RELOCATION SITE FOR SALAMANDERS SALVAGED FROM CITY OF FRESNO PIPELINE PROJECT WORKSITE TO NW.

General: 1 ADULT UNEARTHED DURING ESTIVATION & RELOCATED TO NEARBY BURROW ON 19 AUG 2015. 1 JUVENILE INJURED AT WORKSITE (OCC #911), TREATED & RELEASED HERE 1 AUG 2016. 1 SUBADULT RELOCATED HERE 7 JUN 2017.

Owner/Manager: PVT

Occurrence No.	1258	**Map Index:**	A6869	**EO Index:**	108638	**Element Last Seen:**	2017-03-28
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2017-03-28
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-10-18

Quad Summary:	Friant (3611986)
County Summary:	Fresno

Lat/Long:	36.90754 / -119.68178	**Accuracy:**	80 meters
UTM:	Zone-11 N4087974 E261073	**Elevation (ft):**	403
PLSS:	T12S, R21E, Sec. 9, NE (M)	**Acres:**	5.0

Location:	ABOUT 0.3 MILES WSW OF E SILAXO AT N ARMSTRONG AVE & 0.9 MILES ENE OF STETSON RD AT MARIETTA AVE, N OF CLOVIS.
Detailed Location:	LARVAE WERE RESCUED FROM WORKSITE AT OCCURRENCE #911, ABOUT A MILE NW FROM THIS OCCURRENCE, AND RELOCATED TO THIS SITE.
Ecological:	APPROVED RELOCATION SITE FOR SALAMANDERS SALVAGED FROM CITY OF FRESNO PIPLINE PROJECT WORKSITE TO NW.
General:	24 LARVAE RESCUED FROM WORKSITE ON 24 MAR 2017 AND RELOCATED HERE. AN ADDITIONAL 3 LARVAE WERE RELOCATED HERE ON 28 MAR.
Owner/Manager:	PVT

Coccyzus americanus occidentalis

Element Code: ABNRB02022

western yellow-billed cuckoo

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G5T2T3
	State:	Endangered		**State:**	S1
	Other:	BLM_S-Sensitive, NABCI_RWL-Red Watch List, USFS_S-Sensitive, USFWS_BCC-Birds of Conservation Concern			
Habitat:	**General:**	RIPARIAN FOREST NESTER, ALONG THE BROAD, LOWER FLOOD-BOTTOMS OF LARGER RIVER SYSTEMS.			
	Micro:	NESTS IN RIPARIAN JUNGLES OF WILLOW, OFTEN MIXED WITH COTTONWOODS, WITH LOWER STORY OF BLACKBERRY, NETTLES, OR WILD GRAPE.			

Occurrence No.	87	**Map Index:** 14944	**EO Index:** 25589	**Element Last Seen:**	1902-07-10
Occ. Rank:	None		**Presence:** Extirpated	**Site Last Seen:**	1902-07-10
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	1989-08-10

Quad Summary: Sanger (3611965), Malaga (3611966), Round Mountain (3611975), Clovis (3611976)

County Summary: Fresno

Lat/Long:	36.75271 / -119.63986	**Accuracy:**	1 mile
UTM:	Zone-11 N4070690 E264333	**Elevation (ft):**	345
PLSS:	T13S, R21E, Sec. 36, SW (M)	**Acres:**	0.0

Location: FANCHER CREEK, 6 MI NE OF FRESNO.

Detailed Location:

Ecological:

General: REPORTED AS UNCOMMON BUT NESTING BY TYLER (1913).

Owner/Manager: PVT

Occurrence No.	197	**Map Index:** 34860	**EO Index:** 96983	**Element Last Seen:**	1883-06-17
Occ. Rank:	None		**Presence:** Extirpated	**Site Last Seen:**	1883-06-17
Occ. Type:	Natural/Native occurrence		**Trend:** Unknown	**Record Last Updated:**	2015-04-13

Quad Summary: Lanes Bridge (3611987)

County Summary: Fresno, Madera

Lat/Long:	36.89556 / -119.79294	**Accuracy:**	1 mile
UTM:	Zone-11 N4086930 E251128	**Elevation (ft):**	270
PLSS:	T12S, R20E, Sec. 09 (M)	**Acres:**	0.0

Location: VICINITY OF THE SAN JOAQUIN RIVER, ABOUT 9 MILES NORTH OF FRESNO.

Detailed Location:

Ecological:

General: NEST COLLECTED ON 10 JUN 1883. 5 EGGS COLLECTED 10 JUN, 4 ADDITIONAL TAKEN 17 JUN 1883.

Owner/Manager: UNKNOWN

Vireo bellii pusillus **Element Code:** ABPBW01114

least Bell's vireo

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G5T2
	State:	Endangered		**State:**	S2
	Other:	IUCN_NT-Near Threatened, NABCI_YWL-Yellow Watch List			
Habitat:	**General:**	SUMMER RESIDENT OF SOUTHERN CALIFORNIA IN LOW RIPARIAN IN VICINITY OF WATER OR IN DRY RIVER BOTTOMS; BELOW 2000 FT.			
	Micro:	NESTS PLACED ALONG MARGINS OF BUSHES OR ON TWIGS PROJECTING INTO PATHWAYS, USUALLY WILLOW, BACCHARIS, MESQUITE.			

Occurrence No.	505	**Map Index:**	91510	**EO Index:**	92586	**Element Last Seen:**	1912-05-16
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1912-05-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2014-02-10

Quad Summary: Clovis (3611976)

County Summary: Fresno

Lat/Long:	36.78960 / -119.69871	**Accuracy:**	1 mile
UTM:	Zone-11 N4074931 E259193	**Elevation (ft):**	345
PLSS:	T13S, R21E, Sec. 21 (M)	**Acres:**	0.0

Location: VICINITY OF TARPEY, SOUTH OF CLOVIS, NORTHEAST OF FRESNO.

Detailed Location: MAPPED GENERALLY TO TARPEY. PROVIDED LOCATION DESCRIPTION WAS "TARPEY, GOVED DITCH." GOVED DITCH MAY REFER TO GOULD CANAL, WHICH RUNS ALONG THE WESTERN AND NORTHERN EDGE OF TAPEY (1923 CLOVIS 7.5 MIN TOPO MAP).

Ecological: AREA IS HEAVELY DEVELOPED BASED ON AERIAL IMAGES FROM 1998-2013. GOULD CANAL STILL PRESENT BUT LACKS VEGETATION AND IS SURROUNDED BY RESIDENTIAL AND COMMERCIAL BUILDINGS.

General: EGG SET CONSISTING OF 4 EGGS COLLECTED (WFVZ #33084) BY J. TYLER ON 16 MAY 1912; INCUBATION CONSIDERED "WELL BEGUN." A BIRD WAS ALSO OBSERVED ON THE NEST.

Owner/Manager: UNKNOWN

Occurrence No.	506	**Map Index:**	91511	**EO Index:**	92587	**Element Last Seen:**	1906-05-25
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1906-05-25
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2014-02-10

Quad Summary: Clovis (3611976)

County Summary: Fresno

Lat/Long:	36.82290 / -119.70690	**Accuracy:**	1 mile
UTM:	Zone-11 N4078646 E258567	**Elevation (ft):**	360
PLSS:	T13S, R21E, Sec. 08 (M)	**Acres:**	0.0

Location: CLOVIS, NORTHEAST OF FRESNO.

Detailed Location: PROVIDED LOCATION DESCRIPTION WAS "CLOVIS." MAPPED GENERALLY TO CLOVIS POST OFFICE. MAY HAVE COME FROM CLOVIS DITCH NEAR NORTH END OF TOWN WHICH APPEARS ON 1947 TOPO.

Ecological: NEST WAS CONSTRUCTED IN A WILLOW TREE. AREA IS HEAVELY DEVELOPED BASED ON AERIAL IMAGES FROM 1998-2013 AND IS SURROUNDED BY RESIDENTIAL AND COMMERCIAL BUILDINGS.

General: EGG SET CONSISTING OF 4 EGGS COLLECTED (WFVZ #33083) BY J. TYLER ON 25 MAY 1906; EGG INCUBATION CLASSIFIED AS BEING "FRESH." A VIREO WAS ALSO OBSERVED PERCHED NEAR NEST.

Owner/Manager: UNKNOWN

Dipodomys nitratoides exilis

Element Code: AMAFD03151

Fresno kangaroo rat

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G3TH
	State:	Endangered		**State:**	SH
	Other:	IUCN_VU-Vulnerable			
Habitat:	**General:**	ALKALI SINK-OPEN GRASSLAND HABITATS IN WESTERN FRESNO COUNTY.			
	Micro:	BARE ALKALINE CLAY-BASED SOILS SUBJECT TO SEASONAL INUNDATION, WITH MORE FRIABLE SOIL MOUNDS AROUND SHRUBS AND GRASSES.			

Occurrence No.	15	**Map Index:**	14593	**EO Index:**	23963	**Element Last Seen:**	1898-04-23
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	1898-04-23
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2006-07-25

Quad Summary: Fresno North (3611977)

County Summary: Fresno

Lat/Long:	36.77910 / -119.84460	**Accuracy:**	1 mile
UTM:	Zone-11 N4074142 E246138	**Elevation (ft):**	
PLSS:	T13S, R19E, Sec. 25 (M)	**Acres:**	0.0

Location: FRESNO; 4 MILES NORTH OF RAILROAD STATION ALONG SOUTHERN PACIFIC RIGHT-OF-WAY.

Detailed Location:

Ecological: AREA COMPLETELY DEVELOPED.

General: TYPE LOCALITY. COLLECTED BY BAILEY 23 SEP 1891; U. S. BIOLOGICAL SURVEY COLLECTIONS (BSC) #34843/43823. ALSO COLLECTED FROM "FRESNO" BY C.P. STREATOR 22-23 APRIL 1898 (MVZ #19064-19067 COMPLETE SKULLS & STUDY SKINS).

Owner/Manager: PVT

Vulpes macrotis mutica

Element Code: AMAJA03041

San Joaquin kit fox

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G4T2
	State:	Threatened		**State:**	S2
	Other:				
Habitat:	**General:**	ANNUAL GRASSLANDS OR GRASSY OPEN STAGES WITH SCATTERED SHRUBBY VEGETATION.			
	Micro:	NEED LOOSE-TEXTURED SANDY SOILS FOR BURROWING, AND SUITABLE PREY BASE.			

Occurrence No.	1113	**Map Index:** 64361	**EO Index:**	70600		**Element Last Seen:**	199X-XX-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	199X-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2007-08-22

Quad Summary: Friant (3611986)

County Summary: Fresno, Madera

Lat/Long:	36.98663 / -119.70939	**Accuracy:**	2/5 mile
UTM:	Zone-11 N4096821 E258861	**Elevation (ft):**	410
PLSS:	T11S, R21E, Sec. 07 (M)	**Acres:**	0.0

Location: VICINITY OF FRIANT.

Detailed Location: LOCATION GIVEN ONLY AS "FRIANT"

Ecological:

General: ONE KIT FOX SIGHTED SOMETIME IN THE EARLY 1990'S BY DALE MITCHELL (DFG).

Owner/Manager: UNKNOWN

Occurrence No.	1115	**Map Index:** 69792	**EO Index:**	70606		**Element Last Seen:**	198X-XX-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	198X-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2007-08-23

Quad Summary: Sanger (3611965)

County Summary: Fresno

Lat/Long:	36.70281 / -119.55857	**Accuracy:**	1 mile
UTM:	Zone-11 N4064956 E271443	**Elevation (ft):**	365
PLSS:	T14S, R22E, Sec. 22 (M)	**Acres:**	0.0

Location: SANGER.

Detailed Location: LOCATION GIVEN ONLY AS "SANGER"

Ecological:

General: ONE SIGHTED IN THE 1980'S BY HENRY LAMELLE.

Owner/Manager: UNKNOWN

Pseudobahia bahiifolia

Element Code: PDAST7P010

Hartweg's golden sunburst

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G2
	State:	Endangered		**State:**	S2
	Other:	Rare Plant Rank - 1B.1, SB_RSABG-Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND.			
	Micro:	CLAY SOILS, OFTEN ACIDIC. PREDOMINANTLY ON THE NORTHERN SLOPES OF KNOLLS, BUT ALSO ALONG SHADY CREEKS OR NEAR VERNAL POOLS. 60-170 M.			

Occurrence No.	1	**Map Index:** 14795	**EO Index:**	7949		**Element Last Seen:**	1980-04-03
Occ. Rank:	None		**Presence:**	Possibly Extirpated		**Site Last Seen:**	2010-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Decreasing		**Record Last Updated:**	2011-04-15

Quad Summary: Friant (3611986), Millerton Lake West (3711916)

County Summary: Madera

Lat/Long:	37.00073 / -119.73601	**Accuracy:**	specific area
UTM:	Zone-11 N4098453 E256536	**Elevation (ft):**	500
PLSS:	T11S, R20E, Sec. 01, SE (M)	**Acres:**	10.0

Location: JUNCTION OF ROAD 206 & ROAD 205; BOTH SIDES OF ROAD 205, ABOUT 1.6 AIR MILES WEST OF FRIANT DAM.

Detailed Location: TWO COLONIES MAPPED ACCORDING TO 1991 MAPS BY STEBBINS.

Ecological: VALLEY GRASSLAND ASSOCIATED WITH ERODIUM, BROMUS, BRODIAEA, AND AVENA.

General: S POLY: SEEN IN 1970S. N POLY: <100 PLANTS IN 1980. PLANTS NOT RELOCATED IN 1985, 1986, 1990, 2008, AND 2010. SOME POTENTIAL REMAINS FOR SPECIES TO BE PRESENT UNDER MORE FAVORABLE CONDITIONS IN N POLY. INCLUDES FORMER OCCURRENCE #2.

Owner/Manager: PVT

Occurrence No.	21	**Map Index:** 14849	**EO Index:**	7948		**Element Last Seen:**	2010-04-22
Occ. Rank:	Good		**Presence:**	Presumed Extant		**Site Last Seen:**	2010-04-22
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2011-04-15

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.98760 / -119.70578	**Accuracy:**	specific area
UTM:	Zone-11 N4096919 E259186	**Elevation (ft):**	450
PLSS:	T11S, R21E, Sec. 08, W (M)	**Acres:**	64.0

Location: FROM ABOUT 0.5 TO 1.5 AIR MILES SOUTH OF FRIANT DAM, JUST EAST AND SOUTH OF TOWN OF FRIANT.

Detailed Location: WEST OF FRIANT-KERN CANAL. MAPPED AS TWO POLYGONS. NORTHERN POLYGON IS AROUND FRIANT WATER TANK. SOUTHERN POLYGON IS ABOUT 1/2 MILE TO SOUTH.

Ecological: ON TOPS OF ROLLING LOW HILLS IN VALLEY GRASSLAND AND VERNAL POOLS IN ROCKLIN LOAM SOIL. ASSOCIATED WITH BROMUS RUBENS, MUILLA MARITIMA, BROMUS MOLLIS, VULPIA MYUROS, ERODIUM BOTYRS, LUPINUS BICOLOR, AMSINCKIA INTERMEDIA, AND FESTUCA.

General: ~400 PLANTS IN 1984, 150 IN 1987 (LOW PRECIP), 2000 IN 1989, 800 IN 1990, <2500 IN 1992, <1200 IN 1995, UNKNOWN NUMBER IN 2001, 75 ALONG POWER LINE IN E HALF OF N POLY IN 2008. 1000S IN N POLY IN 2010. INCLUDES FORMER OCCURRENCE #22.

Owner/Manager: USBOR, PVT

Occurrence No.	23	**Map Index:** 14857	**EO Index:**	7946		**Element Last Seen:**	2009-XX-XX
Occ. Rank:	Good		**Presence:**	Presumed Extant		**Site Last Seen:**	2009-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2011-04-25

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.97137 / -119.70634	**Accuracy:**	specific area
UTM:	Zone-11 N4095119 E259085	**Elevation (ft):**	460
PLSS:	T11S, R21E, Sec. 17, SW (M)	**Acres:**	16.5

Location: ABOUT ONE AIR MILE SSE OF TOWN OF FRIANT, 0.5 MILE WEST OF THE FRIANT-KERN CANAL.

Detailed Location: TWO COLONIES MAPPED ACCORDING TO A 1984 MAP BY STEBBINS.

Ecological: TOPS OF LOW ROLLING HILLS INTERSPERSED WITH NON-NATIVE GRASSLAND AND VERNAL POOLS. ASSOCIATED WITH BROMUS RUBENS, BROMUS MOLLIS, MUILLA MARITIMA, AMSINCKIA INTERMEDIA, AND FESTUCA. ORTHOCARPUS CAMPESTRIS VAR. SUCCULENTUS GROWING NEARBY.

General: 400 PLANTS OBSERVED IN 1990, 2500 OBSERVED IN 1992 BETWEEN THIS EO AND EO #21 & 24. 600 TOTAL OBSERVED BETWEEN THIS EO AND EO #21 IN 1995. PLANTS NOT RELOCATED IN 2008, POSSIBLY DUE TO LOW RAINFALL. DOCUMENTED AT SITE BETWEEN 2007-2009.

Owner/Manager: PVT

Occurrence No.	24	**Map Index:** 22190	**EO Index:**	7945		**Element Last Seen:**	2009-XX-XX
Occ. Rank:	Good		**Presence:**	Presumed Extant		**Site Last Seen:**	2009-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2011-04-25

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.97115 / -119.71578	**Accuracy:**	80 meters
UTM:	Zone-11 N4095119 E258243	**Elevation (ft):**	440
PLSS:	T11S, R21E, Sec. 18, SE (M)	**Acres:**	0.0

Location: APPROXIMATELY 1 MILE SOUTH OF FRIANT, 0.6 MILE EAST OF GRAVEL PIT.

Detailed Location: NEAR THE CENTER OF THE SE 1/4 OF SECTION 18.

Ecological: GROWING ON ROCKLIN VOLCANIC SOILS WITHIN VALLEY GRASSLAND WITH MIMA MOUND TOPOGRAPHY. ASSOCIATED WITH BROMUS RUBENS, MUILLA MARITIMA, AND LUPINUS BICOLOR.

General: 2500 OBSERVED IN 1992 BETWEEN THIS OCCURRENCE AND OCCURRENCE #21 & #23. BOTANISTS FROM LIVE OAK ASSOCIATES CONDUCTED SURVEYS AND DOCUMENTED PLANTS ON SITE SOMETIME BETWEEN 2007-2009 (VOLLMAR CONSULTING 2010). SITE NOT ACCESSIBLE IN 2010.

Owner/Manager: PVT

Occurrence No.	25	**Map Index:** 22861	**EO Index:**	7944		**Element Last Seen:**	2010-04-22
Occ. Rank:	Good		**Presence:**	Presumed Extant		**Site Last Seen:**	2010-04-22
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2011-04-29

Quad Summary: Friant (3611986), Millerton Lake West (3711916)

County Summary: Madera

Lat/Long:	37.00676 / -119.72646	**Accuracy:**	specific area
UTM:	Zone-11 N4099098 E257405	**Elevation (ft):**	450
PLSS:	T11S, R21E, Sec. 06, W (M)	**Acres:**	66.0

Location: EAST SIDE OF ROAD 206, FROM ABOUT 1 TO 2 AIR MILES NORTHWEST OF COMMUNITY OF FRIANT.

Detailed Location: MAPPED BY CNDDB AS 4 POLYGONS ACCORDING TO MAPS FROM 1991, 2008, AND 2010. NW COLONY: UPPER SLOPE OF ROADBANK IN SE 1/4 SE 1/4 SECTION 36. SE POLYGON: LARGE COLONY OF 7 SUBPOPULATIONS AT THIS SITE.

Ecological: GROWING IN NON-NATIVE VALLEY GRASSLAND ON UPPER SLOPE OF ROAD BANK. ASSOC W/ BROMUS DIANDRUS, B. RUBENS, ESCHSCHOLZIA LOBBII, AMSINCKIA INTERMEDIA, THYSANOCARPUS CURVIPES, ERODIUM BOTRYS, E. CICUTARIUM, GILIA TRICOLOR, LASTHENIA, ETC.

General: NW POLY: 0 PLANTS IN 1981, 80 IN 1990 & 1995, 0 IN 2010. 2 MIDDLE POLYS: 16,000+ IN 1991. SE POLY: EXTENSIVE POP DESPITE DISTURBANCES, ~18,000 IN 1989 & 1990, >10,000 IN 2004, 1,000S IN 2008, TENS OF THOUSANDS IN 2010. INCL FORMER OCC #26.

Owner/Manager: PVT

Pseudobahia peirsonii

Element Code: PDAST7P030

San Joaquin adobe sunburst

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	Rare Plant Rank - 1B.1, SB_RSABG-Rancho Santa Ana Botanic Garden			
Habitat:	**General:**	VALLEY AND FOOTHILL GRASSLAND, CISMONTANE WOODLAND.			
	Micro:	GRASSY VALLEY FLOORS AND ROLLING FOOTHILLS IN HEAVY CLAY SOIL. 115-795 M.			

Occurrence No.	15	**Map Index:** 15138	**EO Index:**	16859		**Element Last Seen:**	1994-04-09
Occ. Rank:	Poor		**Presence:**	Presumed Extant		**Site Last Seen:**	2010-03-24
Occ. Type:	Natural/Native occurrence		**Trend:**	Decreasing		**Record Last Updated:**	2017-03-27

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.85300 / -119.55646	**Accuracy:**	80 meters
UTM:	Zone-11 N4081616 E272077	**Elevation (ft):**	470
PLSS:	T12S, R22E, Sec. 27, SE (M)	**Acres:**	0.0

Location: EAST SIDE OF ACADEMY AVE, 0.9 MI SOUTH OF JUNCTION WITH SHEPHERD AVE, 3.4 MI NORTH OF SHAW; JUST N OF FRIANT-KERN CANAL.

Detailed Location: LOCATED IN SW 1/4 OF SE 1/4 OF SECTION 27, JUST EAST OF ACADEMY AVE AND NORTH OF ROAD TOWARDS WELL.

Ecological: IN WET HEAVY CENTERVILLE CLAY SOIL. ASSOCIATES INCLUDE AVENA FATUA, BRASSICA KABER, LUPINUS BICOLOR, ACHYRACHAENA MOLLIS, AMSINCKIA INTERMEDIA, AND ERODIUM CICUTARIUM.

General: LARGEST POPULATION SEEN IN 1974. POPULATION NOT RELOCATED IN 1985 SURVEY. 350 PLANTS SEEN IN 1990, 100 IN 1994. NONE OBSERVED IN 2010 (SITE DISKED). SITE LIKELY REMNANT OF HISTORICALLY LARGE POP ON CLAY SOILS EXTENDING N TO HWY 168.

Owner/Manager: PVT

Occurrence No.	16	**Map Index:**	15216	**EO Index:**	7950	**Element Last Seen:**	2010-04-04
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2010-04-04
Occ. Type:	Natural/Native occurrence			**Trend:**	Fluctuating	**Record Last Updated:**	2017-04-03

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.82331 / -119.52210	**Accuracy:**	specific area
UTM:	Zone-11 N4078241 E275053	**Elevation (ft):**	475
PLSS:	T13S, R22E, Sec. 01, SE (M)	**Acres:**	27.0

Location: APPROXIMATELY 0.7 MILE WNW OF ROUND MOUNTAIN SUMMIT AND 0.5 MILE EAST OF FRIANT-KERN CANAL.

Detailed Location: JUST SOUTH OF HOG CREEK. WITHIN THE SE 1/4 OF THE SE 1/4 OF SECTION 1. MAPPED BY CNDDB ACCORDING TO 2010 VOLLMAR CONSULTING DIGITAL DATA AND 2008 KENTNER COORDINATES. 2008 WINCHELL PHOTO FROM FANCHER CREEK ALSO ATTRIBUTED HERE.

Ecological: IN NON-NATIVE GRASSLAND SURROUNDED BY AGRICULTURE ON HEAVY PORTERVILLE CLAY SOILS. ASSOCIATED WITH ACHYRACHAENA MOLLIS, BRASSICA KABER, HORDEUM GENICULATUM, LEPIDIUM NITIDUM, AND THE RARE HESPEREVAX CAULESCENS.

General: 1200 PLANTS SEEN IN 1986, 1000 IN 1987, 3000 IN 1989, 4500 IN 1990, APPROXIMATELY 300 IN 2008, 2500-5000 IN 2010. 40% OF THIS 42 ACRE POPULATION WOULD BE IMPACTED BY PROPOSED FANCHER CREEK RESERVOIR PROJECT.

Owner/Manager: FRESNO FLOOD CONTROL DISTRICT

Occurrence No.	30	**Map Index:**	22186	**EO Index:**	16864	**Element Last Seen:**	1990-04-04
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2010-XX-XX
Occ. Type:	Natural/Native occurrence			**Trend:**	Decreasing	**Record Last Updated:**	2011-04-29

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.82843 / -119.50980	**Accuracy:**	80 meters
UTM:	Zone-11 N4078779 E276166	**Elevation (ft):**	495
PLSS:	T13S, R23E, Sec. 06, SE (M)	**Acres:**	0.0

Location: ROUND MOUNTAIN, 1 KM (0.7 MI) NORTH OF SUMMIT (ELEVATION 869).

Detailed Location: WITHIN THE NW 1/4 OF THE SE 1/4 OF SECTION 6.

Ecological: GROWING ON PORTERVILLE CLAY SOILS IN ASSOCIATION WITH HORDEUM LEPORINUM, AMSINCKIA INTERMEDIA, ERODIUM CICUTARIUM, LAMIUM AMPLEXICAULE, EVAX CAULESCENS, BROMUS RUBENS, AND SENECIO VULGARIS.

General: 50 PLANTS SEEN IN 1987. 26 SEEN IN 1990; STEBBINS REPORTS THAT PLANTS WERE SMALLER THAN PRIOR VISIT, POSSIBLY DUE TO DRY CONDIDTIONS; AREA HEAVILY GRAZED AT TIME OF BOTH FIELD VISITS. NO PLANTS IN 2010; HABITAT AVAILABLE, HEAVILY GRAZED.

Owner/Manager: PVT

Occurrence No.	31	**Map Index:** 22189	**EO Index:**	16860		**Element Last Seen:**	2010-03-31
Occ. Rank:	Fair		**Presence:**	Presumed Extant		**Site Last Seen:**	2010-03-31
Occ. Type:	Natural/Native occurrence		**Trend:**	Decreasing		**Record Last Updated:**	2011-05-09

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.80002 / -119.59661	**Accuracy:**	specific area
UTM:	Zone-11 N4075834 E268337	**Elevation (ft):**	390
PLSS:	T13S, R22E, Sec. 17, SE (M)	**Acres:**	5.0

Location: QUAIL LAKES DEVELOPMENT; BETWEEN ASHLAN AVENUE AND SHAW AVENUE, JUST NORTH OF REDBANK SLOUGH.

Detailed Location: MAPPED BY CNDDB ACCORDING TO A 2009 PRESTON MAP. A 1991 STEBBINS MAP SHOWS THE POPULATION ~0.1 MI FURTHER TO THE E BUT THIS AREA IS NOW DEVELOPED; POPULATION MAY HAVE ONCE BEEN MORE EXTENSIVE OR SITE WAS MAPPED TOO FAR TO E BY STEBBINS.

Ecological: GROWING ON CENTERVILLE CLAY SOILS. ANNUAL GRASSLAND WITH BROMUS MOLLIS, VULPIA MYUROS, HYPOCHAERIS GLABRA, EVAX CAULESCENS, CENTAUREA MELITENSIS, SCANDEX PECTEN-VENERIS, CASTILLEJA EXSERTA, ACHYRACHAENA MOLLIS, LOTUS WRANGELIANUS, ETC.

General: ~5000 PLANTS OVER 3 ACRES IN 1990. PROPOSED DEVELOPMENT INCLUDES 400 HOUSING UNITS, GOLF COURSE, & LAKES. BY 2009, DEVELOPMENT HAS PROGRESSED & SITE HAS BEEN FENCED & SIGNED AS A "RARE SPECIES PRESERVE". 200-300 PLANTS IN 2009, ~50 IN 2010.

Owner/Manager: PVT

Occurrence No.	36	**Map Index:** 30079	**EO Index:**	12731		**Element Last Seen:**	2008-03-27
Occ. Rank:	Fair		**Presence:**	Presumed Extant		**Site Last Seen:**	2008-03-27
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2011-05-04

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.83134 / -119.54259	**Accuracy:**	specific area
UTM:	Zone-11 N4079180 E273249	**Elevation (ft):**	450
PLSS:	T13S, R22E, Sec. 02, NE (M)	**Acres:**	9.0

Location: WEST SIDE OF FRIANT-KERN CANAL, 0.1-0.6 MILE SOUTH OF HERNDON AVE. 0.7-1.0 MILE EAST OF ACADEMY AVE.

Detailed Location: 3 POLYGONS MAPPED BY CNDDB ACCORDING TO MAPS PROVIDED.

Ecological: GRASSLAND WITH LOLIUM MULTIFLORUM, LEPIDIUM NITIDUM, VICIA VILLOSA, LUPINUS BICOLOR, TRIFOLIUM DEPAUPERATUM, ACHYRACHAENA MOLLIS, PLAGIOBOTHRYS FULVUS.

General: 46 PLANTS IN MIDDLE AND SOUTHEASTERN POLYGONS IN 1994. 1 PLANT OBSERVED IN NORTHERN POLYGON IN 2008. SITE WAS NOT ACCESSIBLE IN 2010.

Owner/Manager: PVT

Caulanthus californicus

Element Code: PDBRA31010

California jewelflower

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	Rare Plant Rank - 1B.1			
Habitat:	**General:**	CHENOPOD SCRUB, VALLEY AND FOOTHILL GRASSLAND, PINYON AND JUNIPER WOODLAND.			
	Micro:	SANDY SOILS. 65-1860 M.			

Occurrence No.	38	**Map Index:** 46277	**EO Index:**	63230		**Element Last Seen:**	XXXX-XX-XX
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1986-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2016-04-18

Quad Summary: Malaga (3611966), Fresno South (3611967), Clovis (3611976), Fresno North (3611977)

County Summary: Fresno

Lat/Long:	36.77388 / -119.77951	**Accuracy:**	5 miles
UTM:	Zone-11 N4073392 E251931	**Elevation (ft):**	
PLSS:	T13S, R20E, Sec. 27 (M)	**Acres:**	0.0

Location: FRESNO.

Detailed Location: EXACT LOCATION UNKNOWN, MAPPED IN THE GENERAL VICINITY OF FRESNO.

Ecological:

General: SITE IS BASED ON AN UNDATED DAVIDSON COLLECTION, POSSIBLY MADE IN THE LATE 1890'S OR EARLY 1900'S. NO HABITAT REMAINS IN VICINITY OF FRESNO ACCORDING TO TAYLOR (1986).

Owner/Manager: UNKNOWN

Castilleja campestris var. succulenta

Element Code: PDSCR0D3Z1

succulent owl's-clover

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G4?T2T3
	State:	Endangered		**State:**	S2S3
	Other:	Rare Plant Rank - 1B.2			
Habitat:	**General:**	VERNAL POOLS.			
	Micro:	MOIST PLACES, OFTEN IN ACIDIC SOILS. 20-705 M.			

Occurrence No.	1	**Map Index:**	14831	**EO Index:**	30719	**Element Last Seen:**	1995-04-25
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	2009-04-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2010-11-16

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.91133 / -119.71542	**Accuracy:**	80 meters
UTM:	Zone-11 N4088480 E258086	**Elevation (ft):**	407
PLSS:	T12S, R21E, Sec. 06, SE (M)	**Acres:**	0.0

Location: EAST SIDE OF AUBERRY ROAD, ABOUT 1.1 MILES NORTH OF COPPER AVE AND ABOUT 5.5 AIR MILES SOUTH OF FRIANT.

Detailed Location: MAPPED IN THE SOUTH 1/2 OF THE SE 1/4 OF SECTION 6.

Ecological: SWALE-LIKE VERNAL POOL IN NONNATIVE GRASSLAND. ASSOCIATED WITH MIMULUS TRICOLOR, ERYNGIUM VASEYI, DOWNINGIA SP., PLAGIOBOTHRYS STIPITATUS, & PSILOCARPHUS BREVISSIMUS. SPADEFOOT TOAD ALSO REPORTED FROM THIS SITE.

General: 12 PLANTS OBSERVED IN 1986, SITE OVERGRAZED IN 1993 AND NO PLANTS FOUND. 20 PLANTS IN 1995. NO PLANTS IN 2009: POOL SEEMS TO BE DELIBERATELY DESTOYED, BUT IT DOES NOT APPEAR TO HAVE BEEN DEEP RIPPED; REMNANT VERNAL POOL SPECIES PRESENT.

Owner/Manager: PVT

Occurrence No.	7	**Map Index:**	14708	**EO Index:**	17658	**Element Last Seen:**	1938-05-17
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	1981-06-02
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2003-08-05

Quad Summary: Fresno North (3611977)

County Summary: Fresno

Lat/Long:	36.86577 / -119.78070	**Accuracy:**	1/5 mile
UTM:	Zone-11 N4083592 E252122	**Elevation (ft):**	350
PLSS:	T12S, R20E, Sec. 27, NW (M)	**Acres:**	0.0

Location: FRIANT RD NORTH OF SP RR TRACKS, APPROXIMATELY 1.2 MILES NORTH OF JUNCTION FRIANT RD & BLACKSTONE, HWY 41.

Detailed Location:

Ecological:

General: COLLECTED ON ROAD TO FRIANT, NEAR PINDALE BY HOOVER IN 1938. SITE COMPLETELY DISKED IN 1981.

Owner/Manager: UNKNOWN

Occurrence No.	14	**Map Index:**	36544	**EO Index:**	361	**Element Last Seen:**	1995-04-15
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	1995-04-15
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1997-12-22

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.96914 / -119.83461	**Accuracy:**	specific area
UTM:	Zone-11 N4095204 E247656	**Elevation (ft):**	375
PLSS:	T11S, R20E, Sec. 18, SW (M)	**Acres:**	39.4

Location: NORTH OF AVENUE 15 AT JCT WITH AVENUE 39 1/2, NORTH OF LITTLE DRY CREEK, ABOUT 4.5 MILES WEST OF LITTLE TABLE MOUNTAIN.

Detailed Location: MAPPED WITHIN THE SOUTH 1/2 OF THE SW 1/4 OF SECTION 18. ABOUT 50-60 YDS EAST OF THE FENCELINE ON THE WEST SIDE OF THE PROPERTY.

Ecological: VERNAL POOLS ON HARD, LOAMY CLAY IN VALLEY GRASSLAND, ASSOCIATED WITH PLAGIOBOTHRYS STIPITATUS, LYTHRUM HYSSOPIFOLIUM, DOWNINGIA, LASTHENIA, ERYNGIUM VASEYI, AND THE RARE ORCUTTIA INAEQUALIS.

General: 250 INDIVIDUALS IN MAIN POOL COMPLEX IN 1982, 15 PLANTS SEEN IN ADDITIONAL POOL TO THE NORTH IN 1995. THIS COMPLEX OF POOLS CONTAINS MANY RARE AND ENDANGERED SPECIES.

Owner/Manager: PVT

Occurrence No.	17	**Map Index:**	14850	**EO Index:**	21621	**Element Last Seen:**	1992-04-09
Occ. Rank:	Excellent			**Presence:**	Presumed Extant	**Site Last Seen:**	1992-04-09
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1994-02-25

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.97077 / -119.70493	**Accuracy:**	specific area
UTM:	Zone-11 N4095049 E259208	**Elevation (ft):**	400
PLSS:	T11S, R21E, Sec. 17, SW (M)	**Acres:**	15.1

Location: ABOUT ONE AIR MILE SOUTH OF TOWN OF FRIANT.

Detailed Location:

Ecological: VERNAL POOLS ON SANDY TO CLAY LOAM SOILS WITHIN VALLEY GRASSLAND. ASSOCIATED WITH ERYNGIUM, DOWNINGIA, PLAGIOBOTHRYS, MARSILEA, LASTHENIA, AND MIMULUS TRICOLOR.

General: MORE THAN 1000 INDIVIDUALS IN 1984, ONLY 60 OBSERVED IN 1992.

Owner/Manager: PVT

Occurrence No.	29	**Map Index:** 14683	**EO Index:**	6892		**Element Last Seen:**	2010-05-19
Occ. Rank:	Good		**Presence:**	Presumed Extant		**Site Last Seen:**	2010-05-19
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2011-08-24

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.94858 / -119.79170	**Accuracy:**	specific area
UTM:	Zone-11 N4092810 E251410	**Elevation (ft):**	405
PLSS:	T11S, R20E, Sec. 28, NE (M)	**Acres:**	38.0

Location: CALTRANS MADERA POOLS MITIGATION SITE; EAST SIDE OF HIGHWAY 41, APPROXIMATELY 0.5 TO 0.9 MILE SOUTH OF ROAD 204.

Detailed Location: OBSERVED IN BOTH NATURAL POOLS AS WELL AS CREATED/RESTORED/ENHANCED POOLS. MAPPED BY CNDDB AS 8 POLYGONS ACCORDING TO 2010 CALTRANS DIGITAL DATA.

Ecological: IN BASINS OF NORTHERN HARDPAN VERNAL POOLS. ASSOCIATED WITH DOWNINGIA BICORNUTA, ERYNGIUM SP., MIMULUS TRICOLOR, PSILOCARPHUS BREVISSIMUS, PLAGIOBOTHRYS SP., DESCHAMPSIA DANTHONIOIDES, GLYCERIA OCCIDENTALIS, ETC.

General: 200-400 PLANTS IN 1985, 10 IN 1993, HUNDREDS IN 1995, <20 IN 2009. ~2000 PLANTS OBSERVED IN AN EXTENSIVE SURVEY IN 2010 (NUMBERS INCLUDE PLANTS IN CREATED POOLS). LAND PURCHASED TO PRESERVE VERNAL POOLS AS A RESULT OF HWY 41 REALINGMENT.

Owner/Manager: CALTRANS

Occurrence No.	31	**Map Index:** 25123	**EO Index:**	6195		**Element Last Seen:**	2008-04-17
Occ. Rank:	Fair		**Presence:**	Presumed Extant		**Site Last Seen:**	2008-04-17
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2009-03-13

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.87330 / -119.61142	**Accuracy:**	80 meters
UTM:	Zone-11 N4084001 E267238	**Elevation (ft):**	440
PLSS:	T12S, R22E, Sec. 19, SW (M)	**Acres:**	0.0

Location: HARLAN RANCH, 0.5 MILE NORTHEAST OF HIGHWAY 168/SHEPARD AVENUE INTERSECTION, WEST OF KERN-FRIANT CANAL.

Detailed Location: MAPPED NEAR CENTER OF SECTION 19.

Ecological: HARDPAN VERNAL POOL WITHIN VALLEY GRASSLAND. ASSOCIATED WITH ERYNGIUM, MIMULUS TRICOLOR, PSILOCARPHUS TENELLUS, P. BREVISSIMUS, PLAGIOBOTHRYS ACANTHOCARPUS, DOWNINGIA ORNATISSIMA, AND LASTHENIA FREMONTII.

General: 150 PLANTS OBSERVED IN 1991. 4 PLANTS IN 2008; LOW RAINFALL YEAR. SEVERAL GOOD VERNAL POOLS/MIMA MOUNDS IN THE VICINITY.

Owner/Manager: PVT

Occurrence No.	32	**Map Index:** 25122	**EO Index:**	28381		**Element Last Seen:**	1991-04-05
Occ. Rank:	Excellent		**Presence:**	Presumed Extant		**Site Last Seen:**	1991-04-05
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	1994-02-25

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.96195 / -119.71118	**Accuracy:**	80 meters
UTM:	Zone-11 N4094086 E258624	**Elevation (ft):**	400
PLSS:	T11S, R21E, Sec. 19, NE (M)	**Acres:**	0.0

Location: 1.5 MILES DUE SOUTH OF FRIANT.

Detailed Location: MAPPED 1.3 MILES DUE EAST OF THE SOUTHEAST CORNER OF LOST LAKE. SITE IS WITHIN THE SE 1/4 OF THE NE 1/4 OF SECTION 19.

Ecological: EXTENSIVE VERNAL POOL SYSTEM WITHIN VALLEY GRASSLAND COMMUNITY. ASSOCIATED WITH HORDEUM GENICULATUM, LASTHENIA FREMONTII, ERYNGIUM VASEYI, CRASSULA ERECTA, AND PSILOCARPHUS.

General: 40 PLANTS OBSERVED IN 1991. ALTHOUGH THE TAXON WAS OBSERVED IN ONLY ONE POOL IT IS LIKELY THAT IT OCCURS IN SOME OF THE OTHER HUNDREDS OF POOLS HERE. SITE SHOULD BE PROTECTED VIA RESTRICTING GRAZING, EASEMENTS, AND HYDROLOGY PRESERVATION.

Owner/Manager: PVT

Occurrence No.	33	**Map Index:** 25120	**EO Index:**	6231		**Element Last Seen:**	1992-04-28
Occ. Rank:	Fair		**Presence:**	Presumed Extant		**Site Last Seen:**	2009-04-16
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2010-11-08

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.93567 / -119.78684	**Accuracy:**	specific area
UTM:	Zone-11 N4091365 E251800	**Elevation (ft):**	395
PLSS:	T11S, R20E, Sec. 33, NE (M)	**Acres:**	2.0

Location: 600 METERS EAST OF HIGHWAY 41 AND 0.85 MILE NORTH OF AVENUE 12, NORTHWEST OF THE SAN JOAQUIN RIVER.

Detailed Location: TWO VERNAL POOLS ON TERRACE ABOVE AND TO THE SOUTH OF AN INTERMITTENT SWALE (CALTRANS ROUTE 41 NORTH PROJECT - POOLS #5-E-22, 5-E-19). MAPPED IN THE NE 1/4 OF THE NE 1/4 OF SECTION 33.

Ecological: VERNAL POOLS DOMINATED BY HORDEUM GENICULATA, PLAGIOBOTHRYS STIPITATUS, LYTHRUM HYSSOPIFOLIA, ERYNGIUM VASEYI, CRASSULA AQUATICA, AND PSILOCARPHUS BREVISSIMUS. CASTILLEJA MOSTLY ALONG THE EDGE OF THE POOL.

General: 20 PLANTS OBSERVED IN WESTERN COLONY AND 3 PLANTS IN EASTERN COLONY IN 1992. NO PLANTS OBSERVED IN 2009; OVERALL SITE QUALITY IS STILL GOOD, ABSENCE OF PLANTS POSSIBLY DUE TO LOW RAINFALL.

Owner/Manager: PVT

Occurrence No.	40	**Map Index:** 29049	**EO Index:**	30717		**Element Last Seen:**	1996-05-04
Occ. Rank:	Excellent		**Presence:**	Presumed Extant		**Site Last Seen:**	1996-05-04
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	1997-03-20

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.92871 / -119.72754	**Accuracy:**	specific area
UTM:	Zone-11 N4090439 E257062	**Elevation (ft):**	400
PLSS:	T11S, R21E, Sec. 31, SW (M)	**Acres:**	9.9

Location: ABOUT 0.25 MILE EAST OF FRIANT ROAD AND 0.5 MILE SOUTH OF LITTLE DRY CREEK.

Detailed Location:

Ecological: LARGE (APPROX. 1 ACRE) VERNAL POOL IN NONNATIVE GRASSLAND. WITH ALOPECURUS HOWELLII, ORCUTTIA INAEQUALIS, LYTHRUM HYSSOPIFOLIUM, AND PSILOCARPHUS BREVISSIMUS. PROBABLE FAIRY SHRIMP SITE AND EXCELLENT AMPHIBIAN HABITAT.

General: 300 PLANTS IN 1996.

Owner/Manager: PVT

Occurrence No.	43	**Map Index:** 40368	**EO Index:**	35375		**Element Last Seen:**	1991-XX-XX
Occ. Rank:	Unknown		**Presence:**	Presumed Extant		**Site Last Seen:**	1991-XX-XX
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	1998-12-11

Quad Summary: Round Mountain (3611975)

County Summary: Fresno

Lat/Long:	36.85664 / -119.61104	**Accuracy:**	2/5 mile
UTM:	Zone-11 N4082151 E267221	**Elevation (ft):**	440
PLSS:	T12S, R22E, Sec. 30 (M)	**Acres:**	0.0

Location: SOUTH OF HARLAN RANCH, EAST OF THOMPSON AVE BETWEEN TOLLHOUSE ROAD AND DOG CREEK, EAST OF CLOVIS.

Detailed Location: SITE BASED UPON 1991 PHONE CONVERSTATION WITH J. STEBBINS REGARDING PLANTS "FOUND ABOUT 1 MILE SOUTH OF HARLAN RANCH POPULATION" (OCCURRENCE #31). SITE MAPPED NEAR THE CENTER OF SECTION 30.

Ecological:

General: NEEDS FIELDWORK AND MORE DETAIL.

Owner/Manager: UNKNOWN

Orcuttia pilosa

Element Code: PMPOA4G040

hairy Orcutt grass

Listing Status:	**Federal:**	Endangered	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	Rare Plant Rank - 1B.1			
Habitat:	**General:**	VERNAL POOLS.			
	Micro:	25-125 M.			

Occurrence No.	29	**Map Index:**	36530	**EO Index:**	2303	**Element Last Seen:**	1986-08-15
Occ. Rank:	None			**Presence:**	Possibly Extirpated	**Site Last Seen:**	2010-08-09
Occ. Type:	Natural/Native occurrence			**Trend:**	Decreasing	**Record Last Updated:**	2013-04-25

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.95009 / -119.79510	**Accuracy:**	80 meters
UTM:	Zone-11 N4092986 E251113	**Elevation (ft):**	410
PLSS:	T11S, R20E, Sec. 28, NW (M)	**Acres:**	0.0

Location: WEST OF STATE ROUTE 41, 1.9 MILES NORTH OF INTERSECTION WITH AVENUE 12 AND 5.1 MILES NORTH OF LANES BRIDGE.

Detailed Location: MAPPED IN SINGLE POOL, ABOUT 0.7 MILE SOUTH OF ROAD 204 AND 0.1 MILE WEST OF SR 41. WITHIN THE NE 1/4 OF THE NW 1/4 OF SECTION 28.

Ecological: NORTHERN HARDPAN VERNAL POOL ON SAN JOAQUIN FINE SANDY LOAM. POOL SURROUNDED BY DRY-FARMED GRAINFIELD. ASSOCIATES INCLUDE ERYNGIUM VASEYI, TRICHOSTEMA SP., ELEOCHARIS PALUSTRIS, DOWNINGIA BICORNUTA, PLAGIOBOTHRYS STIPITATUS MICRANTHUS, ETC.

General: 2 PLANTS OBSERVED IN 1986, NONE FOUND IN 1992. NO PLANTS FOUND DURING EXTENSIVE SURVEY IN 2010. QUESTIONABLE ID; PLANTS ID'D IN 1986 AS O. PILOSA, IN 1992 ID'D AS O. INAEQUALIS. 1986 VOUCHER BY MARTIN WAS LOST.

Owner/Manager: PVT

Occurrence No.	45	**Map Index:**	37744	**EO Index:**	32752	**Element Last Seen:**	1995-09-12
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2010-08-09
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-05-29

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.94359 / -119.79300	**Accuracy:**	80 meters
UTM:	Zone-11 N4092260 E251277	**Elevation (ft):**	400
PLSS:	T11S, R20E, Sec. 28, SE (M)	**Acres:**	0.0

Location: EAST SIDE OF HIGHWAY 41 ABOUT 1.4 MILES NORTH OF AVENUE 12, NORTH OF LANES BRIDGE.

Detailed Location: JUST NORTH OF EAST-WEST RUNNING TRANSMISSION LINES.

Ecological: SWALE-LIKE VERNAL POOL WITHIN NON-NATIVE GRASSLAND. ASSOCIATED WITH DOWNINGIA ORNATISSIMA, ERYNGIUM VASEYI, AND PLAGIOBOTHRYS STIPITATUS.

General: 50 PLANTS OBSERVED IN 1995. HABITAT PRESENT, BUT NO PLANTS FOUND IN 2010. LAND WAS PURCHASED TO PRESERVE AND ENHANCE VERNAL POOLS AS MITIGATION FOR THOSE IMPACTED BY THE REALIGNMENT OF HIGHWAY 41.

Owner/Manager: CALTRANS

Occurrence No.	48	**Map Index:** 83415	**EO Index:**	84430		**Element Last Seen:**	2010-06-29
Occ. Rank:	Good		**Presence:**	Presumed Extant		**Site Last Seen:**	2010-06-29
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2011-07-19

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.94797 / -119.78983	**Accuracy:**	specific area
UTM:	Zone-11 N4092737 E251574	**Elevation (ft):**	405
PLSS:	T11S, R20E, Sec. 28, NE (M)	**Acres:**	1.0

Location: EAST SIDE OF HIGHWAY 41, APPROXIMATELY 0.9 MILE SOUTH OF ROAD 204, NORTH OF FRESNO.

Detailed Location: MAPPED IN THE APPROXIMATE CENTER OF THE NE 1/4 OF SECTION 28 ACCORDING TO 2010 DIGITAL DATA PROVIDED BY CALTRANS.

Ecological: LARGE DRY RESTORED SECTION OF VERNAL POOL SURROUNDED BY ANNUAL GRASSLAND. ASSOC W/ EPILOBIUM CLEISTOGAMUM, ORCUTTIA INAEQUALIS, PSILOCARPHUS BREVISSIMUS, LYTHRUM HYSSOPIFOLIA, AND ERYNGIUM SPINOSEPALUM (LIKELY INTERMEDIATE W/ E. CASTRENSE).

General: 2 PLANTS OBSERVED IN 2010. CALTRANS IS IN THE PROCESS OF TRANSFERRING THIS PROPERTY TO DFG. THIS IS A NATURAL POPULATION, BUT IN 2009 THE SITE WAS UNDER CONSTRUCTION FOR THE CREATION, RESTORATION, AND ENHANCEMENT OF VERNAL POOLS AND SWALES.

Owner/Manager: CALTRANS

Orcuttia inaequalis

Element Code: PMPOA4G060

San Joaquin Valley Orcutt grass

Listing Status:	**Federal:**	Threatened	**CNDDB Element Ranks:**	**Global:**	G1
	State:	Endangered		**State:**	S1
	Other:	Rare Plant Rank - 1B.1			
Habitat:	**General:**	VERNAL POOLS.			
	Micro:	10-755 M.			

Occurrence No.	21	**Map Index:** 14687	**EO Index:**	22388		**Element Last Seen:**	1927-05-27
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1987-06-01
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2008-06-26

Quad Summary: Fresno North (3611977), Lanes Bridge (3611987)

County Summary: Fresno, Madera

Lat/Long:	36.86226 / -119.79161	**Accuracy:**	1 mile
UTM:	Zone-11 N4083231 E251138	**Elevation (ft):**	300
PLSS:	T12S, R20E, Sec. 28 (M)	**Acres:**	0.0

Location: NEAR LANES BRIDGE NEAR FRIANT.

Detailed Location:

Ecological:

General: THIS REGION HAS BEEN LEVELED AND IS NOW BEING DEVELOPED FOR RESIDENTIAL AND COMMERCIAL USES AS WELL AS RECREATION ACCORDING TO STEBBINS (1987).

Owner/Manager: UNKNOWN

Occurrence No.	22	**Map Index:** 14887	**EO Index:**	22386		**Element Last Seen:**	1976-06-07
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	1987-06-01
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2011-09-06

Quad Summary:	Friant (3611986)
County Summary:	Fresno

Lat/Long:	36.90022 / -119.68014	**Accuracy:**	1/5 mile
UTM:	Zone-11 N4087158 E261196	**Elevation (ft):**	395
PLSS:	T12S, R21E, Sec. 09, SE (M)	**Acres:**	0.0

Location:	NORTH OF COPPER AVE, ABOUT 0.5 MILE NORTHWEST OF JUNCTION OF COPPER AND ARMSTRONG AVENUE.
Detailed Location:	EXACT LOCATION UNKNOWN. MAPPED BY CNDDB TO ENCOMPASS HISTORIC VERNAL POOLS IN VICINITY ACCORDING TO MAPS FROM 1981 AND 1988.
Ecological:	
General:	PLANTS SEEN IN 1976, DESPITE DROUGHT. NO PLANTS SEEN IN 1981, 83, 85 OR 87. ACCORDING TO STEBBINS, NO VIABLE HABITAT REMAINS DUE TO HYDROLOGIC ALTERATIONS TO A NEARBY STREAM PROJECT. SITE ALSO DAMAGED BY HORSEBACK RIDING AND ORVS.
Owner/Manager:	UNKNOWN

Occurrence No.	23	**Map Index:** 14577	**EO Index:**	22384		**Element Last Seen:**	1979-05-15
Occ. Rank:	None		**Presence:**	Extirpated		**Site Last Seen:**	2010-08-09
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2013-05-13

Quad Summary:	Lanes Bridge (3611987)
County Summary:	Madera

Lat/Long:	36.92605 / -119.85487	**Accuracy:**	1/5 mile
UTM:	Zone-11 N4090476 E245709	**Elevation (ft):**	355
PLSS:	T11S, R19E, Sec. 36, SW (M)	**Acres:**	0.0

Location:	NORTH OF AVENUE 12, EAST OF ROAD 38, 11 MILES ESE OF MADERA.
Detailed Location:	IN 4 OF 6 POOLS IN THE SW 40 ACRES OF SECTION 36. MAPPED BY CNDDB TO ENCOMPASS HISTORIC VERNAL POOLS IN VICINITY ACCORDING TO MAPS FROM 1982 AND 1988.
Ecological:	
General:	THOUSANDS OF PLANTS OBSERVED IN 1979. THIS SITE HAS BEEN LEVELED AND PLOWED AND WAS IN DRYLAND WHEAT IN 1987 ACCORDING TO STEBBINS. 2010 WINDSHIELD SURVEY BY WITHAM CONFIRMS THAT THIS SITE IS ACTIVELY USED FOR WHEAT.
Owner/Manager:	PVT

Occurrence No.	41	**Map Index:**	89216	**EO Index:**	6232	**Element Last Seen:**	2010-08-08
Occ. Rank:	Good			**Presence:**	Presumed Extant	**Site Last Seen:**	2010-08-08
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2013-05-14

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.96888 / -119.83639	**Accuracy:**	specific area
UTM:	Zone-11 N4095180 E247497	**Elevation (ft):**	365
PLSS:	T11S, R20E, Sec. 18, SW (M)	**Acres:**	14.0

Location: ALONG NORTH SIDE OF AVENUE 15 ABOUT 0.35 MILE WEST OF ROAD 39 1/2, 4 MILES WEST OF LITTLE TABLE MOUNTAIN.

Detailed Location: 3 POLYGONS MAPPED WITHIN THE SW 1/2 OF THE SW 1/4 OF SECTION 18 ACCORDING TO A 1986 STEBBINS MAP, 1995 STEBBINS MAP, AND 2013 WITHAM DIGITAL DATA.

Ecological: GROWING ON DRY CRACKED CLAY IN CENTER OF VERNAL POOLS WITHIN VALLEY GRASSLAND. ASSOCIATED WITH ERYNGIUM, DOWNINGIA, PSILOCARPHUS BREVISSIMUS, PLAGIOBOTHRYS, CASTILLEJA CAMPESTRIS VAR. SUCCULENTA, PLAGIOBOTHRYS STIPITATA, AND VULPIA MYUROS.

General: 200 PLANTS SEEN IN 1982. GREATER THAN 100 PLANTS SEEN IN 1983. 400 PLANTS SEEN IN S POLY IN 1986. 1995: ~100 PLANTS IN NW POLY, ~1000 PLANTS IN S POLY. 65 PLANTS IN NE POLY IN 2010; NO OTHER POOLS FOUND TO BE OCCUPIED.

Owner/Manager: PVT

Occurrence No.	43	**Map Index:**	36547	**EO Index:**	2302	**Element Last Seen:**	2017-06-16
Occ. Rank:	Fair			**Presence:**	Presumed Extant	**Site Last Seen:**	2017-06-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Decreasing	**Record Last Updated:**	2017-10-12

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.94824 / -119.79345	**Accuracy:**	specific area
UTM:	Zone-11 N4092778 E251254	**Elevation (ft):**	400
PLSS:	T11S, R20E, Sec. 28 (M)	**Acres:**	14.0

Location: BOTH SIDES OF HIGHWAY 41 FROM ~1.4-2 MILES NORTH OF JUNCTION WITH AVENUE 12, 3 MILES SOUTHWEST OF LITTLE TABLE MOUNTAIN.

Detailed Location: MAPPED AS 8 POLYGONS. A 1973 COLLECTION FROM "8 MI N OF PINEDALE ON HWY 41" ATTRIBUTED HERE. 2 POOLS "RESTORED/ENHANCED."

Ecological: POOLS IN A LARGE DRY-FARMED GRAINFIELD. HIGH TERRACE SITE WITH HARDPAN SOILS MAPPED AS SAN JOAQUIN SANDY LOAM. W/ LYTHRUM HYSSOPIFOLIA, JUNCUS BUFONIUS, HEMIZONIA FITCHII, ERYNGIUM SP., PSILOCARPHUS BREVISSIMUS, DOWNINGIA ORNATISSIMA, ETC.

General: POP #S FOR PARTS OF EO. W SIDE OF HWY: >1000 PLANTS IN 1986, >10,000 PLANTS IN 1992, NONE IN 2009 (DROUGHT?), 3000 IN 2010, DISKED IN 2011 (UNK IF PLANTS SEEN). E SIDE OF HWY: ~100 PLANTS IN 1995, ~350 IN 2010, 2 IN 2017. INCL FRMR EO#52.

Owner/Manager: PVT, CALTRANS

Occurrence No.	45	**Map Index:**	89220	**EO Index:**	9516	**Element Last Seen:**	2010-08-09
Occ. Rank:	None			**Presence:**	Extirpated	**Site Last Seen:**	2011-10-16
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-10-12

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.93285 / -119.85688	**Accuracy:**	specific area
UTM:	Zone-11 N4091237 E245552	**Elevation (ft):**	350
PLSS:	T11S, R19E, Sec. 36, NW (M)	**Acres:**	5.0

Location: EAST OF MADERA RANCHOS SUBDIVISION, JUST NORTH OF MADERA CANAL, MADERA.

Detailed Location: UNDER PG&E POWER LINES. 2 SITES MAPPED BY CNDDB AS A SINGLE POLYGON ACCORDING TO 2013 WITHAM DIGITAL DATA. WITHIN THE SW 1/4 OF THE NW 1/4 OF SECTION 36.

Ecological: LARGE VERNAL POOLS IN ANNUAL GRASSLAND WITH ERYNGIUM VASEYI, TRICHOSTEMA, POLYPOGON, PSILOCARPHUS, AND BROMUS RUBENS.

General: ~1000 PLANTS IN 1983, 60 IN 1986, NONE IN 1987, 3000 IN 1991, NONE IN 2009 (DROUGHT), ~800 IN 2010. SITE DISKED BY 3 MACHINES IN 2011; CONSIDERED POSSIBLY EXTIRPATED BY WITHAM. BASED ON 2016 AERIAL IMAGERY; SITE HAS BEEN EXTIRPATED BY AG.

Owner/Manager: PVT

Occurrence No.	48	**Map Index:**	24646	**EO Index:**	6891	**Element Last Seen:**	1992-06-17
Occ. Rank:	Poor			**Presence:**	Presumed Extant	**Site Last Seen:**	1992-06-17
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	1993-12-13

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.93595 / -119.79158	**Accuracy:**	80 meters
UTM:	Zone-11 N4091408 E251380	**Elevation (ft):**	390
PLSS:	T11S, R20E, Sec. 33, NE (M)	**Acres:**	0.0

Location: 0.9 MILE NORTH OF AVENUE 12, 0.1 MILE EAST OF HIGHWAY 41.

Detailed Location: POOL #5E-28 FOR CALTRANS RTE 41 NORTH PROJECT.

Ecological: LARGE VERNAL POOL IN ANNUAL GRASSLAND WITH ERYNGIUM SP., PSILOCARPHUS BREVISSIMUS, EREMOCARPUS SETIGERUS.

General: FEWER THAN 10 PLANTS IN 1992.

Owner/Manager: PVT

Occurrence No.	53	**Map Index:** 29049	**EO Index:**	30718		**Element Last Seen:**	1996-05-25
Occ. Rank:	Excellent		**Presence:**	Presumed Extant		**Site Last Seen:**	1996-05-25
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	1997-03-20

Quad Summary: Friant (3611986)

County Summary: Fresno

Lat/Long:	36.92871 / -119.72754	**Accuracy:**	specific area
UTM:	Zone-11 N4090439 E257062	**Elevation (ft):**	400
PLSS:	T11S, R21E, Sec. 31, SW (M)	**Acres:**	9.9

Location: ABOUT 0.25 MILE EAST OF FRIANT ROAD AND 0.5 MILE SOUTH OF LITTLE DRY CREEK.

Detailed Location:

Ecological: LARGE (APPROX 1 ACRE) VERNAL POOL IN NONNATIVE GRASSLAND. WITH ALOPECURUS HOWELLII, CASTILLEJA CAMPESTRIS SUCCULENTA, LYTHRUM HYSSOPIFOLIUM, AND PSILOCARPHUS BREVISSIMUS. PROBABLE FAIRY SHRIMP SITE AND EXCELLENT AMPHIBIAN HABITAT.

General: 300 PLANTS IN 1996.

Owner/Manager: PVT

Occurrence No.	65	**Map Index:** A6807	**EO Index:**	108577		**Element Last Seen:**	2016-06-03
Occ. Rank:	Excellent		**Presence:**	Presumed Extant		**Site Last Seen:**	2016-06-03
Occ. Type:	Natural/Native occurrence		**Trend:**	Unknown		**Record Last Updated:**	2017-10-12

Quad Summary: Lanes Bridge (3611987)

County Summary: Madera

Lat/Long:	36.97418 / -119.82608	**Accuracy:**	80 meters
UTM:	Zone-11 N4095742 E248433	**Elevation (ft):**	400
PLSS:	T11S, R20E, Sec. 18, E (M)	**Acres:**	5.0

Location: VERNAL POOL COMPLEX ON FENSTON RANCH, APPROXIMATELY 0.55 MILE NE OF THE INTERSECTION OF AVE 15 AND ROAD 39 1/2.

Detailed Location: FENSTON RANCH IS A PROPERTY SEEKING CONSERVATION BY PRIVATE PROPERTY OWNER. MAPPED ACCORDING TO 2016 JONES COORDINATES, IN THE EAST 1/2 OF SECTION 18.

Ecological: VERNAL POOL COMPLEX ON UNDISTURBED LANDS. POOLS CONSISTED OF CRACKED CLAY PAN. PLANTS OCCURRING WHEN POOLS WERE DRY. ASSOCIATED WITH ERYNGIUM, NAVARRETIA MYERSII SSP. MYERSII, AND CENTROMADIA FITCHII.

General: 500+ PLANTS OBSERVED IN 2016.

Owner/Manager: PVT

Occurrence No.	66	**Map Index:**	A6808	**EO Index:**	108578	**Element Last Seen:**	2017-06-06
Occ. Rank:	Unknown			**Presence:**	Presumed Extant	**Site Last Seen:**	2017-06-06
Occ. Type:	Natural/Native occurrence			**Trend:**	Unknown	**Record Last Updated:**	2017-10-12

Quad Summary:	Lanes Bridge (3611987)
County Summary:	Madera

Lat/Long:	36.98669 / -119.82453	**Accuracy:**	80 meters
UTM:	Zone-11 N4097126 E248612	**Elevation (ft):**	410
PLSS:	T11S, R20E, Sec. 7, SE (M)	**Acres:**	5.0

Location:	FENSTON RANCH; APPROXIMATELY 1.4 AIR MILES NNE OF THE INTERSECTION OF AVE 15 AND ROAD 39 1/2.
Detailed Location:	MAPPED ACCORDING TO 2017 NUNES COORDINATES, IN THE NE 1/4 OF THE SE 1/4 OF SECTION 7.
Ecological:	LARGE VERNAL POOL, WITH A LARGE POPULATION GROWING WITHIN THE VERNAL POOL.
General:	ABOUT 500 PLANTS OBSERVED IN 2017
Owner/Manager:	PVT

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: December 29, 2017
Consultation Code: 08ESMF00-2018-SLI-0758
Event Code: 08ESMF00-2018-E-02228
Project Name: Dry Creek

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to

utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2018-SLI-0758

Event Code: 08ESMF00-2018-E-02228

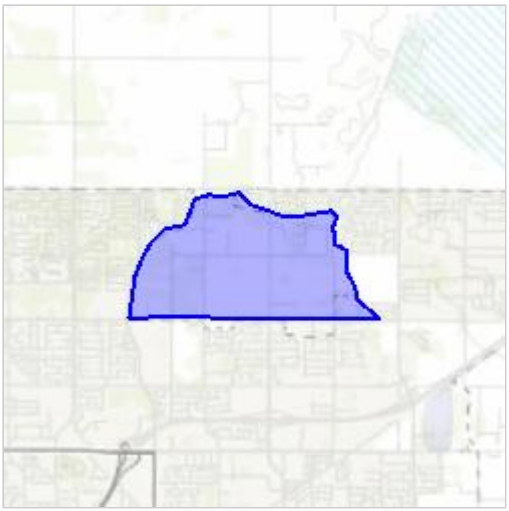
Project Name: Dry Creek

Project Type: AGRICULTURE

Project Description: Clovis, CA

Project Location:

Approximate location of the project can be viewed in Google Maps:
https://www.google.com/maps/place/36.85895209226541N119.68746195169062W



Counties: Fresno, CA

Endangered Species Act Species

There is a total of 11 threatened, endangered, or candidate species on this species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

Mammals

NAME	STATUS
Fresno Kangaroo Rat *Dipodomys nitratoides exilis* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5150	Endangered
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Birds

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **proposed** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Reptiles

NAME	STATUS
Blunt-nosed Leopard Lizard *Gambelia silus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/625	Endangered
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Greene's Tuctoria *Tuctoria greenei* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/1573	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix C – Photographs

Dry Creek Preserve
Master Plan Area

Photograph 1

View of typical internal surface street within Master Plan Area

Photograph 2

View of unvegetated roadside swale

Photograph 3

View of plowed pasture land typical of the Master Plan Area

Photograph 4

View of Enterprise Canal at north end of Master Plan Area

Photograph 5

View of drainage channel on east side of Master Plan Area (taken from Armstrong Avenue), looking west toward Study Area.

Photograph 6

View of representative rural residential homesite within Master Plan Area

Photograph 7

View of Dry Creek and adjacent bike trail within Study Area

Dale F. Mitchell
8300 North Marion Avenue
Clovis, Ca. 93619

Mr. Dwight Kroll, AICP
Director, Division of Planning and Development Services
1033 Fifth Street
City of Clovis, CA 93612

February 20, 2018

Subject: Biological Assessment for the Dry Creek Preserve Area

Dear Director Kroll:

I have owned property and personally resided at the above address, located within the Dry Creek Preserve portion of the Clovis Sphere of influence, for a period of 34 years since 1983. As a long-time resident and a trained biologist (please see below), I have become intimately familiar with the floral and faunal resources of the Dry Creek Preserve area. My wildlife related activities have included almost perpetual casual wildlife observations as well as more structured surveys within the area, including: (i) 25 years of continuous terrestrial and aquatic invertebrate collections, (ii) multi-seasonal native plant observations and collections, and (iii) numerous vertebrate wildlife surveys using direct observation, track plates, night spotlight surveys, set trail cameras at numerous bait station locations, and other survey methods. These inclusive surveys and collections have covered much of the accessible Dry Creek Preserve landscape.

I have carefully reviewed the Biological Assessment Report by Peak Environmental, LLC., pertaining to adoption of the City of Clovis 2014 General Plan, which included surveys and assessments made within the Dry Creek Preserve area, bounded by Nees Avenue on the South, Dry Creek on the west, and Fresno Irrigation District's Enterprise Canal on the north and east (approximately 850 total acres, including road rights of way). I have also reviewed the Biological Assessment performed by Argonaut Ecological, Inc., pertaining to a proposed 46-acre residential development by Woodside Homes Inc., located within the north-central portion of the Dry Creek Preserve on the west side of Fowler Avenue, north of Teague Avenue. More recently, I have reviewed the Environmental Report prepared by Argonaut Environmental in regard to the Dry Creek Preserve Master Plan. Based upon my own surveys and familiarity with the Dry Creek Preserve-associated floral and faunal community, I believe the three aforementioned Biological Assessments do adequately describe the biological resources present within their respective locations. I believe the latter survey is fully adequate to represent the entire extent of the landscape and natural habitat areas within the Dry Creek Preserve. I believe the lists of plant and wildlife species provided by the above consultants are both comprehensive and accurate, and the surveys, as described in detail in each of the Biological Reports, were properly conducted. I base my above conclusions about the three reports upon my own observations of the area, characterized by: 1) homogeneity of the topography, habitat types and conditions over the area, 2) similarity across the area's history of land uses and land use changes, including widespread historical discing, leveling and irrigation, 3) general homogeneity of the area's native and introduced plant associations across the area, 4) regional and state-wide ubiquity in the ranges of the vertebrate and invertebrate wildlife species present within the area, and 5) absence of occurrence records of endemic, rare or endangered

species, or California-listed Animal or Plant Species of Special Concern. I believe I am qualified to perform professional biological surveys and assessments and to provide expert opinions, based upon my education and history of related employment and specific training, as below.

Education:
I earned a Bachelor of Arts degree in Biology from California State University Fresno (1971), followed by 38 Semester-Units of post-graduate credit there, emphasizing the fields of Fisheries, Aquatic Biology, Fish Pathology, and Wildlife Biology-Management. I later accumulated 14 additional Quarter-Units of graduate credit in Fisheries Science from U.C. Davis, over a 15-year period, concurrent with the employment history provided below.

Employment History and Experience:
I was employed by the California Department of Fish and Game (now Dep't of Fish and Wildlife) in the following capacities:

1) Aquatic/Fisheries Research Biologist (1972-1982),
2) Environmental Scientist - Associate Biologist Fisheries and Wildlife (1982-1988),
3) Regional Environmental Services Supervisor (1988-1998),
4) Environmental Program Manager-Deputy Regional Manager for the 12-county DFW Central Region, (1998-2009), prior to retiring in December 2009.

In the above capacities, I personally performed literally hundreds of site-specific biological surveys, involving the technical methods described above. I also performed aquatic research using other more detailed Aquatic Resource survey and modelling methodologies. I prepared numerous reports and technical publications, and provided expert witness testimony in numerous evidentiary proceedings and court trials. I became trained and certified in use of the Department's Natural Diversity Database and Wildlife Habitat Relationships Model. I also became certified to use the US Fish and Wildlife Service's National Instream Flow Assessment Models, the USFWS Habitat Evaluation Procedures methodology, the U.S. Army Corps of Engineers Wetlands Delineation Procedures, and other nationally recognized methodologies for environmental or biological assessment. I am a long-time member of natural resource related professional organizations, including the American Fisheries Society (Certified Fishery Biologist) and The Wildlife Society.

If you have questions about either my above-described surveys/conclusions or about my personal qualifications, please do not hesitate to contact me directly either at the above address, by telephone at (559) 999-1758, or by e-mail at dmitchellclovis@aol.com. Thank you for giving consideration to my recommendations.

Sincerely,

Dale F. Mitchell

Dale F. Mitchell

CULTURAL RESOURCE ASSESSMENT

FOR THE DRY CREEK PRESERVE

MASTER PLAN AREA,

FRESNO COUNTY CALIFORNIA

Prepared by

Melinda A. Peak
Peak & Associates, Inc.
3941 Park Drive, Suite 20-329
El Dorado Hills, CA 95762
(916) 939-2405

Prepared for

Woodside Homes
9 River Park Place East Suite 430
Fresno, CA 93720

and

The City of Clovis

January 17, 2018
(Job #17-109)

INTRODUCTION

The Dry Creek Preserve is a 795-acre Master Plan area located in the City of Clovis' Sphere of Influence. In 1972, Local Agency Formation Commissions (LAFCOs) throughout the State of California were granted authority to determine spheres of influence for cities. A Sphere of Influence (SOI) is a planning boundary outside of the City limit that designates the City's probable future boundary and service area. It is updated on a regular basis as the City grows and future growth plans become better defined. Projects proposed within the Sphere of Influence are usually referred to the City for planning and consideration. This area was specifically mentioned in the 2014 General Plan Update as Focus Area No. 7.

Creation of the Master Plan will ensure that the area's unique historical and agricultural heritage is recognized and maintained as development occurs. Currently the land parcels within the Master Plan area are designated as Rural Residential, in accordance with the Herndon-Shepherd Specific Plan's Land Use Designations. One 31-acre development area, the Whisper Creek project, was previously annexed to the City of Clovis and has been subdivided into approximate three-quarter acre home sites, pursuant to a 2010 General Plan Amendment.

The proposed Master Plan boundaries are generally Nees Avenue on the South, and the Enterprise and Dry Creek Canals on the North, East, and West. The area lies atop a broad alluvium and has fertile loamy soils suitable for agriculture. About one half of the Master Plan area is managed as orchards, pastureland or other agricultural uses. A wide variety of livestock are also kept on various size parcels throughout the area. The remaining area is principally developed into single family residences on Rural Residential sized lots. Area housing and demographics are widely varied, with many different values and styles of homes situated on parcels which range from one acre to about 20 acres in size. (There is a scattering of older, legally "non-conforming" parcels of less than two acres, which were formed prior to the Rural Residential designation by Fresno County.)

The purpose of this technical report is to present the finding of a cultural resources assessment conducted on the Master Plan area. The cultural resources assessment was conducted at a planning level, meaning the area as a whole was evaluated but individual parcels were not surveyed or studied. This technical report is intended to provide the City of Clovis with an overall assessment of the cultural resources potentially present, to describe the cultural resources characteristics of the area and the likelihood of the area to support sensitive cultural resources, to identify any known sensitive cultural resources, and to make recommendations for a range of mitigation measures that may be needed as the Master Plan area develops.

The Master Plan Area is located within portions of sections 27, 28 and 29, Township 12 South, Range 21 East, mapped on the Clovis USGS topographic quadrangle (Figure 1).

A project planned for development by Woodside Homes (Tract 6154) has been addressed by cultural resource studies in 2016. Research and a field survey covered the overall project area (Peak 2016).

Dry Creek Preserve Master Plan Area
Flume
20
ENTERPRISE
AVE
Siphon
Well
DITCH
CANAL
Dry
29
28
TEAGUE
SUNNYSIDE
NEES
Dry Creek Sch
Dry Creek Preserve Master Plan Area
- True North
32
33
ALLUVIAL
Radio Sta (KCIB)
USGS 1:24,000 Clovis, Calif. 1964 (1981)
Township 12 South, Range 21 East

Figure 1

Melinda A. Peak, senior historian/archeologist with Peak & Associates, Inc. served as principal investigator for the study (resume, Appendix 1).

STATE REGULATIONS

State historic preservation regulations affecting this project include the statutes and guidelines contained in the California Environmental Quality Act (CEQA; Public Resources Code sections 21083.2 and 21084.1 and sections 15064.5 and 15126.4 (b) of the CEQA Guidelines). CEQA Section 15064.5 requires that lead agencies determine whether projects may have a significant effect on archaeological and historical resources. Public Resources Code Section 21098.1 further cites: A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.

An "historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record or manuscript that is historically or archaeologically significant (Public Resources Code section 5020.1).

Advice on procedures to identify such resources, evaluate their importance, and estimate potential effects is given in several agency publications such as the series produced by the Governor's Office of Planning and Research (OPR), *CEQA and Archaeological Resources,* 1994. The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including, but not limited to, museums, historical commissions, associations and societies be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of the antiquity and provides for the sensitive treatment and disposition of those remains (California Health and Safety Code Section 7050.5, California Public Resources Codes Sections 5097.94 et al).

The California Register of Historical Resources (Public Resources Code Section 5020 et seq.)

The State Historic Preservation Office (SHPO) maintains the California Register of Historical Resources (CRHR). Properties listed, or formally designated as eligible for listing, on the National Register of Historic Places are automatically listed on the CRHR, as are State Landmarks and Points of Interest. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

For the purposes of CEQA, an historical resource is a resource listed in, or determined eligible for listing in the California Register of Historical Resources. When a project will impact a site, it needs to be determined whether the site is an historical resource. The criteria are set forth in Section 15064.5(a) (3) of the CEQA Guidelines, and are defined as any resource that does any of the following:

A. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

B. Is associated with the lives of persons important in our past;

C. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

D. Has yielded, or may be likely to yield, information important in prehistory or history.

In addition, the CEQA Guidelines, Section 15064.5(a) (4) states:

The fact that a resource is not listed in, or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register of historical resources (pursuant to section 5020.1(k) of the Public Resources Code), or identified in an historical resources survey (meeting the criteria in section 5024.1(g) of the Public Resources Code) does not preclude a lead agency from determining that the resource may be an historical resource as defined in Public Resources Code section 5020.1(j) or 5024.1.

California Health and Safety Code Sections 7050.5, 7051, And 7054

These sections collectively address the illegality of interference with human burial remains, as well as the disposition of Native American burials in archaeological sites. The law protects such remains from disturbance, vandalism, or inadvertent destruction, and establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project, including the treatment of remains prior to, during, and after evaluation, and reburial procedures.

California Public Resources Code Section 15064.5(e)

This law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction. The section establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project and establishes the Native American Heritage Commission as the entity responsible to resolve disputes regarding the disposition of such remains.

Assembly Bill 52

Assembly Bill (AB) 52 establishes a formal consultation process for California tribes as part of CEQA and equates significant impacts on tribal cultural resources with significant environmental impacts. AB 52 defines a “California Native American Tribe” as a Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission. AB 52 requires formal consultation with California Native American Tribes prior to determining the level of environmental document if a tribe has requested to be informed by the lead agency of proposed projects. AB 52 also requires that

consultation address project alternatives, mitigation measures, for significant effects, if requested by the California Native American Tribe, and that consultation be considered concluded when either the parties agree to measures to mitigate or avoid a significant effect, or the agency concludes that mutual agreement cannot be reached. Under AB 52, such measures shall be recommended for inclusion in the environmental document and adopted mitigation monitoring program if determined to avoid or lessen a significant impact on a tribal cultural resource.

CULTURAL SETTING

Archeology

The Central Valley region was among the first in the state to attract intensive fieldwork, and research has continued to the present day. This has resulted in a substantial accumulation of data, but the emphasis has been in the northern portion of the valley. In the early decades of the 1900s, E.J. Dawson explored numerous sites near Stockton and Lodi, later collaborating with W.E. Schenck (Schenck and Dawson 1929). By 1933, the focus of work was directed to the Cosumnes locality, where survey and excavation were conducted by the Sacramento Junior College (Lillard and Purves 1936). Excavation data, in particular from the stratified Windmiller site (CA-SAC-107), suggested two temporally distinct cultural traditions. Later work at other mounds by Sacramento Junior College and the University of California, Berkeley, enabled the investigators to identify a third cultural tradition, intermediate between the previously postulated Early and Late Horizons. The three-horizon sequence, based on discrete changes in ornamental artifacts and mortuary practices, as well as on observed differences in soils within sites (Lillard, Heizer and Fenenga 1939), was later refined by Beardsley (1954). An expanded definition of artifacts diagnostic of each time period was developed, and its application extended to parts of the central California coast. Traits held in common allow the application of this system within certain limits of time and space to other areas of prehistoric central California.

In the southern San Joaquin Valley, with the exception of Hewes's excavation at CA-FRE-48 (the Tranquility Site), the foci of early investigations have been the old shorelines of the interior lakes: Tulare, Kern, and Buena Vista. In 1899, Dr. P. M. Jones directed fieldwork in the Buena Vista-Tulare Lake area of Kern County. Jones investigated 150 mounds and conducted trenching of several sites including CA-KER-53. In 1909, N. C. Nelson investigated prehistoric site CA-KER-49, which is located to the west of Buena Vista Lake. Later, four surveys and excavations were conducted in the same locale under the auspices of the University of California. A compilation of these investigation results was published in 1926 by Gifford and Schenck.

As a result of this early work, an elaborate culture complex was defined for the late prehistoric period. This complex can be ascribed probably to the Yokuts and their direct ancestors. The material culture of this late temporal period complex included steatite vessels and beads, finely-made projectile points, pottery, shaped stone mortars, *Tivela* disc beads, use of asphaltum, and the presence of metates and manos. Flexed burials were the predominant interment mode. Earlier complexes underlying the late cultural expressions were represented by chipped stone crescents, large projectile points, atlatl spurs, and weights. Mortuary practices, generally thought to be

related, include extended rather than flexed burial position, a situation analogous to that of the northern valley (Gifford and Schenck 1926; Lillard, Heizer, and Fenenga 1939; Moratto 1972). Presence of "Early Man," although not found in direct association with extinct animals, is demonstrated by the frequency of chipped stone crescents and fluted points similar to those of the Clovis-Folsom Complex in the American Southwest. Although fluted points have been found near the shores of Tulare Lake, an area that has also produced surface finds of extinct mammal bone of Pleistocene age, the association is not substantiated by controlled excavations and remains speculative (Riddell and Olsen 1969). Most of the point collection had been acquired by D. Witt over a period of 30 years.

Under the direction of Wedel (1941), the Civil Works Administration, in conjunction with the Smithsonian Institution, initiated the first major excavations using stratigraphic controls. Investigations of CA-KER-39 and CA-KER-60 as well as several smaller sites near Buena Vista Lake produced evidence of two distinct cultural entities or occupation periods. Wedel lacked methods for dating these two entities by cross-comparison of the assemblages, he tentatively stated that the early occupation at Buena Vista Lake appeared to be temporally older and less developed than the Early Horizon (Windmiller Pattern) of the Delta region. He compared this early component to the Oak Grove or Milling Stone culture of the Santa Barbara area (Rogers 1939). He divided the later cultural entity into two distinct phases, both clearly distinguished from the earlier cultural phase by artifact types. Wedel (1941:144-145) estimated that neither of these cultural periods exceeded 1500 B.P. (years Before the Present). Later, other investigators proposed far earlier ages for these early occupations, with dates ranging from 2000 to 7000 B.P. (Baumhoff and Olmstead 1963, 1964; Heizer 1964; Meighan 1959).

Later investigations in 1963 and 1964 at CA-KER-116 near Buena Vista Lake produced materials similar to Wedel's early occupation. These materials occurred in the lower levels of the "upper deposit," while an even deeper cultural deposit yielded materials similar to those of the San Dieguito Complex. Artifacts included a chipped stone crescent, crude point fragments, and an atlatl spur. Radiocarbon age determinations on shell from the lowest cultural levels returned a date of circa 8200 B.P. (Fredrickson and Grossman 1966, 1977; Fredrickson 1967).

Despite the previously mentioned investigations, the prehistory of the southern San Joaquin remains as yet poorly understood, without a tightly defined chronological sequence of cultural development.

Ethnology

Ethnographic literature is often uncertain in definition of cultural boundaries for Indian groups. Early displacement by white intrusion resulted in population shifts to avoid conflict with the Spanish, and later with the miners and settlers. The ravages of disease and warfare decimated the native people, further weakening cultural identity. Informants were often uncertain of original territories of the various tribal groupings.

The Foothill Yokuts were members of the Penutian language family which held all of the Central Valley, San Francisco Bay Area, and the Pacific Coast from Marin County to near Point Sur. The

Yokuts differed from other ethnographic groups in California as they had true tribal divisions with group names (Kroeber 1925). Each tribe spoke a particular dialect, common to its members, but similar enough to other Yokuts that they were mutually intelligible (Kroeber 1925).

The Foothill Yokuts were a group of about 15 named tribes who occupied the western Sierra Nevada foothills from the Fresno River to the Kern River. A further subdivision separated the groups into northern, central and southern groups. The area controlled by individual groups varied over time. There is no information to indicate that there was a village in the project vicinity, but this does not preclude the possibility.

Trade was well developed, with mutually beneficial interchange of needed or desired goods. Obsidian, rare in the San Joaquin Valley, was obtained by trade with Paiute and Shoshoni groups on the eastern side of the Sierra Nevada, where numerous sources of this material are located, and to some extent from the Napa Valley to the north. Shell beads, obtained by the Yokuts from coastal people, and acorns, rare in the Great Basin, were among many items exported to the east by Yokuts traders (Davis 1961).

Economic subsistence was based on the acorn, with substantial dependency on gathering and processing of wild seeds and other vegetable foods. The rivers, streams, and sloughs which formed a maze within the valley provided abundant food resources such as fish, shellfish, and turtles. Game, wild fowl, and small mammals were trapped and hunted to provide protein augmentation of the diet. In general, the eastern portion of the San Joaquin Valley provided a lush environment of varied food resources, with the estimated large population centers reflecting this abundance (Cook 1955; Baumhoff 1963).

Settlements were oriented along the water ways, with their village sites normally placed adjacent to these features for their nearby water and food resources. House structures varied in size and shape (Latta 1949; Kroeber 1925). The housepit depressions ranged in diameter from between 3 to 18 meters.

Latta (1949:99) reported that a village of 200 to 300 Yokuts might have four or five large houses that were used for ten or twelve years or until a family member died, at which time the Indians burned the house in which the death had occurred. If a sick or aged person died outside the dwelling, the family did not burn the house. When a Northern Yokuts died, his body was cremated or buried in a flexed position. Southern tribes normally buried their dead, although they did cremate shamans, persons who died away from their village and, among the Tachi, persons of great importance.

The Yokuts experienced severe depopulation after contact with the Spanish and subsequent explorers. The most devastating impacts of the Spanish colonization effort were not the result of military conflicts, but came from Old World diseases newly introduced to the native people.

Historical Context

Early Explorations

The early recorded inhabitants of the region were members of the Yokuts tribe. Although the Spanish missions were established closer to the Pacific coast between 1769 and 1817, the general project area was first visited in the early 1800s by Spanish explorers, who visited the San Joaquin Valley with three goals: to search for runaway neophytes from the missions in the coastal regions, to punish the Indian raiders, and to select sites for new missions. In 1806, a group led by Gabriel Moraga and Father Pedro Muñoz, left Mission San Juan Bautista heading north to about the Mokelumne River. They then turned south, and travelled along the edge of the mountains crossing the San Joaquin River and passing through Tejon Pass, arriving at Mission San Fernando. In 1815, José Dolores Pico marched an expedition group from Monterey into the region. Following the San Joaquin River, he passed through the area in search of runaways, traveling as far south as the Kern River. The expedition returned to the starting point in Monterey with nine prisoners and a number of horses.

After control of California passed from Spain to Mexico in 1822, Mexican explorations into the interior continued, with José Dolores Pico conducting a major expedition along the San Joaquin River in 1825-1826. This expedition was considered successful in that some neophytes were captured, hostile Indians killed, some of the tribal groups intimidated, and some stolen horses recovered. In 1828, Sebastián Rodríguez led a similar expedition into the same region. His expedition captured a number of neophytes as well as some of the stolen horses, an item that had become an important dietary staple for the Indian tribes in the San Joaquin Valley region (Beck and Haase 1974).

The expeditions did not leave physical evidence, but there were definitely effects to the Native American populations. Causing even more of an effect on the native population were the diseases brought in to the Native populations of the Central Valley in the early 1830s.

Ranchos

In Fresno County, there was only one early land grant, a rancho along the current southern border of the county: Laguna de Tache. The era of the Spanish and Mexican land grants did not directly affect the project area.

Clovis

The extension of the railroad system throughout the San Joaquin Valley allowed the increased expansion of a market for the agricultural production of the region. A branch line of the Southern Pacific Railroad (first known as the Pollasky Railroad or the San Joaquin Railroad) was built through this region circa 1891. Marcus Pollasky served as the promoter, and monies were raised locally for the construction costs. Clovis Cole, the owner of a large wheat ranch, donated land for the route, and a station was established here on the line and named Clovis (Gudde 1969; City of Clovis 1962).

After the completion of the railroad, the construction of the flume from Shaver Lake to the east was soon completed by the Fresno Flume and Irrigation Company. The 45-mile-long flume could deliver 200,000 board feet of lumber through the v-shaped watercourse in a 24-hour period. At the end of the flume, there was a finishing and distributing plant. Other, better grade lumber was delivered to Clovis down Tollhouse Grade, hauled by ox and horse teams. In the early years, 140 men were employed by the lumber company, with an annual payroll of $450,000. The Clovis lumber plant occupied a 40-acre site. The factory, warehouse, a planing mill and engine house all burned to the ground in 1898, but were soon rebuilt. As many as 400 men were employed by the company. The mill was located on the south side of Fifth Street (City of Clovis 1962; Clovis Centennial Book Committee 2011).

The mill in Clovis produced "ordinary lines of lumber," shakes, trays, sweat boxes, raisin boxes, orange boxes, cedar posts, ties, poles, and also pine and oak cordwood (*Fresno Republican* 1897: 96). The ever-increasing agricultural use of the San Joaquin Valley, due to improvements and expansion of irrigation systems, led to a large market for the fruit packing boxes, allowing shipment of the produce to a wider marketplace.

Clovis was laid out by a licensed surveyor, working for the co-owners of the land: Clovis Cole, Clarence Pallos and George Owen. Early homes were utilitarian, and the streets were ungraded City of Clovis 1962).

The town's population expanded rapidly from about 500 residents in 1905 to about 1,000 in 1910. Nearby, the population was increasing within the local rural agricultural colonies, with large acreages broken up into 20-acre tracts advertised for sale to Midwesterners. By 1919, local population had grown to 1,500. At this point, the lumber business is still the main support of the economy, but the area produced huge crops of Malaga grapes and figs (Clovis Centennial Book Committee 2011; Vandor 1919:269)

For the first 21 years, there was no organized government in Clovis. Late in 1911, an election was held, and the City incorporated in 1912. Most of the early businesses in town were located on Front Street, now known as Clovis Avenue, on the west side of the tracks (City of Clovis 1962).

Historical Background: Master Plan Area

The early use of land in the Dry Creek region was primarily for cultivation of wheat. Improvements such as the development of the railroad, allowing marketing of more perishable crops, and irrigation canals, providing a steady source of water year-round, also encouraged the growth of crops such as grapes. The establishment of orchards and vineyards allowed more profitability with smaller tracts of land, and many pieces of land were subdivided as portions of agricultural colonies.

Early settlement in the Master Plan Area appears to be quite limited. The 1891 Official Fresno County map indicates only four landowners, all of whom owned other large holdings in the region: T. L. Reel, S.H. Cole, R. T. Owen and C.A. Owen. In 1891, no residences existed within the Master Plan Area.

Development of land in the area was aided by the construction of the Enterprise Canal system in 1891, delivering a permanent water source to the region from the Kings River, and allowing orchards and farms to be profitable.

With the subdivision of the land into colonies containing primarily 20-acre parcels in the 1890s-1910s, many bought the smaller pieces of land and built homes on their farms.

Another change in the area was the construction of the West Branch of the Helm Colonial Canal between 1911 and 1913. The canal took water from the Enterprise Canal at a point on the northwestern corner of the Master Plan Area to other land colonies on the west side of Clovis.

The 1907 Official Map of Fresno County shows the subdivision of the land, with the only exceptions in the southwest, northeast and western portions of the Mater Plan Area. A review of the 1923 Clovis USGS topographic map (based on a 1921 survey) suggests that most of these tracts had been sold and were occupied, with 23 buildings in the Master Plan Area.

RESEARCH

A record search was conducted for the project area at the Southern San Joaquin Valley Archaeological Information Center of the California Historical Resources Information System on December 11, 2017 (RS#17-546, Appendix 2).

There are two recorded sites in or adjacent to the Master Plan Area: Enterprise Canal (CA-FRE-3546H) and the West Branch of the Helm Colonial Canal (CA-FRE-3344H).

Two small tracts within the Master Plan Area have been surveyed in the past, with a larger acreage covered by Peak & Associates in 2016 for Woodside Homes (see Map, Appendix 2). The survey recorded one isolated quartzite flake and no prehistoric period sites.

Research was also conducted with historic period maps, USGS topographic maps (1923, 1947, 1972, 1981) and texts, providing information on the pattern of ownership and development of the Master Plan Area. There are a number of buildings more than 45 years in age within the Master Plan Area that could be eligible for the California Register—23 on the 1923 USGS topographic map, and 26 total buildings on the 1947 topographic quadrangle.

CULTURAL RESOURCE SENSITIVITY

Prehistoric Period Resources

Only a small portion of the Master Plan Area has been subject to systematic surveys, about seven per cent of the overall land area. Based on the setting of the Master Plan Area, the major portion of the

land is of fairly low sensitivity for the presence of prehistoric period cultural resources. The only portion of the Master Plan Area with a moderate potential to contain a prehistoric period resource with an intact cultural deposit would be in proximity to the course of the only natural waterway, Dry Creek. The earliest topographic map does not show any natural high spots along the creek, but the land had been cultivated for many years before the topographic map had been completed.

Field surveys should be conducted on any parcels proposed for development within the Master Plan Area to determine if resources are present, with evaluations of significance under the criteria of the California Register. Consultation should be conducted with Native American groups. Measures and plans should then be developed for the management of any significant sites. In addition, procedures for dealing with subsurface sites that could be located during construction activities should be developed for each project site.

Historic Period Resources

There are a number of buildings present within the Master Plan Area that are more than 45 years in age. Some of the older buildings may have been removed and replaced by newer buildings; it is not possible to complete an analysis without viewing the buildings in the field. Other old buildings may have been extensively remodeled and may not be recognizable as early buildings.

Although most of the homes built by the early colony land owners might have been somewhat modest, it is possible that some of the residences could be good examples of their style of construction or have other distinguishing characteristics. Any older buildings should be recorded during project surveys and evaluated under the criteria of the California Register.

RECOMMENDATIONS

In order to complete identification and evaluation of cultural resources, project level cultural resource studies should be conducted before approval of specific projects on properties not previously covered by cultural resource surveys (Map, Appendix 2). The studies need to include research, field surveys, and recordation and evaluation of any resources. Recommendations should then be developed for the management of any resources present that are determined to be important under the criteria of the California Register of Historical Resources. Any significant prehistoric period resources will require consultation with local Native American groups for development of management measures.

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APPENDIX 1

Resume: Melinda Peak

PEAK & ASSOCIATES, INC.
RESUME

MELINDA A. PEAK **January 2018**
Senior Historian/Archeologist
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El Dorado Hills, CA 95762
(916) 939-2405

PROFESSIONAL EXPERIENCE

Ms. Peak has served as the principal investigator on a wide range of prehistoric and historic excavations throughout California. She has directed laboratory analyses of archeological materials, including the historic period. She has also conducted a wide variety of cultural resource assessments in California, including documentary research, field survey, Native American consultation and report preparation.

In addition, Ms. Peak has developed a second field of expertise in applied history, specializing in site-specific research for historic period resources. She is a registered professional historian and has completed a number of historical research projects for a wide variety of site types.

Through her education and experience, Ms. Peak meets the Secretary of Interior Standards for historian, architectural historian, prehistoric archeologist and historic archeologist.

EDUCATION

M.A. - History - California State University, Sacramento, 1989
Thesis: *The Bellevue Mine: A Historical Resources Management Site Study in Plumas and Sierra Counties, California*
B.A. - Anthropology - University of California, Berkeley

PROJECTS

In recent years, Ms. Peak has led the team completing the cultural resource sections for General Plan and General Plan Updates, for a number of cities/neighborhoods including Campbell, Milpitas, Yountville, Manteca, The Springs, Sebastopol, Martinez, Brentwood, Colusa County and Foster City. Older General Plan efforts include Wheatland, Rocklin, Sheridan, Granite Bay and South Sutter County.

In recent months, Ms. Peak has completed a number of determinations of eligibility and effect documents in coordination with the Corps of Engineers for projects requiring federal permits, assessing the eligibility of a number of sites for the National Register of Historic Places.

She has also completed historical research projects on a wide variety of topics for a number of projects including the development of a winery in a ranch in Folsom, commercial buildings in the City of

Davis, a lumber mill in Clovis, older farmhouses dating to the 1860s, an early roadhouse, bridges, canals, former small-town site, and a section of an electric railway line.

In recent years, Ms. Peak has prepared a number of cultural resource overviews and predictive models for blocks of land proposed for future development for general and specific plans. She has been able to direct a number of surveys of these areas, allowing the model to be tested.

Ms. Peak completed the cultural resource research and contributed to the text prepared for the DeSabla-Centerville PAD for the initial stage of the FERC relicensing. She also served cultural resource project manager for the FERC relicensing of the Beardsley-Donnells Project. For the South Feather Power Project and the Woodleaf-Palermo and Sly Creek Transmission Lines, her team completing the technical work for the project.

She served as principal investigator for the multi-phase Twelve Bridges Golf Club project in Placer County. She served as liaison with the various agencies, helped prepare the historic properties treatment plan, managed the various phases of test and data recovery excavations, and completed the final report on the analysis of the test phase excavations of a number of prehistoric sites. She is currently involved as the principal investigator for the Clover Valley Lakes project adjacent to Twelve Bridges in the City of Rocklin, coordinating contacts with Native Americans, the Corps of Engineers and the Office of Historic Preservation.

Ms. Peak has served as project manager for a number of major survey and excavation projects in recent years, including the many surveys and site definition excavations for the 172-mile-long Pacific Pipeline proposed for construction in Santa Barbara, Ventura and Los Angeles counties. She also completed an archival study in the City of Los Angeles for the project, and served as principal investigator for a major coaxial cable removal project for AT&T.

Additionally, she completed a number of small surveys, served as a construction monitor at several urban sites, and conducted emergency recovery excavations for sites found during monitoring. She has directed the excavations of several historic complexes in Sacramento, Placer and El Dorado Counties.

Ms. Peak is the author of a chapter and two sections of a published history (1999) of Sacramento County, *Sacramento: Gold Rush Legacy, Metropolitan Legacy*. She served as the consultant for a children's book on California, published by Capstone Press in 2003 in the land of Liberty series.

APPENDIX 2

Record Search

California
Historical
Resources
Information
System

Fresno
Kern
Kings
Madera
Tulare

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic

12/11/2017

Robert A. Gerry
Peak & Associates, Inc.
3941 Park Drive, Suite 20-329
El Dorado Hills, CA 95762

Re: Dry Creek Preserve
Records Search File No.: 17-546

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Clovis USGS 7.5's quad. The following reflects the results of the records search for the project area and the 0.125 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☒ custom GIS maps ☐ shapefiles ☐ hand-drawn maps

Resources within project area:	P-10-005511, 005934
Resources within 0.125 mile radius:	None
Reports within project area:	FR-00279, 00548, 01130, 02490
Reports within 0.125 mile radius:	Not Requested

Resource Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Database Printout (details):	☐ enclosed	☒ not requested	☐ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):	☐ enclosed	☒ not requested	☐ nothing listed
Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☒ enclosed	☐ not requested	☐ nothing listed
Report Copies:	☐ enclosed	☒ not requested	☐ nothing listed
OHP Historic Properties Directory:	☒ enclosed	☐ not requested	☐ nothing listed
Archaeological Determinations of Eligibility:	☐ enclosed	☐ not requested	☒ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☒ not requested	☐ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see http://www.dot.ca.gov/hq/structur/strmaint/historic.htm

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see http://historicalmaps.arcgis.com/usgs/

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see http://www.glorecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1 and/or http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items

Shipwreck Inventory: Not available at SSJVIC; please see http://www.slc.ca.gov/Info/Shipwrecks.html

Soil Survey Maps: Not available at SSJVIC; please see http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Celeste M. Thomson
Coordinator

Resource List

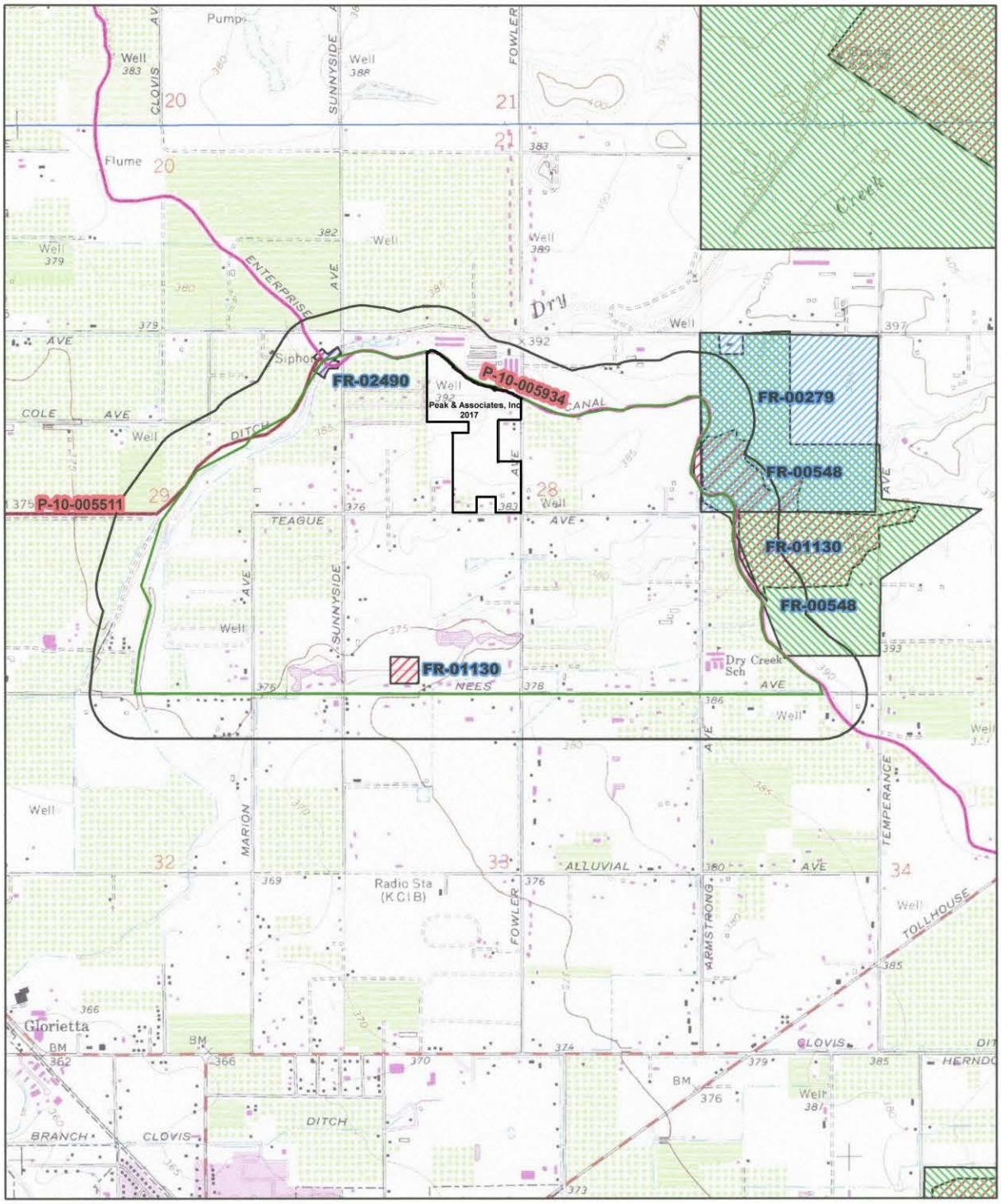
SSJVIC Record Search 17-546

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-10-005511	CA-FRE-003344H	Resource Name - West Branch Helm Colonial Ditch	Structure	Historic	HP20 (Canal/aqueduct)	2005 (Wendy Nettles, Randy Baloian, Applied EarthWorks, Inc.)	FR-02123
P-10-005934	CA-FRE-003564H	Resource Name - Enterprise Canal	Structure	Historic	HP20 (Canal/aqueduct)	2007 (R. Baloian, Applied EarthWorks, Inc.); 2013 (Randy Baloian, Applied EarthWorks, Inc.)	FR-02615

Report List

SSJVIC Record Search 17-546

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-00279		1992	Bissonnette, Linda Dick	Cultural Resources Assessment for the Clovic Unified School District, Northeast Educational Center, Shepherd Avenue, Fresno County	Michael Paoli and Associates	
FR-00548		1987	Meighan, Clement, Dillon, Brian, Verano, John, and Indermill, Roc	Redbank and Fancher Creeks Intensive Cultural Resources Survey, Fresno County, California	UCLA	
FR-01130		1975	Wren, Donald G. and Crist, Michael	Archaeological Reconnaissance of the Redbank and Fancher Creek Investigation Area	Individual Consultant	10-001154, 10-001155
FR-02490	Submitter - Project No. 10-SCAO-015	2009	Chotkowski, Michael A.	Section 106 Compliance for Enterprise Canal at Big Dry Creek Improvement Project, Fresno County, California	Bureau of Reclamation	



May depict confidential cultural resource locations.
Do not distribute.

0 0.125 0.25 0.5 Miles

0 0.175 0.35 0.7 Kilometers

N

SSJVIC Record Search 17-546
Clovis 7.5'
Fresno County, CA

EST. 1968
PROVOST&
PRITCHARD
CONSULTING GROUP
An Employee Owned Company

286 W. Cromwell Avenue
Fresno, CA 93711-6162
Tel: (559) 449-2700
Fax: (559) 449-2715
www.ppeng.com

July 22, 2016

Mel Gonzalez-Sanchez
City of Clovis
1033 Fifth Street
Clovis, CA 93612

RE: Water Infrastructure Investigation for Tentative Map 6154 (APNs 559-011-08, 09S, 10S, 11, 13, and 14)

Dear Mr. Gonzalez-Sanchez:

Provost and Pritchard Consulting Group ("P&P") has prepared this letter summarizing the findings of our investigation into the water system infrastructure required to serve a single family residential development project (Project) located along Fowler Avenue, between Teague Avenue and the Enterprise Canal.

Project Information

It is our understanding that the Project will have a land use designation of low density residential (2 to 4 units per acre), which is an increase over the original designation of rural residential as noted in the City of Clovis Water Master Plan (CWMP) Update – Phase II Facilities Plan (Provost & Pritchard, 1999). The Project covers an area of approximately 46.4 acres, encompassing six parcels (APNs 555-011-08, 09S, 10S, 11, 13, and 14) within the Herndon-Shepherd planning area. The entire Project is within the Kings River service area for the Fresno Irrigation District (FID), therefore the Project has access to Kings River water as a supply source.

The existing Project site consists of three dwellings and several out buildings, which are surrounded by native plants and trees. The proposed use will consist of 96 new single family units, which equates to a dwelling unit density of approximately 2.1 units per acre (see Attachment A – Tentative Tract Map). Existing water transmission mains near the Project include a 12-inch main in Fowler Avenue from Shepherd Avenue and extending south of Teague Avenue, a 12-inch main in Teague Avenue east of Fowler Avenue and a 16-inch main in Shepherd Avenue east of Fowler Avenue (see Attachment B – Water Facilities Map). Collectively, these facilities convey water from the surface water treatment plant, located approximately 5 miles southeast of the Project, to this portion of pressure zone called "Zone 1."

Assumptions:

The following assumptions apply to this investigation:

- Proposed development will comply with the City's two points of connection requirement.
- Proposed development will install master planned facilities as recommended in the investigation.
- Developer is responsible for sizing all water mains and other water related infrastructure internal to the Project.
- The Clovis Fire Department (CFD) requires a minimum fire flow of 1,800 gallons per minute (gpm) and a minimum residual pressure of 35 psi, per CFD Standard #2.3.
- Proposed Water system demands will be based on unit demand from the *Draft Water Master Plan Update Phase III - Facilities Plan* (Provost & Pritchard, 2016).
- Existing Water system demands will be based on unit demand from the *Water Master Plan Update Phase II - Facilities Plan* (Provost & Pritchard, 1999)
- Existing infrastructure sizes based on GIS data from City (see Attachment B).
- Gross acreage for the development is approximately 46.4 acres.
- Recycled water will not be applied to public landscaping surrounding the Project.
- Hydraulic model analysis was not part of this scope of services.

Water Demand

Potable water demands for the Project were estimated using land use based unit water demand factors from the *Water Master Plan Update Phase II – Facilities Plan.* During the water master plan update, per capita demand in 2013 was observed to be greater than the per capita demand during the 1999 water master plan effort. The 1999 unit demands were modified to reflect the observed 2013 per capita demand data. The updated unit demands were used for the Project demand calculation in this investigation. Table LU-2 in the Land Use Element of the City General Plan (GP) states that low density residential land use has a density range of 2.1 – 4.0 dwelling units per acre (du/acre). The Project consists of 96 single family units on approximately 46.4 acres, which equates to 2.1 du/acre, consistent with the GP low density residential land use classification. **Table 1** summarizes unit demand factors used to estimate demand for typical planning conditions such as annual average, maximum day, and peak hour.

Table 1. Summary of Unit Water Demands by Land Use

Land Use	Annual Average (AFY/ac)		Maximum Day (gpm/ac)		Peak Hour (gpm/ac)	
	Low	High	Low	High	Low	High
Existing						
Rural Residential	0.50	0.58	0.39	0.45	0.62	0.71
Proposed						
Low Density Residential	2.20	2.53	2.73	3.14	4.50	5.18

Notes:
1. Abbreviations: AFY = Acre-feet per year, GPM = gallons per minute
2. Values in the column titled "High" correspond to unit demands modified to reflect a change in per capita demand between 1999 and 2013; the per capita demand increased by approximately 15% during this time.
3. Land uses for the "Existing" condition were based on a Land Use Plan *Water Master Plan Update Phase II – Facilities Plan*

Water usage for each demand category was estimated by multiplying gross acreage of land use type by its respective unit demand. Refer to Table 2 for a summary of anticipated water demands for existing and proposed conditions.

Table 2. Summary of Unit Water Demands by Land Use

Land Use	Area (ac)	Annual Average (AFY)		Maximum Day (gpm)		Peak Hour (gpm)	
		Low	High	Low	High	Low	High
Existing							
Rural Residential	46.39	23.2	26.9	18.0	20.9	28.8	32.9
Proposed							
Low Density Residential	46.39	102.1	117.4	126.5	145.7	208.8	240.3

Infrastructure

The Project is comprised of six (6) developed parcels on the north side of Teague Avenue and west of Fowler Avenue. There are 12-inch water mains in Teague and Fowler Avenues and a 16-inch water main in Shepherd Ave. It is recommended that the City require the Project to construct the master planned 18-inch water main along Teague Avenue from Fowler Avenue to the western limits of the Project (see Attachment B). To comply with the City's requirement of two points of connection to the existing distribution system, it is recommended that the Project connect in both Fowler and Teague Avenues This approach provides a more reliable water supply involving separated transmission grid mains rather than providing two points of connection in Fowler Avenue only. Two potential locations for connection in Fowler Avenue are at Lester and Trenton Avenues. The potential location for connection in Teague Avenue is through an easement at the southern end of Bundy Avenue (see Attachment B). Design of the required water mains internal to Tract 6154 will be the responsibility of the Project developer.

Water Supply

Urbanization within Clovis occurs both inside and outside the Kings River service area for Fresno Irrigation District (FID), therefore not all lands have access to this water source. Lands generally located south of the Enterprise Canal are within the Kings River service area and as such are entitled to an average annual allotment of about 2.1 acre-feet per acre (AF/ac). Some land uses within the City have unit demands greater than the 2.1 AF/ac supply available. The City adopted an ordinance requiring new development with demands exceeding the 2.1 AF/ac water entitlement to pay fees so the City can acquire additional water supply to serve the development. Since the entirety of the Project is within the FID service area, water from the Kings River is available to offset the anticipated annual demand of 117.4 AFY; however, the Project exceeds the water entitlement for the gross acreage by approximately 20 AFY which will necessitate the Project to pay fees to acquire additional water supply. See **Table 3** for summary of reconciliation of supply and demand for existing and proposed land use conditions.

Table 3. Reconciliation of Supply and Demand

Land Use Category	Ave Day Demand (AFY)	FID Entitlement (AFY)	Additional Supply Required (AFY)
Existing			
Rural Residential	26.9	97.4	--
Proposed			
Low Density Residential	117.4	97.4	20.0

1. The "High" values of Average Day Demand are used for this reconciliation.
2. "Additional Supply Required" is based on "High" average day demand.

Summary

Based on information collected during this investigation and the City's adherence to recommendations from prior water supply planning efforts, the existing water system and recommended connections would be adequate to support anticipated demands from the Project. In order to comply with the City's requirement of two points of connection to the existing system, it is recommended that the Project establish connections in both Fowler and Teague Avenues, to provide higher reliability of water supply as discussed above. As there is insufficient entitlement supply available, the Project will need to pay fees to the City to make up the supply shortfall of 20 AFY. Serving this Project should not negatively impact the City's ability to provide a supply/delivery of water to reasonably foreseeable users within the City assuming adherence to recommendations from prior water resources planning efforts. However, to understand the cumulative impacts to supplies and other major water infrastructure, the City should be tracking changes in demand as part of the development process in order to determine when projects with greater demand are offset by projects with demands lower than originally planned.

Respectfully,

Heather Bashian, PE
Senior Engineer

PROFESSIONAL ENGINEER
Heather E. Bashian
No. 73075
Civil
STATE OF CALIFORNIA

Date Signed 7/22/16

Enclosures: 2

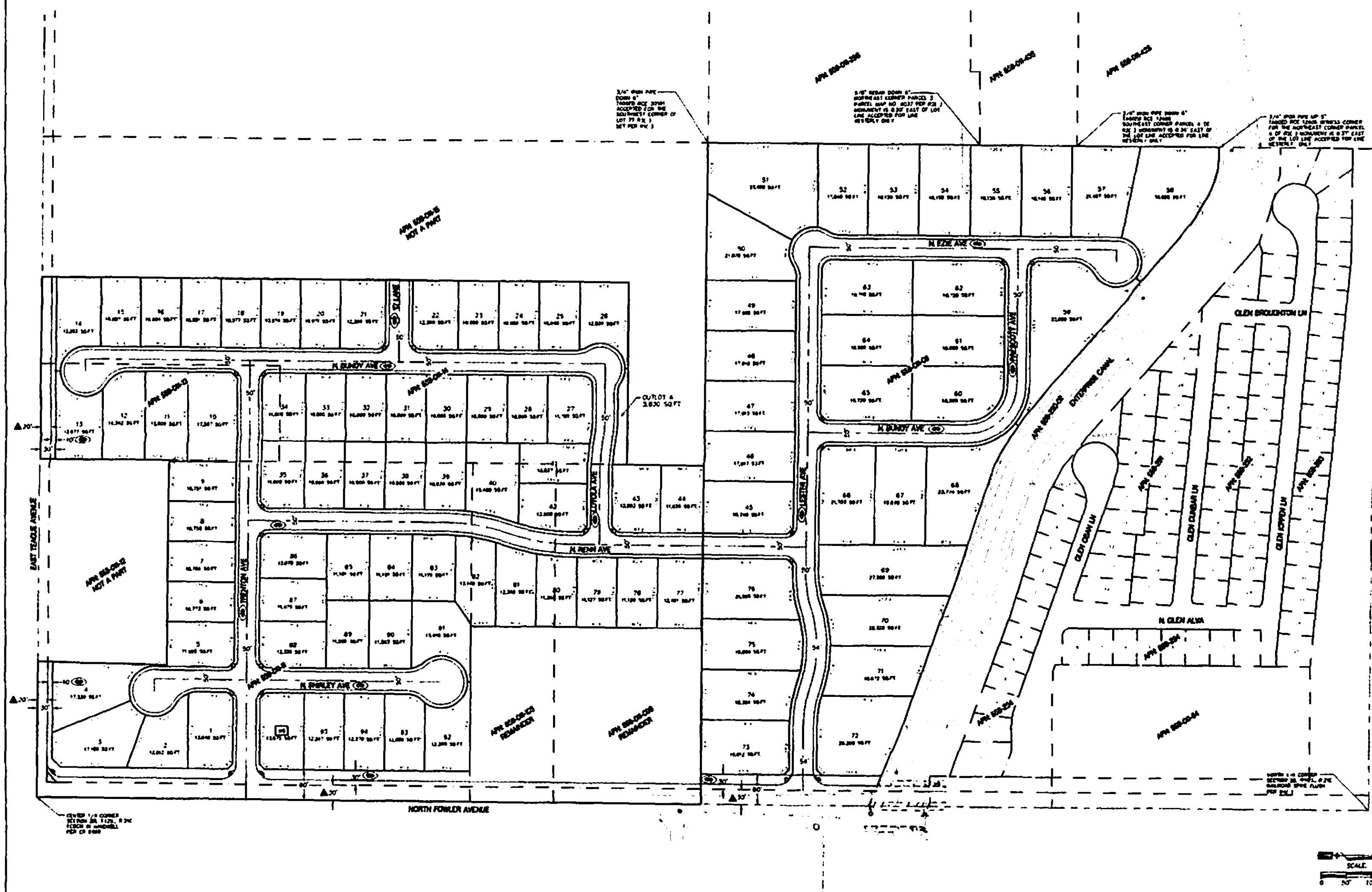
Attachment A – TTM6154 Map
Attachment B – Existing Infrastructure Map

c: Mike Harrison

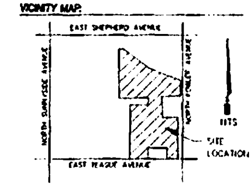
VESTING TENTATIVE SUBDIVISION MAP

TRACT NO. 6154

A RESIDENTIAL DEVELOPMENT
IN THE CITY OF CLOVIS
FRESNO COUNTY, CALIFORNIA



VICINITY MAP



SITE INFORMATION

EXISTING TREES
TO BE REMOVED

EXISTING BUILDINGS
ONE (1) EXISTING HOME TO BE REMOVED

EXISTING USE
SINGLE FAMILY RESIDENTIAL

PROPOSED USE
SINGLE FAMILY RESIDENTIAL

PROPOSED ZONING
R-1

EXISTING ZONING
AE-20

SOURCE OF WATER
CITY OF CLOVIS

SOURCE OF SEWAGE DISPOSAL
CITY OF CLOVIS

SOURCE OF ELECTRICITY
PG&E

SOURCE OF GAS
PG&E

SOURCE OF CABLE T.V.
COMCAST

SOURCE OF TELEPHONE
AT&T

ASSESSORS PARCEL NUMBER
554-011-08, 09S, 10S, 11, 13, & 14

SITE AREA
43.234 AC GROSS
41.178 AC NET

OWNER
WOODSIDE HOMES
9 RIVER PARK PLACE EAST, #430
FRESNO, CA 93720

MINIMUM LOT SIZE
10,751 SQ FT

MAXIMUM LOT SIZE
33,600 SQ FT

AVERAGE LOT SIZE
12,621 SQ FT

DU/AC - NET ACREAGE
2.33 DU/AC

LEGEND

EXISTING PROPERTY LINE
PROPOSED PROPERTY LINE
EXISTING SECTION LINE
EXISTING EASEMENT LINE
EXISTING RIGHT-OF-WAY LINE
EXISTING CENTERLINE
FUTURE RIGHT-OF-WAY LINE
EXISTING WATER LINE (SIZE AS NOTED)
EXISTING SEWER LINE (SIZE AS NOTED)

▲ PREVIOUSLY DEDICATED FOR PUBLIC STREET PURPOSES PER SHEPHERD & TEAGUE ALLUVIAL TRACT NO. 5 RECORDED IN BOOK 2 OF RECORD OF SURVEYS AT PAGE 77, F.C.R.

PUBLIC STREET EASEMENT NOW OFFERED FOR DEDICATION FOR PUBLIC USE

OUTLOT "A" FOR FUTURE DEVELOPMENT (LANDSCAPE PARK)

SCALE 1" = 100'

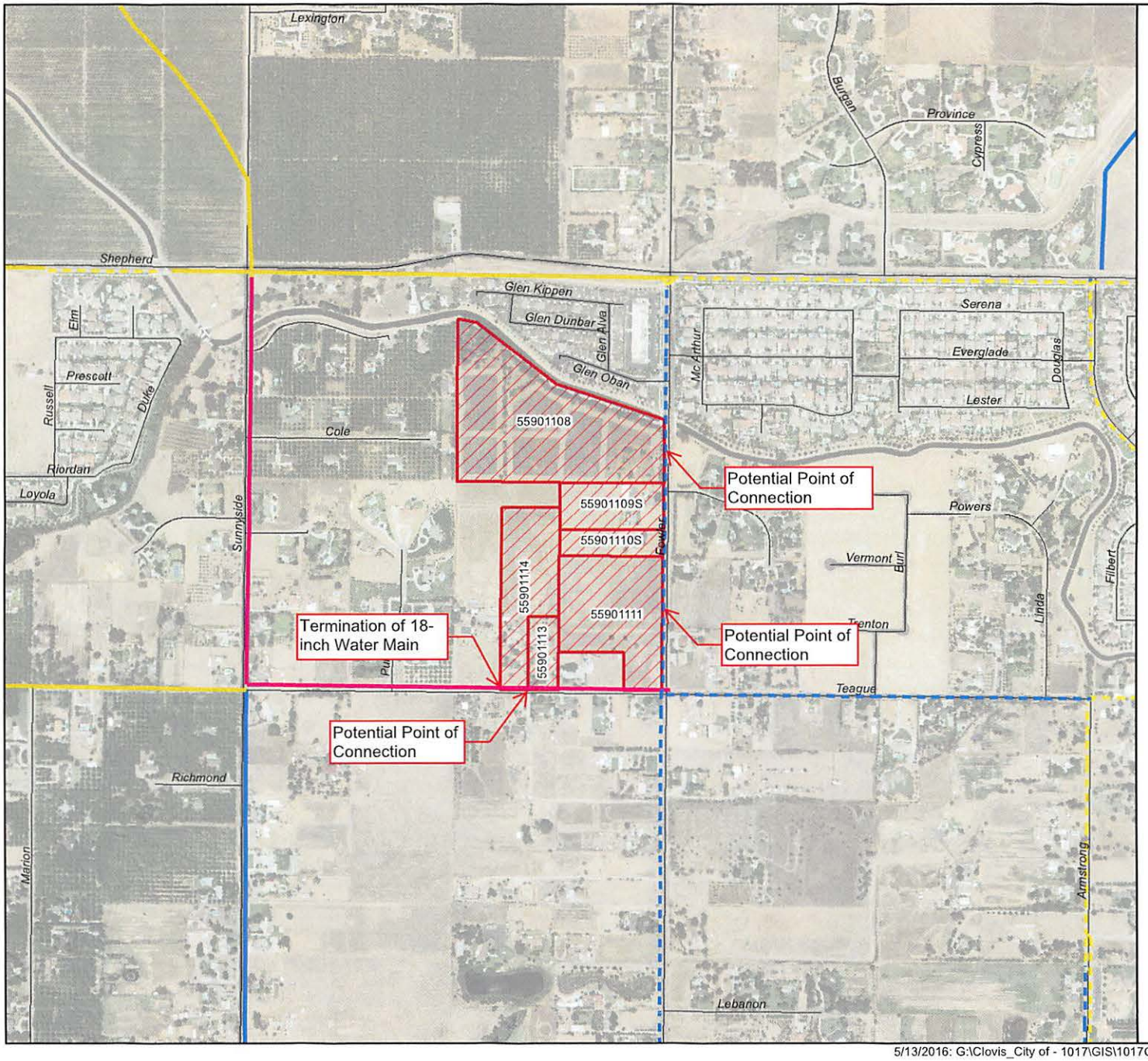
YAMABE & HORN ENGINEERING, INC.

CONSTRUCTION MANAGEMENT
TRAFFIC
DEVELOPMENT REVIEW
STREETS
PARKS
SOLID WASTE
UTILITIES

CITY OF CLOVIS • PLANNING AND DEVELOPMENT SERVICES DEPARTMENT

WOODSIDE HOMES INC
CITY OF CLOVIS

TENTATIVE TRACT MAP
TRACT NO 6154



Legend

- Study Area
- Street

Existing Water Mains

Size (inches)

- 12"
- 16"

Future Water Mains

Size (inches)

- 12"
- 16"
- 18"

*2014 NAIP Aerial Imagery

Exhibit
Water Facilities

Water System Evaluation

PROVOST & PRITCHARD CONSULTING GROUP
An Employee Owned Company

0 250 500
Feet

5/13/2016: G:\Clovis_City of - 1017\GIS\1017OG01\2016\TM 6154\StudyArea_WaterFacilities.mxd

FIRSTCARBONSOLUTIONS™

Air Quality and Greenhouse Gas Analysis Report
Tract 6154
City of Clovis, Fresno County, California

Prepared for:
Woodside Homes
9 River Park Place East, Suite 430
Fresno, CA 93720
559.437.5007

Contact: Matt Smith, Land Acquisition Manager

Prepared by:
FirstCarbon Solutions
7265 N. First Street, Suite 101
Fresno, CA, 93720
559.246.3732

Contact: Dave Mitchell, Senior Air Quality Scientist

Date: June 6, 2016

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ACRONYMS AND ABBREVIATIONS

$\mu g/m^3$	micrograms per cubic meter
AB	Assembly Bill
APN	Assessor's Parcel Number
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BAU	Business as Usual
CalEEMod	California Emissions Estimator Model
CAPCOA	California Air Pollution Control Officers Association
CEQA	California Environmental Quality Act
CO	carbon monoxide
CO_2	carbon dioxide
District	San Joaquin Valley Air Pollution Control District
DPM	diesel particulate matter
EMFAC	EMission FACtors Model
EPA	United States Environmental Protection Agency
GAMAQI	Guidance for Assessing and Mitigating Air Quality Impacts
GHG Rx	Greenhouse Gas Reduction Exchange
GHG	greenhouse gases
IPCC	United Nations Intergovernmental Panel on Climate Change
$MMTCO_2e$	million metric tons of carbon dioxide equivalent
$MTCO_2e$	metric tons of carbon dioxide equivalent
NO_x	nitrogen oxides
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppb	parts per billion
ppm	parts per million
ROG	reactive organic gases
SB	Senate Bill
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO_x	sulfur oxides
VOC	volatile organic compounds

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SECTION 1: EXECUTIVE SUMMARY

1.1 - Purpose and Methods of Analysis

The following air quality and greenhouse gas (GHG) analysis was prepared to evaluate whether the estimated criteria air pollutant and GHG emissions generated by the Tract 6154 residential subdivision (project) would cause significant impacts to air resources in the project area. This assessment was conducted within the context of the California Environmental Quality Act (CEQA, California Public Resources Code Sections 21000, et seq.). The methodology follows the Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) prepared by the San Joaquin Valley Air Pollution Control District (SJVAPCD or District) for quantification of emissions and evaluation of potential impacts to air resources (SJVAPCD 2015a) and the SJVAPCD's Guidance for Valley Land-Use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA (SJVAPCD 2009a).

1.2 - Project Description

The project consists of the construction and development of 96 single-family homes located at northwest corner of East Teague Avenue and North Fowler Avenue in the City of Clovis. The project would be constructed on 43.23 gross acres (41.17 net acres) with an average density of 2.33 dwelling units per acre. The Assessor's Parcel Numbers (APNs) associated with the project site are 559-011-08, 559-011-09S, 559-011-10S, 559-011-11, 559-011-13, and 559-011-14. The project is currently located within the City of Clovis's Sphere of Influence, within an unincorporated portion of Fresno County. The project would require annexation as part of the approval process. The project site is currently designated as R-R—Rural Residential (1 dwelling unit/2 acres) by the County of Fresno 2000 General plan and the City of Clovis 2014 General Plan. The project lies within the San Joaquin Valley Air Basin. The project's regional vicinity location is shown in Exhibit 1; an aerial view of the local vicinity is provided in Exhibit 2; and the site plan design is provided in Exhibit 3.

1.3 - Summary of Analysis Results

The following is a summary of the analysis results. As shown below, the project would result in less than significant impacts for all air quality and GHG impact criteria analyzed.

Impact AIR-1: The project would not conflict with or obstruct implementation of the applicable air quality plan. **Less than significant impact.**

Impact AIR-2: The project would not violate air quality standards or contribute substantially to an existing or projected air quality violation. **Less than significant impact.**

Impact AIR-3: The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors). **Less than significant impact.**

Impact AIR-4: The project would not expose sensitive receptors to substantial pollutant concentrations. **Less than significant impact.**

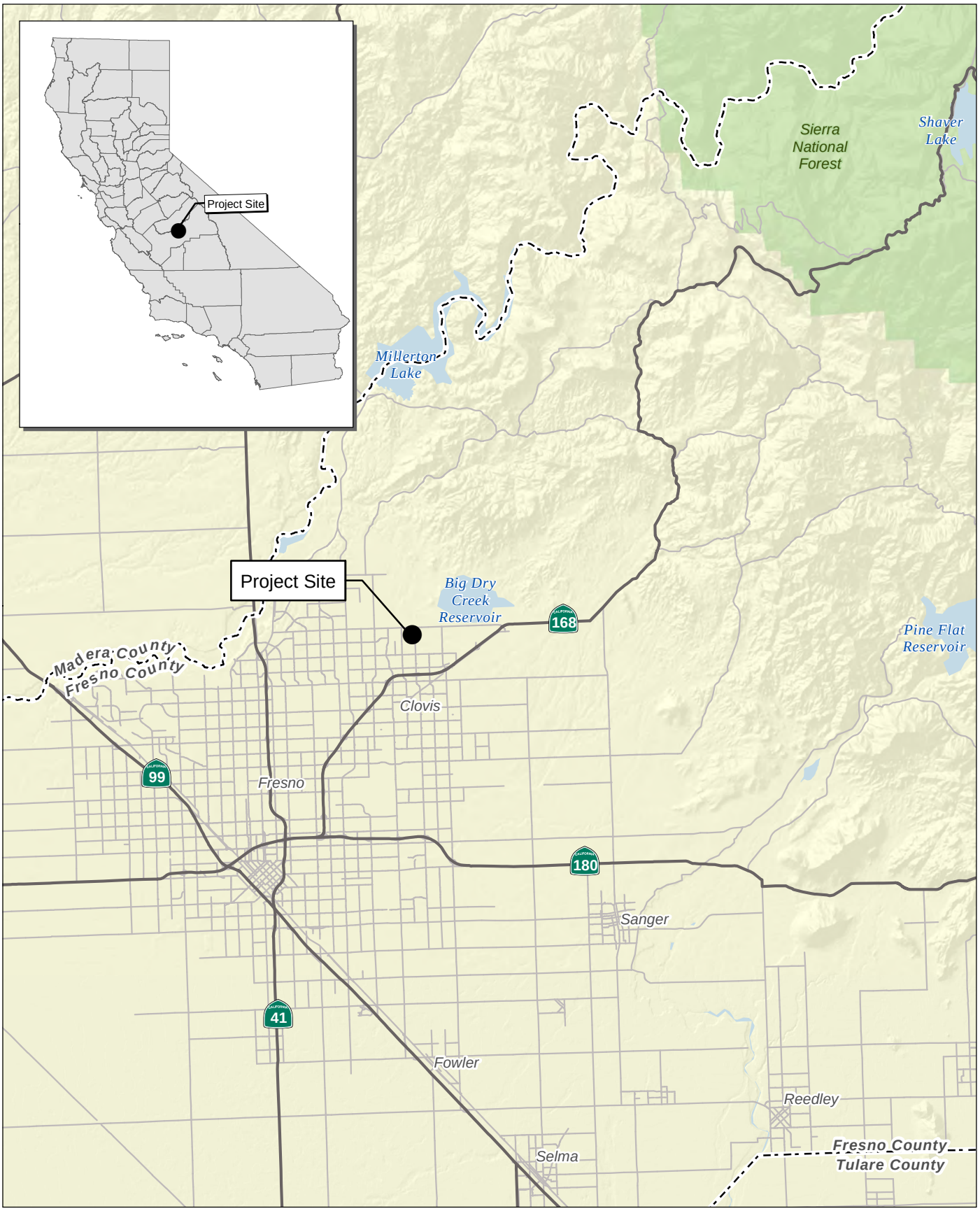
Impact AIR-5: The project would not create objectionable odors affecting a substantial number of people. **Less than significant impact.**

Impact GHG-1: The project would not generate direct or indirect greenhouse gas emissions that would result in a significant impact on the environment. **Less than significant impact.**

Impact GHG-2: The project would not conflict with any applicable plan, policy or regulation of an agency adopted to reduce the emissions of greenhouse gases. **Less than significant impact**.

1.4 - Standard Conditions and Mitigation Measures Applied to the Project

No mitigation measures beyond compliance with mandatory regulations were required to demonstrate that the project would have less than significant air quality and GHG impacts.



Source: Census 2000 Data, The CaSIL, FCS GIS 2013.

FirstCarbon SOLUTIONS

5 2.5 0 5 Miles

Exhibit 1
Regional Location Map

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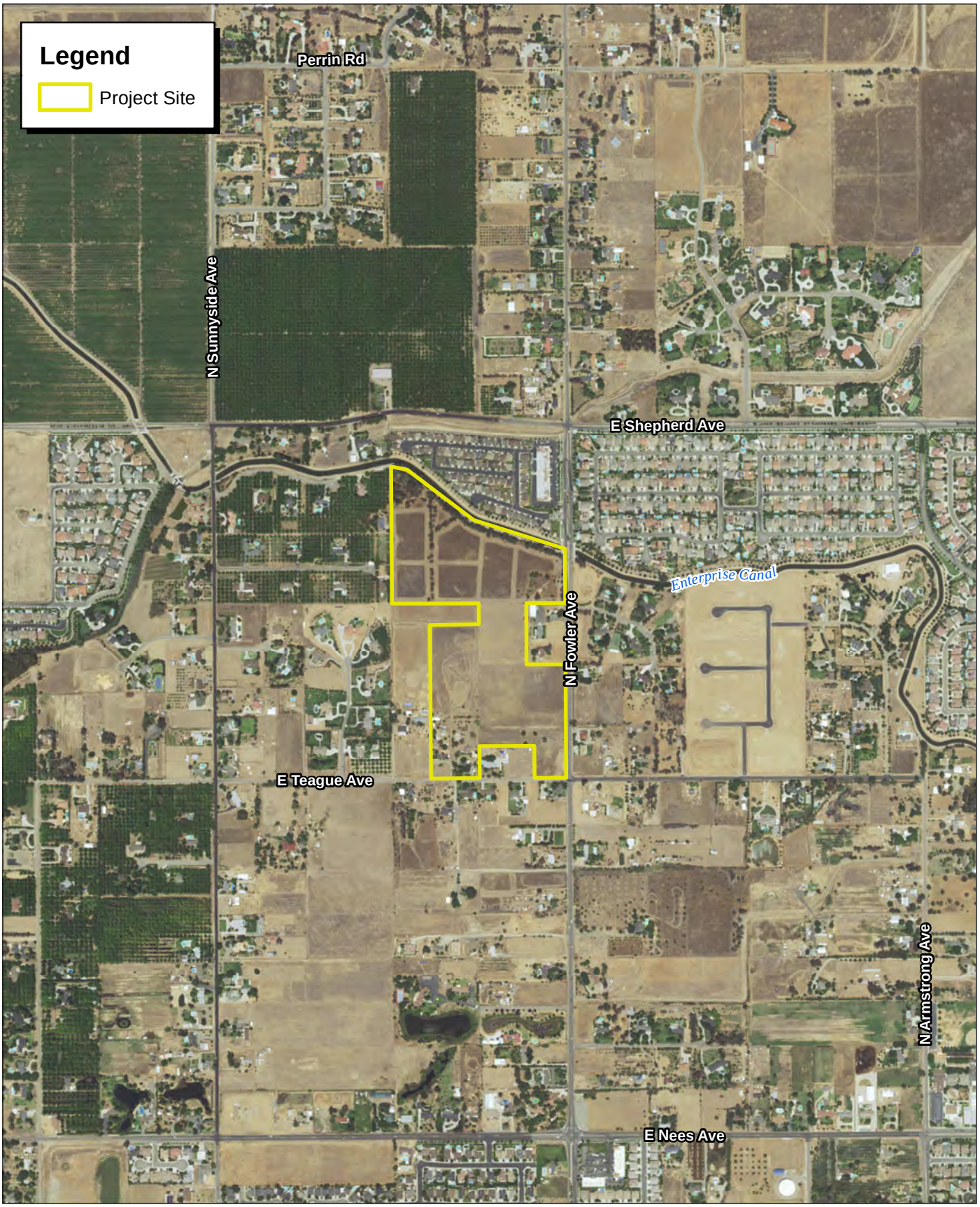

Source: ESRI Imagery, 2015

FirstCarbon SOLUTIONS

1,000 500 0 1,000 Feet

Exhibit 2
Local Vicinity Map
Aerial Base

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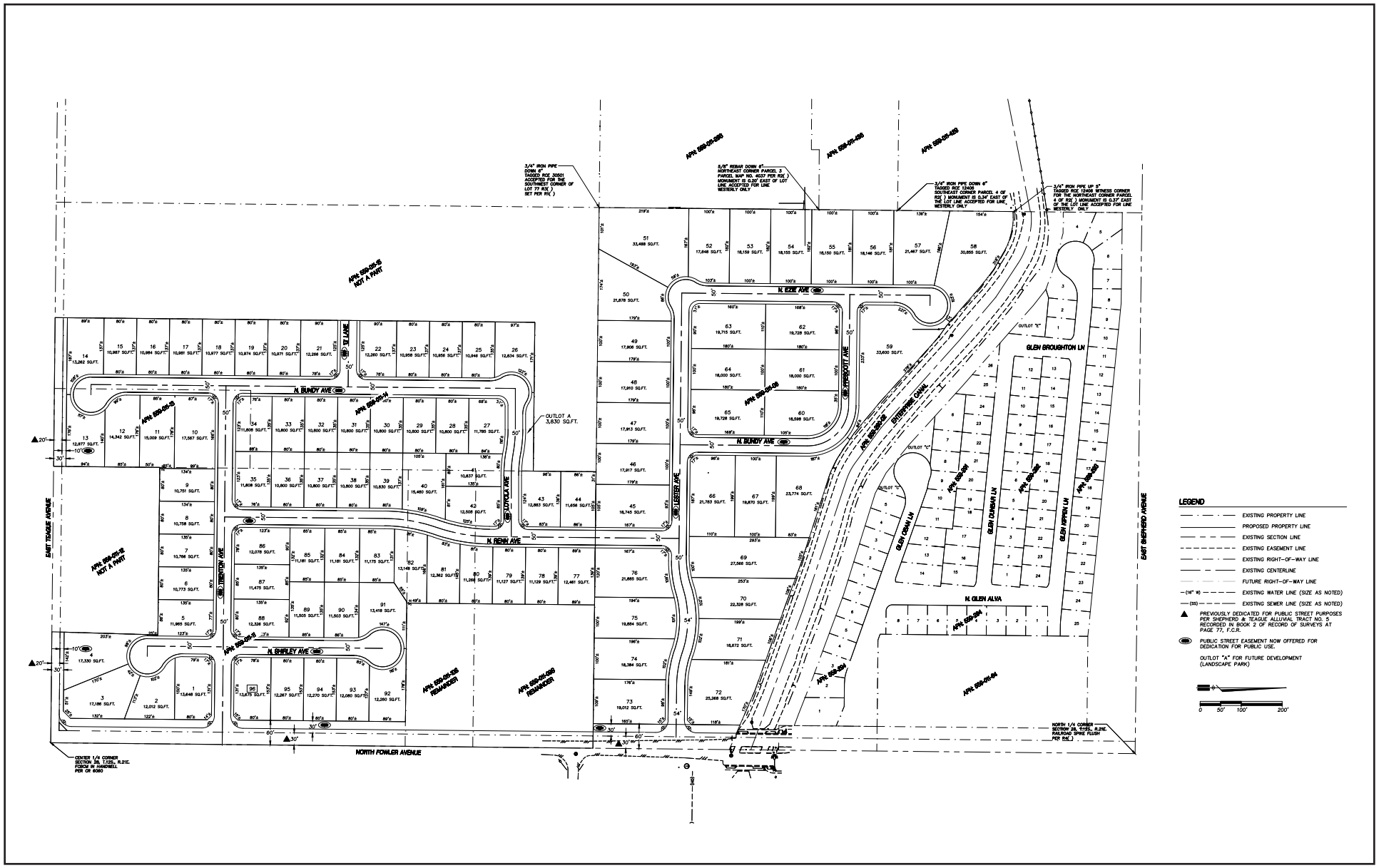

Source: Yambe & Horn Engineering, Inc, 2016

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Exhibit 3
Site Plan

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SECTION 2: AIR QUALITY SETTING

2.1 - Environmental Setting

The project is located in the San Joaquin Valley Air Basin (Air Basin). Regional and local air quality is impacted by topography, dominant airflows, atmospheric inversions, location, and season. The following section describes these conditions as they pertain to the Air Basin. The information in this section is primarily from the District's GAMAQI and the accompanying Technical Document (SJVAPCD 2015a).

2.1.1 - San Joaquin Valley Air Basin

Topography

The topography of a region is important for air quality because mountains can block airflow that would help disperse pollutants and can channel air from upwind areas that transports pollutants to downwind areas. The SJVAPCD covers the entirety of the Air Basin. The Air Basin is generally shaped like a bowl. It is open in the north and is surrounded by mountain ranges on all other sides. The Sierra Nevada mountains are along the eastern boundary (8,000 to 14,000 feet in elevation), the Coast Ranges are along the western boundary (3,000 feet in elevation), and the Tehachapi Mountains are along the southern boundary (6,000 to 8,000 feet in elevation).

Climate

The climate is important for air quality because of differences in the atmosphere's ability to trap pollutants close to the ground, creating adverse air quality, or to rapidly disperse pollutants over a wide area preventing high concentrations from accumulating under different climatic conditions. The Air Basin has an "inland Mediterranean" climate and is characterized by long, hot, dry summers and short, foggy winters. Sunlight can be a catalyst in the formation of some air pollutants (such as ozone); the Air Basin averages over 260 sunny days per year.

Dominant airflows provide the driving mechanism for transport and dispersion of air pollution. The mountains surrounding the Air Basin form natural horizontal barriers to the dispersion of air contaminants. The wind generally flows south-southeast through the valley, through the Tehachapi Pass and into the Southeast Desert Air Basin portion of Kern County. As the wind moves through the Air Basin, it mixes with the air pollution generated locally, generally transporting air pollutants from the north to the south in the summer and in a reverse flow in the winter.

2.2 - Regulatory Setting

Air pollutants are regulated to protect human health and for secondary effects such as visibility and building soiling. The Clean Air Act of 1970 tasks the United States Environmental Protection Agency (EPA) with setting air quality standards. The State of California also sets air quality standards that are in some cases more stringent than federal standards, and address additional pollutants. The following section describes these federal and state standards and the health effects of the regulated pollutants.

2.2.1 - Clean Air Act

Congress established much of the basic structure of the Clean Air Act (CAA) in 1970, and made major revisions in 1977 and 1990. Six common air pollutants (also known as criteria pollutants) are addressed in the CAA. These are particulate matter, ground-level ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. The EPA calls these pollutants criteria air pollutants because it regulates them by developing human health-based and/or environmentally based criteria (science-based guidelines) for setting permissible levels. The set of limits based on human health are called primary standards. Another set of limits intended to prevent environmental and property damage are called secondary standards (EPA 2014). The federal standards are called National Ambient Air Quality Standards (NAAQS). The air quality standards provide benchmarks for determining whether air quality is healthy at specific locations and whether development activities will cause or contribute to a violation of the standards. The criteria pollutants are:

- Ozone
- Nitrogen dioxide (NO_2)
- Lead
- Particulate matter (PM_{10} and $PM_{2.5}$)
- Carbon monoxide (CO)
- Sulfur dioxide

The federal standards were set to protect public health, including that of sensitive individuals; thus, the EPA is tasked with updating the standards as more medical research is available regarding the health effects of the criteria pollutants. Primary federal standards are the levels of air quality necessary, with an adequate margin of safety, to protect the public health (ARB 2012a).

2.2.2 - California Clean Air Act

The California Legislature enacted the California Clean Air Act (CCAA) in 1988 to address air quality issues of concern not adequately addressed by the federal CAA at the time. California's air quality problems were and continue to be some of the most severe in the nation, and required additional actions beyond the federal mandates. The California Air Resources Board (ARB) administers California Ambient Air Quality Standards (CAAQS) for the 10 air pollutants designated in the CCAA. The 10 state air pollutants are the six federal standards listed above as well visibility-reducing particulates, hydrogen sulfide, sulfates, and vinyl chloride. The EPA authorized California to adopt its own regulations for motor vehicles and other sources that are more stringent than similar federal regulations implementing the CAA. Generally, the planning requirements of the CCAA are less stringent than the federal CAA; therefore, consistency with the CAA will also demonstrate consistency with the CCAA.

2.2.3 - Toxic Air Contaminants

A toxic air contaminant (TAC) is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. There are no ambient air quality standards for TAC emissions. TACs are regulated in terms of health risks to individuals and populations exposed to the pollutants. The 1990 Clean Air Act Amendments significantly expanded the EPA's authority to regulate hazardous air pollutants (HAP). Section 112 of the Clean Air Act lists 187 hazardous air

pollutants to be regulated by source category. Authority to regulate these pollutants was delegated to individual states. ARB and local air districts regulate TACs and HAPs in California.

2.2.4 - Air Pollutant Description and Health Effects

The federal and state ambient air quality standards, relevant effects, properties, and sources of the pollutants are summarized in Table 1.

Table 1: Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Ozone	1 Hour	0.09 ppm	—	Irritate respiratory system; reduce lung function; breathing pattern changes; reduction of breathing capacity; inflame and damage cells that line the lungs; make lungs more susceptible to infection; aggravate asthma; aggravate other chronic lung diseases; cause permanent lung damage; some immunological changes; increased mortality risk; vegetation and property damage.	Ozone is a photochemical pollutant as it is not emitted directly into the atmosphere, but is formed by a complex series of chemical reactions between volatile organic compounds (VOC), NO_x, and sunlight. Ozone is a regional pollutant that is generated over a large area and is transported and spread by the wind.	Ozone is a secondary pollutant; thus, it is not emitted directly into the lower level of the atmosphere. The primary sources of ozone precursors (VOC and NO_x) are mobile sources (on-road and off-road vehicle exhaust).
	8 Hour	0.070 ppm	0.070 ppm[f]			
Carbon monoxide (CO)	1 Hour	20 ppm	35 ppm	Ranges depending on exposure: slight headaches; nausea; aggravation of angina pectoris (chest pain) and other aspects of coronary heart disease; decreased exercise tolerance in persons with peripheral vascular disease and lung disease; impairment of central nervous system functions; possible increased risk to fetuses; death.	CO is a colorless, odorless, toxic gas. CO is somewhat soluble in water; therefore, rainfall and fog can suppress CO conditions. CO enters the body through the lungs, dissolves in the blood, replaces oxygen as an attachment to hemoglobin, and reduces available oxygen in the blood.	CO is produced by incomplete combustion of carbon-containing fuels (e.g., gasoline, diesel fuel, and biomass). Sources include motor vehicle exhaust, industrial processes (metals processing and chemical manufacturing), residential wood burning, and natural sources.
	8 Hour	9.0 ppm	9 ppm			
Nitrogen dioxide[b] (NO_2)	1 Hour	0.18 ppm	0.100 ppm	Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; contribution to atmospheric discoloration; increased visits to hospital for respiratory illnesses.	During combustion of fossil fuels, oxygen reacts with nitrogen to produce nitrogen oxides—NO_x (NO, NO_2, NO_3, N_2O, N_2O_3, N_2O_4, and N_2O_5). NO_x is a precursor to ozone, PM_{10}, and $PM_{2.5}$ formation. NO_x can react with compounds to form nitric acid and related small particles and result in PM-related health effects.	NO_x is produced in motor vehicle internal combustion engines and fossil fuel-fired electric utility and industrial boilers. Nitrogen dioxide (NO_2) forms quickly from NO_x emissions. NO_2 concentrations near major roads can be 30 to 100 percent higher than those at monitoring stations.
	Annual	0.030 ppm	0.053 ppm			

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfur dioxide[c] (SO_2)	1 Hour	0.25 ppm	0.075 ppm	Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma. Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient sulfur dioxide levels. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.	Sulfur dioxide is a colorless, pungent gas. At levels greater than 0.5 ppm, the gas has a strong odor, similar to rotten eggs. Sulfur oxides (SO_x) include sulfur dioxide and sulfur trioxide. Sulfuric acid is formed from sulfur dioxide, which can lead to acid deposition and can harm natural resources and materials. Although sulfur dioxide concentrations have been reduced to levels well below state and federal standards, further reductions are desirable because sulfur dioxide is a precursor to sulfate and PM_{10}.	Human caused sources include fossil-fuel combustion, mineral ore processing, and chemical manufacturing. Volcanic emissions are a natural source of sulfur dioxide. The gas can also be produced in the air by dimethylsulfide and hydrogen sulfide. Sulfur dioxide is removed from the air by dissolution in water, chemical reactions, and transfer to soils and ice caps. The sulfur dioxide levels in the State are well below the maximum standards.
	3 Hour	—	0.5 ppm			
	24 Hour	0.04 ppm	0.14 (for certain areas)			
	Annual	—	0.030 ppm (for certain areas)			
Particulate matter (PM_{10})	24 hour	50 µg/m^3	150 µg/m^3	• Short-term exposure (hours/days): irritation of the eyes, nose, throat; coughing; phlegm; chest tightness; shortness of breath; aggravate existing lung disease, causing asthma attacks and acute bronchitis; those with heart disease can suffer heart attacks and arrhythmias. • Long-term exposure: reduced lung function; chronic bronchitis; changes in lung morphology; death.	Suspended particulate matter is a mixture of small particles that consist of dry solid fragments, droplets of water, or solid cores with liquid coatings. The particles vary in shape, size, and composition. PM_{10} refers to particulate matter that is between 2.5 and 10 microns in diameter, (1 micron is one-millionth of a meter). $PM_{2.5}$ refers to particulate matter that is 2.5 microns or less in diameter, about one-thirtieth the size of the average human hair.	Stationary sources include fuel or wood combustion for electrical utilities, residential space heating, and industrial processes; construction and demolition; metals, minerals, and petrochemicals; wood products processing; mills and elevators used in agriculture; erosion from tilled lands; waste disposal, and recycling. Mobile or transportation-related sources are from vehicle exhaust and road dust. Secondary particles form from reactions in the atmosphere.
	Mean	20 µg/m^3	—			
Particulate matter ($PM_{2.5}$)	24 Hour	—	35 µg/m^3			
	Annual	12 µg/m^3	12.0 µg/m^3			
Visibility-reducing particles	8 Hour	See note below[d]				

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Sulfates	24 Hour	25 µg/m^3	—	(a) Decrease in ventilatory function; (b) aggravation of asthmatic symptoms; (c) aggravation of cardio-pulmonary disease; (d) vegetation damage; (e) degradation of visibility; (f) property damage.	The sulfate ion is a polyatomic anion with the empirical formula SO_4^{2-}. Sulfates occur in combination with metal and/or hydrogen ions. Many sulfates are soluble in water.	Sulfates are particulates formed through the photochemical oxidation of sulfur dioxide. In California, the main source of sulfur compounds is combustion of gasoline and diesel fuel.
Lead[e]	30-day	1.5 µg/m^3	—	Lead accumulates in bones, soft tissue, and blood and can affect the kidneys, liver, and nervous system. It can cause impairment of blood formation and nerve conduction, behavior disorders, mental retardation, neurological impairment, learning deficiencies, and low IQs.	Lead is a solid heavy metal that can exist in air pollution as an aerosol particle component. Leaded gasoline was used in motor vehicles until around 1970. Lead concentrations have not exceeded state or federal standards at any monitoring station since 1982.	Lead ore crushing, lead-ore smelting, and battery manufacturing are currently the largest sources of lead in the atmosphere in the United States. Other sources include dust from soils contaminated with lead-based paint, solid waste disposal, and crustal physical weathering.
	Quarter	—	1.5 µg/m^3			
	Rolling 3-month average	—	0.15 µg/m^3			
Vinyl chloride[e]	24 Hour	0.01 ppm	—	Short-term exposure to high levels of vinyl chloride in the air causes central nervous system effects, such as dizziness, drowsiness, and headaches. Epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers.	Vinyl chloride, or chloroethene, is a chlorinated hydrocarbon and a colorless gas with a mild, sweet odor. In 1990, ARB identified vinyl chloride as a toxic air contaminant and estimated a cancer unit risk factor.	Most vinyl chloride is used to make polyvinyl chloride plastic and vinyl products, including pipes, wire and cable coatings, and packaging materials. It can be formed when plastics containing these substances are left to decompose in solid waste landfills. Vinyl chloride has been detected near landfills, sewage plants, and hazardous waste sites.
Hydrogen sulfide	1 Hour	0.03 ppm	—	High levels of hydrogen sulfide can cause immediate respiratory arrest. It can irritate the eyes and respiratory tract and cause headache, nausea, vomiting, and cough. Long exposure can cause pulmonary edema.	Hydrogen sulfide (H_2S) is a flammable, colorless, poisonous gas that smells like rotten eggs.	Manure, storage tanks, ponds, anaerobic lagoons, and land application sites are the primary sources of hydrogen sulfide. Anthropogenic sources include the combustion of sulfur containing fuels (oil and coal).

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources
Volatile organic compounds (VOC)		There are no state or federal standards for VOCs because they are not classified as criteria pollutants.		Although health-based standards have not been established for VOCs, health effects can occur from exposures to high concentrations because of interference with oxygen uptake. In general, concentrations of VOCs are suspected to cause eye, nose, and throat irritation; headaches; loss of coordination; nausea; and damage to the liver, the kidneys, and the central nervous system. Many VOCs have been classified as toxic air contaminants.	Reactive organic gases (ROG), or VOCs, are defined as any compound of carbon—excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate—that participates in atmospheric photochemical reactions. Although there are slight differences in the definition of ROG and VOCs, the two terms are often used interchangeably.	Indoor sources of VOCs include paints, solvents, aerosol sprays, cleansers, tobacco smoke, etc. Outdoor sources of VOCs are from combustion and fuel evaporation. A reduction in VOC emissions reduces certain chemical reactions that contribute to the formulation of ozone. VOCs are transformed into organic aerosols in the atmosphere, which contribute to higher PM_{10} and lower visibility.
Diesel particulate matter (DPM)		There are no ambient air quality standards for DPM.		Some short-term (acute) effects of DPM exposure include eye, nose, throat, and lung irritation, coughs, headaches, light-headedness, and nausea. Studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Human studies on the carcinogenicity of DPM demonstrate an increased risk of lung cancer, although the increased risk cannot be clearly attributed to diesel exhaust exposure.	DPM is a source of $PM_{2.5}$—diesel particles are typically 2.5 microns and smaller. Diesel exhaust is a complex mixture of thousands of particles and gases that is produced when an engine burns diesel fuel. Organic compounds account for 80 percent of the total particulate matter mass, which consists of compounds such as hydrocarbons and their derivatives, and polycyclic aromatic hydrocarbons and their derivatives. Fifteen polycyclic aromatic hydrocarbons are confirmed carcinogens, a number of which are found in diesel exhaust.	Diesel exhaust is a major source of ambient particulate matter pollution in urban environments. Typically, the main source of DPM is from combustion of diesel fuel in diesel-powered engines. Such engines are in on-road vehicles such as diesel trucks, off-road construction vehicles, diesel electrical generators, and various pieces of stationary construction equipment.

Table 1 (cont.): Description of Air Pollutants

Air Pollutant	Averaging Time	California Standard	Federal Standard[a]	Most Relevant Effects from Pollutant Exposure	Properties	Sources

Notes:
ppm = parts per million (concentration) µg/m^3 = micrograms per cubic meter Annual = Annual Arithmetic Mean 30-day = 30-day average Quarter = Calendar quarter

[a] Federal standard refers to the primary national ambient air quality standard, or the levels of air quality necessary, with an adequate margin of safety to protect the public health. All standards listed are primary standards except for 3 Hour SO_2, which is a secondary standard. A secondary standard is the level of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

[b] To attain the 1-hour NO_2 national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 parts per billion (ppb) (0.100 ppm).

[c] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

[d] Visibility-reducing particles: In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are “extinction of 0.23 per kilometer” and “extinction of 0.07 per kilometer” for the statewide and Lake Tahoe Air Basin standards, respectively.

[e] The ARB has identified lead and vinyl chloride as ‘toxic air contaminants’ with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

[f] The EPA Administrator approved a revised 8-hour ozone standard of 0.07 ppb on October 1, 2015. The new standard will go into effect 60 days after publication of the Final Rule in the Federal Register. The Final Rule was published in the Federal Register on October 26, 2015 and became effective on December 28, 2015.

Source of effects, properties, and sources: South Coast Air Quality Management District 2007; California Environmental Protection Agency 2002; California Air Resources Board 2009a; U.S. Environmental Protection Agency 2003, 2009, 2009b, 2010, 2011, and 2012a; National Toxicology Program 2011a and 2011b.
Source of standards: California Air Resources Board 2013a and EPA 2016.

Several pollutants listed in Table 1 are not addressed in this analysis. Analysis of lead is not included in this report because no new sources of lead emissions are anticipated with the project. Visibility-reducing particles are not explicitly addressed in this analysis because particulate matter is addressed as PM_{10} and $PM_{2.5}$. No components of the project would result in vinyl chloride or hydrogen sulfide emissions in any substantial quantity.

Toxic Air Contaminants Health Effects

A TAC is defined as an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in minute quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. The California Almanac of Emissions and Air Quality presents the relevant concentration and cancer risk data for the ten (10) TACs that pose the most substantial health risk in California based on available data. The ten TACs are acetaldehyde, benzene, 1.3-butadiene, carbon tetrachloride, hexavalent chromium, para-dichlorobenzene, formaldehyde, methylene chloride, perchloroethylene, and diesel particulate matter (DPM).

Some studies indicate that DPM poses the greatest health risk among the TACs listed above. A 10-year research program (ARB 1998) demonstrated that DPM from diesel-fueled engines is a human carcinogen and that chronic (long-term) inhalation exposure to DPM poses a chronic health risk. In addition to increasing the risk of lung cancer, exposure to diesel exhaust can have other health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. Diesel exhaust is a major source of fine particulate pollution as well, and studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems.

DPM differs from other TACs in that it is not a single substance, but a complex mixture of hundreds of substances. Although DPM is emitted by diesel-fueled, internal combustion engines, the composition of the emissions varies, depending on engine type, operating conditions, fuel composition, lubricating oil, and whether an emission control system is present. Unlike the other TACs, however, no ambient monitoring data are available for DPM because no routine measurement method currently exists. The ARB has made preliminary concentration estimates based on a DPM exposure method. This method uses the ARB emissions inventory's PM_{10} database, ambient PM_{10} monitoring data, and the results from several studies to estimate concentrations of DPM.

Limited data on levels and health risks attributable to the top 10 TACs listed above is available from the ARB as part of its California Almanac of Emissions and Air Quality—2009 Edition (ARB 2009b). As shown therein for data collected at the First Street air monitoring station in Fresno, cancer risks attributable to all of the listed TACs above with the exception of DPM have declined about 70 percent from the mid-1990s to 2007. Risks associated with DPM emissions are only provided for the year 2000 and have not been updated in the Almanac. Although more recent editions of the Almanac do not provide estimated risk, they do provide emission inventories for DPM for later years. The 2013 Almanac provides emission inventory trends for DPM from 2000 through 2035. The ARB Almanac 2013 reports that DPM emissions were reduced in the SJVAB from 16 tons per day in 2000 to 11 tons

per day in 2010 for a 31 percent decrease. DPM emissions in the San Joaquin Valley are projected to decrease to 6 tons per day by 2015 for a 62 percent reduction from year 2000 levels. ARB predicts a reduction to 3 tons per day by 2035 for an 81 percent reduction from year 2000 levels. Continued implementation of the ARB's Diesel Risk Reduction Plan is expected to provide continued reductions in DPM through 2020 and beyond through regulations on this source (ARB 2013b).

Asbestos

Asbestos is the name given to a number of naturally occurring fibrous silicate minerals that have been mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The three most common types of asbestos are chrysotile, amosite, and crocidolite. Chrysotile, also known as white asbestos, is the most common type of asbestos found in buildings. Chrysotile makes up approximately 90 to 95 percent of all asbestos contained in buildings in the United States. Exposure to asbestos is a health threat; exposure to asbestos fibers may result in health issues such as lung cancer, mesothelioma (a rare cancer of the thin membranes lining the lungs, chest, and abdominal cavity), and asbestosis (a non-cancerous lung disease that causes scarring of the lungs). Exposure to asbestos can occur during demolition or remodeling of buildings that were constructed prior to the 1977 ban on asbestos for use in buildings. Exposure to naturally occurring asbestos can occur during soil-disturbing activities in areas with deposits present. No naturally occurring asbestos is located near the project site.

2.3 - Existing Air Quality Conditions

The local air quality can be evaluated by reviewing relevant air pollution concentrations near the project area. Table 2 summarizes 2012 through 2015 published monitoring data, which is the most recent four-year period available. The table displays data from the Clovis-N Villa Avenue monitoring station (located approximately 3.19 miles southwest of the project site) and the Fresno-Garland monitoring station (located approximately 6.97 miles southwest of the project site). The data shows that during the past few years, the project area has exceeded the standards for ozone (state and national), PM_{10} (state), and $PM_{2.5}$ (national). The data in the table reflects the concentration of the pollutants in the air, measured using air monitoring equipment. This differs from emissions, which are calculations of a pollutant being emitted over a certain period. No recent monitoring data for Fresno County or the San Joaquin Valley Air Basin was available for SO_2. Generally, no monitoring is conducted for pollutants that are no longer likely to exceed ambient air quality standards.

Table 2: Air Quality Monitoring Summary

Air Pollutant	Averaging Time	Item	2012	2013	2014	2015
Ozone[1]	1 Hour	Max 1 Hour (ppm)	**0.124**	**0.123**	**0.118**	**0.116**
		Days > State Standard (0.09 ppm)	37	13	26	18
	8 Hour	Max 8 Hour (ppm)	**0.109**	**0.104**	**0.103**	**0.099**
		Days > State Standard (0.07 ppm)	93	66	84	51
		Days > National Standard (0.075 ppm)	57	38	56	28

Table 2 (cont.): Air Quality Monitoring Summary

Air Pollutant	Averaging Time	Item	2012	2013	2014	2015
Carbon monoxide (CO)[2]	8 Hour	Max 8 Hour (ppm)	2.06	ID	ID	ND
		Days > State Standard (9.0 ppm)	0	0	0	ND
		Days > National Standard (9 ppm)	0	0	0	ND
Nitrogen dioxide (NO_2)[1]	Annual	Annual Average (ppm)	0.010	ID	ID	ID
	1 Hour	Max 1 Hour (ppm)	0.0550	0.0540	0.0590	0.0590
		Days > State Standard (0.18 ppm)	0	0	0	0
Sulfur dioxide (SO_2)	Annual	Annual Average (ppm)	ND	ND	ND	ND
	24 Hour	Max 24 Hour (ppm)	ND	ND	ND	ND
		Days > State Standard (0.04 ppm)	ND	ND	ND	ND
Inhalable coarse particles (PM_{10})[1]	Annual	Annual Average (µg/m^3)	**29.2**	ID	ID	ID
	24 hour	24 Hour (µg/m^3)	**78.3**	**121.9**	**84.3**	**67.4**
		Days > State Standard (50 µg/m^3)	55.8	ID	ID	ID
		Days > National Standard (150 µg/m^3)	0	0	0	ID
Fine particulate matter ($PM_{2.5}$)[1]	Annual	Annual Average (µg/m^3)	**15.2**	ID	ID	**13.0**
	24 Hour	24 Hour (µg/m^3)	**74.1**	**103.4**	**72.8**	**80.7**
		Days > National Standard (35 µg/m^3)	24.1	25.1	40.4	12.4

Notes:
> = exceed ppm = parts per million µg/m^3 = micrograms per cubic meter
ID = insufficient data ND = no data max = maximum
Bold = exceedance
State Standard = California Ambient Air Quality Standard
National Standard = National Ambient Air Quality Standard
[1] Clovis-North Villa Avenue
[2] Fresno-Garland Station
Source: California Air Resources Board 2015a: Clovis-N Villa Avenue Station and Fresno-Garland Station.

The health impacts of the various air pollutants of concern can be presented in a number of ways. The clearest in comparison is to the state and federal ozone standards. If concentrations are below the standard, it is safe to say that no health impact would occur to anyone. When concentrations exceed the standard, impacts will vary based on the amount by which the standard is exceeded. The EPA developed the Air Quality Index (AQI) as an easy-to-understand measure of health impacts compared with concentrations in the air. Table 3 provides a description of the health impacts of ozone at different concentrations.

Table 3: Air Quality Index and Health Effects from Ozone

Air Quality Index/ 8-hour Ozone Concentration	Health Effects Description
AQI 100—Moderate	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 75 ppb	**Health Effects Statements**: Unusually sensitive individuals may experience respiratory symptoms.
	Cautionary Statements: Unusually sensitive people should consider limiting prolonged outdoor exertion.
AQI 150—Unhealthy for Sensitive Groups	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 95 ppb	**Health Effects Statements**: Increasing likelihood of respiratory symptoms and breathing discomfort in active children and adults and people with respiratory disease, such as asthma.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged outdoor exertion.
AQI 200—Unhealthy	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 115 ppb	**Health Effects Statements**: Greater likelihood of respiratory symptoms and breathing difficulty in active children and adults and people with respiratory disease, such as asthma; possible respiratory effects in general population.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion; everyone else, especially children, should limit prolonged outdoor exertion.
AQI 210—Very Unhealthy	**Sensitive Groups**: Children and people with asthma are the groups most at risk.
Concentration 139 ppb	**Health Effects Statements**: Increasingly severe symptoms and impaired breathing likely in active children and adults and people with respiratory disease, such as asthma; increasing likelihood of respiratory effects in general population.
	Cautionary Statements: Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion; everyone else, especially children, should limit outdoor exertion.
Source: Air Now 2015.	

Based on the AQI scale for the 8-hour ozone standard, Clovis experienced no days in the last four years that would be categorized as unhealthful (AQI 200), and as many as 179 days that were unhealthful for sensitive groups (AQI 150) or moderate (AQI 100) as measured at the Clovis monitoring station. The highest reading was 109 parts per billion (ppb) in 2012 compared with the

95-ppb cutoff point for unhealthful for sensitive groups (AQI 150), but lower than the 115-ppb cutoff point for unhealthy (AQI 200).

The other nonattainment pollutant of concern is $PM_{2.5}$. An AQI of 100 or lower is considered moderate and would be triggered by a 24-hour average concentration of 35.4 µg/m^3, which is considered an exceedance of the federal $PM_{2.5}$ standard. The monitoring station nearest the project exceeded the standard on 102 days in the four-year period spanning from 2012 to 2015. People with respiratory or heart disease, the elderly and children are the groups most at risk. Unusually sensitive people should consider reducing prolonged or heavy exertion. The AQI of 150 is classified as unhealthful for sensitive groups with a $PM_{2.5}$ concentration of 55.4 µg/m^3. At this concentration, there is increasing likelihood of respiratory symptoms in sensitive individuals, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease, and in the elderly. People with respiratory or heart disease, the elderly, and children should limit prolonged exertion. The highest concentration recorded in Clovis was 103.4 µg/m^3 in 2013. At this concentration, increased aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly, and increased respiratory effects in general population would occur. People with respiratory or heart disease, the elderly, and children should avoid prolonged exertion; everyone else should limit prolonged exertion when the AQI exceeds this level. The relationship of the AQI to health effects in shown Table 4.

Table 4: Air Quality Index and Health Effects of Particulate Pollution

Air Quality Index/ 8-hour Ozone Concentration	Health Effects Description
AQI 51–100—Moderate	**Sensitive Groups**: Some people who may be unusually sensitive to particle.
Concentration 12.1 µg/m^3	**Health Effects Statements**: Unusually sensitive people should consider reducing prolonged or heavy exertion.
	Cautionary Statements: Unusually sensitive people: Consider reducing prolonged or heavy exertion. Watch for symptoms such as coughing or shortness of breath. These are signs to take it easier.
AQI 100–150—Unhealthy for Sensitive Groups	**Sensitive Groups**: Sensitive groups include people with heart or lung disease, older adults, children and teenagers.
Concentration 35.5 µg/m^2	**Health Effects Statements**: Increasing likelihood of respiratory symptoms in sensitive individuals, aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly.
	Cautionary Statements: Sensitive groups: Reduce prolonged or heavy exertion. It is OK to be active outside, but take more breaks and do less intense activities. Watch for symptoms such as coughing or shortness of breath. People with asthma should follow their asthma action plans and keep quick relief medicine handy. If you have heart disease: Symptoms such as palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these, contact your health care provider.

Table 4 (cont.): Air Quality Index and Health Effects of Particulate Pollution

Air Quality Index/ 8-hour Ozone Concentration	Health Effects Description
AQI 151–200—Unhealthy	**Sensitive Groups**: Everyone
Concentration 55 µg/m^3	**Health Effects Statements**: Increased aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; increased respiratory effects in general population.
	Cautionary Statements: Sensitive groups: Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling. Everyone else: Reduce prolonged or heavy exertion. Take more breaks during outdoor activities.
AQI 201-300—Very Unhealthy	**Sensitive Groups**: Everyone
Concentration 150.5 µg/m^3	**Health Effects Statements**: Significant aggravation of heart or lung disease and premature mortality in persons with cardiopulmonary disease and the elderly; significant increase in respiratory effects in general population.
	Cautionary Statements: Sensitive groups: Avoid all physical activity outdoors. Move activities indoors or reschedule to a time when air quality is better. Everyone else: Avoid prolonged or heavy exertion. Consider moving activities indoors or rescheduling to a time when air quality is better.
Source: EPA 2014.	

2.3.1 - Attainment Status

The EPA and the ARB designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated as an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National nonattainment areas are further designated as marginal, moderate, serious, severe, or extreme as a function of deviation from standards.

Each standard has a different definition, or "form" of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the federal annual $PM_{2.5}$ standard is met if the three-year average of the annual average $PM_{2.5}$ concentration is less than or equal to the standard.

The current attainment designations for the Air Basin are shown in Table 5. The Air Basin is designated as nonattainment for ozone, PM_{10}, and $PM_{2.5}$.

Table 5: San Joaquin Valley Air Basin Attainment Status

Pollutant	State Status	National Status
Ozone—One Hour	Nonattainment/Severe	No Standard
Ozone—Eight Hour	Nonattainment	Nonattainment/Extreme
Carbon monoxide	Attainment/Unclassified	Merced, Madera, and Kings Counties are unclassified; others are in Attainment
Nitrogen dioxide	Attainment	Attainment/Unclassified
Sulfur dioxide	Attainment	Attainment/Unclassified
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
Lead	Attainment	No Designation/Classification
Source of State status: California Air Resources Board (ARB 2013c). Source of National status: U.S. Environmental Protection Agency (EPA 2012a).		

2.4 - Air Quality Plans and Regulations

Air pollutants are regulated at the national, state, and air basin or county level; each agency has a different level of regulatory responsibility. The EPA regulates at the national level. The ARB regulates at the state level. The SJVAPCD regulates at the air basin level.

The EPA is responsible for national and interstate air pollution issues and policies. The EPA sets national vehicle and stationary source emission standards, oversees approval of all State Implementation Plans, provides research and guidance for air pollution programs, and sets National Ambient Air Quality Standards, also known as the federal standards described earlier.

A State Implementation Plan is a document prepared by each state describing existing air quality conditions and measures that will be followed to attain and maintain federal standards. The State Implementation Plan for the State of California is administered by the ARB, which has overall responsibility for statewide air quality maintenance and air pollution prevention. California's State Implementation Plan incorporates individual federal attainment plans for regional air districts—an air district prepares their federal attainment plan, which is sent to ARB to be approved and incorporated into the California State Implementation Plan. Federal attainment plans include the technical foundation for understanding air quality (e.g., emission inventories and air quality monitoring), control measures and strategies, and enforcement mechanisms. The most recent attainment plans for the SJVAPCD are the 2007 8-hour Ozone Attainment Plan and the 2012 $PM_{2.5}$ Plan for the 2006 $PM_{2.5}$ standard. The Air Basin is designated as an extreme ozone nonattainment area for the EPA's 2008 8-hour ozone standard of 75 ppb. The EPA Administrator signed the Final Rule revising the 8-hour ozone standard to 70 ppm on October 1, 2015. The new standard will became effective 60 days after publication in the Federal Register. Adoption of a new standard requires an implementation process that includes making attainment designations and the development of new plans to attain the standard based on each area's designation. The deadline for

the attainment demonstration plan for the San Joaquin Valley is July 20, 2016. The plan for areas designated extreme nonattainment must demonstrate attainment of the new ozone standard by July 20, 2032. A hearing to adopt the 2016 Plan for the 2008 8-Hour Ozone Standard is scheduled for June 16, 2016.

Areas designated non-attainment must develop air quality plans and regulations to achieve standards by specified dates, depending on the severity of the exceedances. For much of the country, implementation of federal motor vehicle standards and compliance with federal permitting requirements for industrial sources are adequate to attain air quality standards on schedule. For many areas of California, however, additional state and local regulation is required to achieve the standards. Regulations adopted by California are described below.

2.4.1 - California Regulations

Low-Emission Vehicle Program

The ARB first adopted Low-Emission Vehicle (LEV) program standards in 1990. These first LEV standards ran from 1994 through 2003. LEV II regulations, running from 2004 through 2010, represent continuing progress in emission reductions. As the State's passenger vehicle fleet continues to grow and more sport utility vehicles and pickup trucks are used as passenger cars rather than work vehicles, the more stringent LEV II standards were adopted to provide reductions necessary for California to meet federally mandated clean air goals outlined in the 1994 State Implementation Plan. In 2012, ARB adopted the LEV III amendments to California's Low-Emission Vehicle (LEV) regulations. These amendments, also known as the Advanced Clean Car Program include more stringent emission standards for model years 2017 through 2025 for both criteria pollutants and GHGs for new passenger vehicles (ARB 2012a).

On-Road Heavy-Duty Vehicle Program

The ARB has adopted standards for emissions from various types of new on-road heavy-duty vehicles. Section 1956.8, Title 13, California Code of Regulations contains California's emission standards for on-road heavy-duty engines and vehicles, and test procedures. ARB has also adopted programs to reduce emissions from in-use heavy-duty vehicles including the Heavy-Duty Diesel Vehicle Idling Reduction Program, the Heavy-Duty Diesel In-Use Compliance Program, the Public Bus Fleet Rule and Engine Standards, and the School Bus Program and others (ARB 2013b).

ARB Regulation for In-Use Off-Road Diesel Vehicles

On July 26, 2007, the ARB adopted a regulation to reduce DPM and nitrous oxides (NO_x) emissions from in-use (existing) off-road heavy-duty diesel vehicles in California. Such vehicles are used in construction, mining, and industrial operations. The regulation limits idling to no more than five consecutive minutes, requires reporting and labeling, and requires disclosure of the regulation upon vehicle sale. The ARB is enforcing that part of the rule with fines up to $10,000 per day for each vehicle in violation. Performance requirements of the rule are based on a fleet's average NO_x emissions, which can be met by replacing older vehicles with newer, cleaner vehicles or by applying exhaust retrofits. The regulation was amended in 2010 to delay the original timeline of the performance requirements, making the first compliance deadline January 1, 2014 for large fleets

(over 5,000 horsepower), 2017 for medium fleets (2,501-5,000 horsepower), and 2019 for small fleets (2,500 horsepower or less).

The latest amendments to the Truck and Bus regulation became effective on December 31, 2014. The amended regulation requires diesel trucks and buses that operate in California to be upgraded to reduce emissions. Newer heavier trucks and buses must meet PM filter requirements beginning January 1, 2012. Lighter and older heavier trucks must be replaced starting January 1, 2015. By January 1, 2023, nearly all trucks and buses will need to have 2010 model year engines or equivalent.

The regulation applies to nearly all privately and federally owned diesel fueled trucks and buses and to privately and publicly owned school buses with a gross vehicle weight rating (GVWR) greater than 14,000 pounds. The regulation provides a variety of flexibility options tailored to fleets operating low use vehicles, fleets operating in selected vocations like agricultural and construction, and small fleets of three or fewer trucks (ARB 2015b).

ARB Airborne Toxic Control Measure for Asbestos

In July 2001, the ARB approved an Air Toxic Control Measure for construction, grading, quarrying and surface mining operations to minimize emissions of naturally occurring asbestos. The regulation requires application of best management practices to control fugitive dust in areas known to have naturally occurring asbestos and requires notification to the local air district prior to commencement of ground-disturbing activities. The measure establishes specific testing, notification and engineering controls prior to grading, quarrying, or surface mining in construction zones where naturally occurring asbestos is located on projects of any size. There are additional notification and engineering controls at work sites larger than one acre in size. These projects require the submittal of a “Dust Mitigation Plan” and approval by the air district prior to the start of a project.

Construction sometimes requires the demolition of existing buildings where construction occurs. Buildings often include materials containing asbestos, but no demolition is associated with this project. However, asbestos is also found in a natural state, known as naturally occurring asbestos. Exposure and disturbance of rock and soil that naturally contain asbestos can result in the release of fibers into the air and consequent exposure to the public. Asbestos most commonly occurs in ultramafic rock that has undergone partial or complete alteration to serpentine rock (serpentinite) and often contains chrysotile asbestos. In addition, another form of asbestos, tremolite, can be found associated with ultramafic rock, particularly near faults. Sources of asbestos emissions include unpaved roads or driveways surfaced with ultramafic rock, construction activities in ultramafic rock deposits, or rock quarrying activities where ultramafic rock is present.

The ARB has an Air Toxics Control Measure for construction, grading, quarrying, and surface mining operations, requiring the implementation of mitigation measures to minimize emissions of asbestos-laden dust. The measure applies to road construction and maintenance, construction and grading operations, and quarries and surface mines when the activity occurs in an area where naturally occurring asbestos is likely to be found. Areas are subject to the regulation if they are identified on maps published by the Department of Conservation as ultramafic rock units or if the Air Pollution Control Officer or owner/operator has knowledge of the presence of ultramafic rock, serpentine, or

naturally occurring asbestos on the site. The measure also applies if ultramafic rock, serpentine, or asbestos is discovered during any operation or activity. Review of the Department of Conservation maps indicates that no ultramafic rock has been found near Clovis.

Diesel Risk Reduction Plan

The ARB's Diesel Risk Reduction Plan has led to the adoption of new state regulatory standards for all new on-road, off-road, and stationary diesel-fueled engines and vehicles to reduce DPM emissions by about 90 percent overall from year 2000 levels. The projected emission benefits associated with the full implementation of this plan, including federal measures, are reductions in DPM emissions and associated cancer risks of 75 percent by 2010, and 85 percent by 2020 (ARB 2000).

2.4.2 - San Joaquin Valley Air Pollution Control District

The District is responsible for controlling emissions primarily from stationary sources. The District, in coordination with the eight countywide transportation agencies, is also responsible for developing, updating, and implementing air quality attainment plans for the Air Basin. The District also has roles under CEQA.

Ozone Plans

The Air Basin is designated nonattainment of state and federal health-based air quality standards for ozone. To meet Clean Air Act requirements for the one-hour ozone standard, the District adopted an Extreme Ozone Attainment Demonstration Plan in 2004, with an attainment date of 2010. Although the EPA revoked the federal 1-hour ozone standard effective June 15, 2005 and replaced it with an 8-hour standard, the requirement to submit a plan for that standard remained in effect for the San Joaquin Valley.

The planning requirements for the 1-hour plan remain in effect until replaced by a federal 8-hour ozone attainment plan. The EPA approved the 2004 Extreme Ozone Attainment Demonstration Plan, including revisions to the plan, on March 8, 2010, effective April 7, 2010. However, the Air Basin failed to attain the standard in 2010 and was subject to a $29-million Clean Air Act penalty. The penalty is being collected through an additional $12 motor vehicle registration surcharge for each passenger vehicle registered in the Air Basin that will be applied to pollution reduction programs in the region. The District also instituted a more robust ozone episodic program to reduce emissions on days with the potential to exceed the ozone standards.

The EPA originally classified the Air Basin as serious nonattainment for the 1997 federal 8-hour ozone standard with an attainment date of 2013. On April 30, 2007, the District's Governing Board adopted the 2007 Ozone Plan, which contained analysis showing a 2013 attainment target to be infeasible. The 2007 Ozone Plan details the plan for achieving attainment on schedule with an "extreme nonattainment" deadline of 2024. At its adoption of the 2007 Ozone Plan, the District also requested a reclassification to extreme nonattainment. ARB approved the plan in June 2007, and the EPA approved the request for reclassification to extreme nonattainment on April 15, 2010.

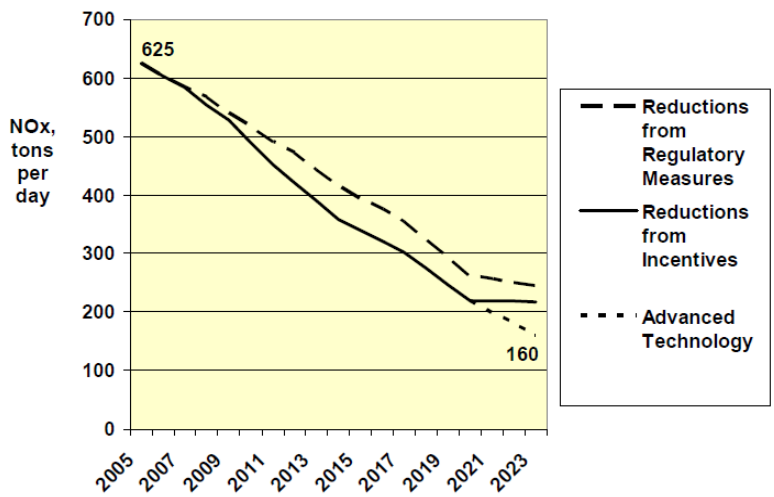
The 2007 Ozone Plan contains measures to reduce ozone and particulate matter precursor emissions to bring the Basin into attainment with the federal 8-hour ozone standard. The 2007 Ozone Plan

calls for a 75-percent reduction of NO_x and a 25-percent reduction of reactive organic gases (ROG). Figure 1 displays the anticipated NO_x reductions attributed in the 2007 Ozone Plan (Source: 2007 Ozone Plan). The plan, with innovative measures and a "dual path" strategy, assures expeditious attainment of the federal 8-hour ozone standard for all Air Basin residents. The District Governing Board adopted the 2007 Ozone Plan on April 30, 2007. The ARB approved the plan on June 14, 2007. The 2007 Ozone Plan requires yet to be determined "Advanced Technology" to achieve additional reductions after 2021, in order to attain the standard at all monitoring stations in the Air Basin by 2024 as allowed for areas designated extreme nonattainment by the federal Clean Air Act (CAA).

The Air Basin is designated as an extreme ozone nonattainment area for the EPA's 2008 8-hour ozone standard of 75 ppb. The plan to address this standard is scheduled for adoption in June 2016 and is due to the EPA in July 2016.

State ozone standards do not have an attainment deadline but require implementation of all feasible measures to achieve attainment at the earliest date possible. This is achieved through compliance with the federal deadlines and control measure requirements.

Figure 1: San Joaquin Valley NO_x Emissions Forecast



Particulate Matter Plans

The Air Basin was designated nonattainment of state and federal health-based air quality standards for PM_{10}. The Air Basin is also designated nonattainment of state and federal standards for $PM_{2.5}$.

To meet Clean Air Act requirements for the PM_{10} standard, the District adopted a PM_{10} Attainment Demonstration Plan (Amended 2003 PM_{10} Plan and 2006 PM_{10} Plan), which has an attainment date of 2010. The District adopted the 2007 PM_{10} Maintenance Plan in September 2007 to assure the San Joaquin Valley's continued attainment of the EPA's PM_{10} standard. The EPA designated the valley as an attainment/maintenance area for PM_{10} on September 25, 2008. Although the San Joaquin Valley has exceeded the standard since then, those days were considered exceptional events that are not considered a violation of the standard for attainment purposes.

The 2008 $PM_{2.5}$ Plan builds upon the comprehensive strategy adopted in the 2007 Ozone Plan to bring the Air Basin into attainment of the 1997 national standards for $PM_{2.5}$. The EPA has identified NO_x and sulfur dioxide as precursors that must be addressed in air quality plans for the 1997 $PM_{2.5}$ standards. The 2008 $PM_{2.5}$ Plan is a continuation of the District's strategy to improve the air quality in the Air Basin. The EPA issued final approval of the 2008 $PM_{2.5}$ Plan on November 9, 2011, which became effective on January 9, 2012. The EPA approved the emissions inventory, the reasonably available control measures/reasonably available control technology demonstration, reasonable further progress demonstration, attainment demonstration and associated air quality modeling, and the transportation conformity motor vehicle emissions budgets. The EPA also granted California's request to extend the attainment deadline for the San Joaquin Valley to April 5, 2015 and approved commitments to measures and reductions by the District and the ARB. Finally, it disapproved the State Implementation Plan's contingency provisions and issued a protective finding for transportation conformity determinations.

In December 2012, the District adopted the 2012 $PM_{2.5}$ Plan to bring the San Joaquin Valley into attainment of the EPA's 2006 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$. The ARB approved the District's 2012 $PM_{2.5}$ Plan for the 2006 standard at a public hearing on January 24, 2013 (SJVAPCD 2012). This plan seeks to bring the Valley into attainment with the standard by 2019, with the expectation that most areas will achieve attainment before that time.

The 2015 Plan for the 1997 $PM_{2.5}$ Standard, approved by the District Governing Board on April 16, 2015, will bring the Valley into attainment of EPA's 1997 $PM_{2.5}$ standard as expeditiously as practicable, but no later than December 31, 2020. The plan was required to request reclassification to Serious nonattainment and to extend the attainment date from 2018 to 2020 (SJVAPCD 2015b).

SJVAPCD Rules and Regulations

The SJVAPCD rules and regulations that may apply to projects that will occur during buildout of the project include, but are not limited to the following:

Rule 4102—Nuisance. The purpose of this rule is to protect the health and safety of the public, and applies to any source operation that emits or may emit air contaminants or other materials.

Rule 4601—Architectural Coatings. The purpose of this rule is to limit Volatile Organic Compounds (VOC) emissions from architectural coatings. Emissions are reduced by limits on VOC content and providing requirements on coatings storage, cleanup, and labeling.

Rule 4641—Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations. The purpose of this rule is to limit VOC emissions from asphalt paving and maintenance operations. If asphalt paving will be used, then the paving operations will be subject to Rule 4641.

Rule 4901—Wood Burning Fireplaces and Wood Burning Heaters. The purposes of this rule are to limit emissions of carbon monoxide and particulate matter from wood burning fireplaces, wood burning heaters, and outdoor wood burning devices, and to establish a public education program to reduce wood burning emissions. All development that includes woodburning devices are subject to this rule.

Regulation VIII—Fugitive PM_{10} Prohibitions. Rules 8011-8081 are designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction and demolition activities, road construction, bulk materials storage, paved and unpaved roads, carryout and trackout, etc. All development projects that involve soil disturbance are subject to at least one provision of the Regulation VIII series of rules.

Rule 9510—Indirect Source Review. This rule reduces the impact of NO_x and PM_{10} emissions from growth within the Air Basin. The rule places application and emission reduction requirements on development projects meeting applicability criteria in order to reduce emissions through on-site mitigation, off-site District-administered projects, or a combination of the two. This project must comply with Rule 9510 because it would develop more than 50 residential dwelling units.

CEQA

The District has three roles under CEQA:

1. *Lead Agency*: Responsible for preparing environmental analyses for its own projects (adoption of rules, regulations, or plans) or permit projects filed with the District where the District has primary approval authority over the project.
2. *Responsible Agency*: The discretionary authority of a Responsible Agency is more limited than a Lead Agency; having responsibility for mitigating or avoiding only the environmental effects of those parts of the project which it decides to approve, carry out, or finance. The District defers to the Lead Agency for preparation of environmental documents for land use projects that also have discretionary air quality permits, unless no document is prepared by the Lead Agency and potentially significant impacts related to the permit are possible. The District regularly submits comments on documents prepared by Lead Agencies to ensure that District concerns are addressed.
3. *Commenting Agency*: The District reviews and comments on air quality analyses prepared by other public agencies (such as the project).

The District also provides guidance and thresholds for CEQA air quality and GHG analyses. The result of this guidance, as well as state regulations to control air pollution, is an overall improvement in the Air Basin. In particular, the District's 2015 GAMAQI states the following:

1. The District's Air Quality Attainment Plans include measures to promote air quality elements in county and city general plans as one of the primary indirect source programs. The general plan is the primary long range planning document used by cities and counties to direct development. Since air districts have no authority over land use decisions, it is up to cities and counties to ensure that their general plans help achieve air quality goals. Section 65302.1 of the California Government Code requires cities and counties in the San Joaquin Valley to amend appropriate elements of their general plans to include data, analysis, comprehensive goals, policies, and feasible implementation strategies to improve air quality in their next housing element revisions.

2. The Air Quality Guidelines for General Plans (AQGGP), adopted by the District in 1994 and amended in 2005, is a guidance document containing goals and policy examples that cities and counties may want to incorporate into their General Plans to satisfy Section 65302.1. When adopted in a general plan and implemented, the suggestions in the AQGGP can reduce vehicle trips and miles traveled and improve air quality. The specific suggestions in the AQGGP are voluntary. The District strongly encourages cities and counties to use their land use and transportation planning authority to help achieve air quality goals by adopting the suggested policies and programs.

2.4.3 - Local

The City of Clovis adopted its 2014 General Plan in August of 2014. The City's applicable air quality goals and policies from the Air Quality Element and Circulation Element are listed below.

City of Clovis Air Quality Goals and Policies

Air Quality Element

- **Goal 1:** A local environment that is protected from air pollution and emissions.
- **Policy 1.1: Land use and transportation.** Reduce greenhouse gas and other local pollutant emissions through mixed use and transit-oriented development and well-designed transit, pedestrian, and bicycle systems.
- **Policy 1.2: Sensitive land uses.** Prohibit the future siting of sensitive land uses within the distances of emission sources as defined by the California Air Resources Board, without sufficient mitigation.
- **Policy 1.3: Construction activities.** Encourage the use of best management practices during construction activities to reduce emissions of criteria pollutants as outlined by the San Joaquin Valley Air Pollution Control District (SJVAPCD).
- **Policy 1.6: Alternative fuel infrastructure.** Encourage public and private activity and employment centers to incorporate electric charging and alternative fuel stations.
- **Policy 1.8: Trees.** Maintain or plant trees where appropriate to provide shade, absorb carbon, improve oxygenation, slow stormwater runoff, and reduce the heat island effect.
- **Goal 2:** A region with healthy air quality and lower greenhouse gas emissions.
- **Policy 2.1: Regional coordination.** Support regional efforts to reduce air pollution (criteria air pollutants and greenhouse gas emissions) and collaborate with other agencies to improve air quality at the emission source and reduce vehicle miles traveled.
- **Policy 2.2: Cross-jurisdictional issues.** Collaborate with regional agencies and surrounding jurisdictions to address cross-jurisdictional transportation and air quality issues.
- **Policy 2.6: Innovative mitigation.** Encourage innovative mitigation measures to reduce air quality impacts by coordinating with the SJVAPCD, project applicants, and other interested parties.

Circulation Element

- **Goal 1:** A context-sensitive and "complete streets" transportation network that prioritizes effective connectivity and accommodates a comprehensive range of mobility needs.

- **Policy 1.1: Multimodal network.** The City shall plan, design, and maintain the transportation network to promote safe and convenient travel for all users: pedestrian, bicyclists, transit riders, freight, and motorists.
- **Policy 1.2: Transportation decisions.** Decisions should balance the comfort, convenience, and safety of pedestrian, bicyclists, and motorists.
- **Policy 1.4: Jobs and housing.** Encourage infill development that would provide jobs and services closer to housing, and vice versa, to reduce citywide vehicle miles traveled and effectively utilize the existing transportation infrastructure.
- **Policy 1.5: Neighborhood connectivity.** The transportation network shall provide multimodal access between neighborhoods and neighborhood-serving uses (educational, recreational, or neighborhood commercial uses).
- **Goal 3:** A multimodal transportation network that is safe and comfortable in the context of adjacent neighborhoods.
- **Policy 3.11: Right-of-way design.** Design landscaped parkways, medians, and right-of-ways as aesthetic buffers to improve the community's appearance and encourage non-motorized transportation.
- **Goal 5:** A complete system of trails and pathways accessible to all residents.
- **Policy 5.1: Complete street amenities.** Upgrade existing streets and design new streets to include complete street amenities, prioritizing improvements to bicycle and pedestrian connectivity or safety (consistent with the Bicycle Transportation Master Plan and other master plans).
- **Policy 5.5: Pedestrian access.** Require sidewalks, paths, and crosswalks to provide access to schools, parks, and other activity centers to provide general pedestrian connectivity throughout the city.

City of Clovis General Plan Program EIR

The General Plan Program Environmental Impact Report (PEIR) includes the following mitigation measures and standard conditions to reduce significant air quality impacts:

- **SC-1:** Prior to project approval, each applicant for individual, site-specific developments under the General Plan shall comply with the San Joaquin Valley Air Pollution Control District rules and regulations, including, without limitation, Indirect Source Rule 9510. The applicant shall document, to the City's reasonable satisfaction, its compliance with this standard condition.

Mitigation Measures

3-1: Prior to issuance of any construction permits, development project applicants shall prepare and submit to the City of Clovis Planning Division a technical assessment evaluating potential project construction-related air quality impacts. The evaluation shall be prepared in conformance with San Joaquin Valley Air Pollution Control District (SJVAPCD) methodology in assessing air quality impacts. If construction-related criteria air pollutants are determined to have the potential to exceed the SJVAPCD adopted thresholds of significance, as identified in the Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), the City of Clovis Planning Division shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions

during construction activities to below these thresholds. These identified measures shall be incorporated into all appropriate construction documents (e.g., construction management plans) submitted to the City and shall be verified by the City's Planning Division.

3-2: Prior to discretionary approval, applicants for phased development projects (i.e., construction would overlap operation/opening of the project) involving residential land uses shall coordinate with the San Joaquin Valley Air Pollution Control District (SJVAPCD) or the City of Clovis in conjunction with the SJVAPCD in preparation of a health risk assessment (HRA) for construction activities. If the construction HRA identifies risk impacts that exceed the standards as determined by the SVJAPCD at the time the project is considered, it shall identify measures to reduce these impacts to below these standards. Recommended measures may include those identified in Mitigation Measure 3-1. The recommendations of the construction HRA shall be incorporated into all construction management plans which shall be submitted to the City and verified by the City's Planning Division.

3-3: Prior to project approval, development project applicants shall prepare and submit to the City of Clovis Planning Division a technical assessment evaluating potential project operation phase-related air quality impacts. The evaluation shall be prepared in conformance with San Joaquin Valley Air Pollution Control District (SJVAPCD) methodology in assessing air quality impacts. If operational-related criteria air pollutants are determined to have the potential to exceed the SJVAPCD adopted thresholds of significance, as identified in the Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), the City of Clovis Planning Division shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the Standard Conditions of Approval.

3-4: Prior to project approval, the City of Clovis Planning Division shall require applicants for individual, site-specific developments to consider establishing a Voluntary Emission Reduction Agreement (VERA) with the San Joaquin Valley Air Pollution Control District. Under this agreement, project proponents may enter into an agreement where funds are used to develop and implement emission reduction projects.

3-5: Prior to discretionary project approval, the City of Clovis shall evaluate new development proposals for sensitive land uses (e.g., residential, schools, day care centers) within the City for potential incompatibilities with regard to the California Air Resources Board's Air Quality and Land Use Handbook: A Community Health Perspective (April 2005). Applicants for sensitive land uses that are within the recommended buffer distances shall submit a health risk assessment (HRA) to the City of Clovis prior to future discretionary project approval. The HRA shall be prepared in accordance with policies and procedures of the state Office of Environmental Health Hazard Assessment (OEHHA) and the San Joaquin Valley Air Pollution Control District. The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children age 0 to 6 years. If the HRA shows that the incremental cancer risk exceeds ten in one million (10E-06), the appropriate noncancer hazard index exceeds 1.0, or if the PM_{10} or $PM_{2.5}$ ambient air quality standard increment exceeds 2.5 $\mu g/m^3$, the applicant will be required to identify and

demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks to an acceptable level (i.e., below ten in one million or a hazard index of 1.0), including appropriate enforcement mechanisms.

3-6: Prior to discretionary project approval, applicants for industrial or warehousing land uses shall coordinate with the San Joaquin Valley Air Pollution Control District (SJVAPCD) or the City of Clovis in conjunction with the SJVAPCD to determine the appropriate level of health risk assessment (HRA) required. All HRAs shall be submitted to the City of Clovis.

2.4.4 - Existing Sources of Toxic Emissions

No existing sources were identified that exceed ARB recommendations in its Air Quality Land Use Handbook for siting sensitive land uses impact the project.

2.4.5 - ARB Air Quality Land Use Handbook

Table 6 lists the following ARB advisory recommendations that address the issue of siting "sensitive land uses" near specific sources of air pollution (ARB 2005):

- High traffic freeways and roads
- Distribution centers
- Rail yards
- Ports
- Refineries
- Chrome plating facilities
- Dry cleaners
- Large gas dispensing facilities

The analysis examines the area around the site to determine if potential sources of TAC emissions may impact the project, based on the ARB recommended screening distances.

Table 6: Recommendations on Siting New Sensitive Land Uses

Source Category	Advisory Recommendations
Freeways and High-Traffic Roads	Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.
Distribution Centers	Avoid siting new sensitive land uses within 1,000 feet of a distribution center (that accommodates more than 100 trucks per day, more than 40 trucks with operating transport refrigeration units (TRUs) per day, or where TRU unit operations exceed 300 hours per week). Take into account the configuration of existing distribution centers and avoid locating residences and other new sensitive land uses near entry and exit points.
Rail Yards	Avoid siting new sensitive land uses within 1,000 feet of a major service and maintenance rail yard. Within one mile of a rail yard, consider possible siting limitations and mitigation approaches.
Ports	Avoid siting of new sensitive land uses immediately downwind of ports in the most heavily impacted zones. Consult local air districts or the ARB on the status of pending analyses of health risks.

Table 6 (cont.): Recommendations on Siting New Sensitive Land Uses

Source Category	Advisory Recommendations
Refineries	Avoid siting new sensitive land uses immediately downwind of petroleum refineries. Consult with local air districts and other local agencies to determine an appropriate separation.
Chrome Platers	Avoid siting new sensitive land uses within 1,000 feet of a chrome plater.
Dry Cleaners Using Perchloroethylene	Avoid siting new sensitive land uses within 300 feet of any dry cleaning operation. For operations with two or more machines, provide 500 feet. For operations with three or more machines, consult with the local air district. Do not site new sensitive land uses in the same building with perchloroethylene dry cleaning operations.
Gasoline Dispensing Facilities	Avoid siting new sensitive land uses within 300 feet of a large gas station (defined as a facility with a throughput of 3.6 million gallons per year or greater). A 50-foot separation is recommended for typical gas dispensing facilities.
Note: These recommendations are advisory. Land use agencies have to balance other considerations, including housing and transportation needs, economic development priorities, and other quality of life issues.	

SECTION 3: CLIMATE CHANGE SETTING

3.1 - Climate Change

Climate change is a change in the average weather of the earth that is measured by alterations in wind patterns, storms, precipitation, and temperature. These changes are assessed using historical records of temperature changes occurring in the past, such as during previous ice ages. Many of the concerns regarding climate change use this data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of GHGs needed to stabilize global temperatures and climate change impacts. In its Fourth Assessment Report, the IPCC predicted that the global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1 degrees Celsius (°C) to 6.4°C. Regardless of analytical methodology, global average temperatures and sea levels are expected to rise under all scenarios (IPCC 2007a). The report also concluded that "[w]arming of the climate system is unequivocal," and that "[m]ost of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations."

An individual project cannot generate enough GHG emissions to effect a discernible change in global climate. However, the project participates in the potential for global climate change by its incremental contribution of GHGs combined with the cumulative increase of all other sources of GHGs, which when taken together constitute potential influences on global climate change.

3.1.1 - Consequences of Climate Change in California

In California, climate change may result in consequences such as the following (from CCCC 2006 and Moser et al. 2009).

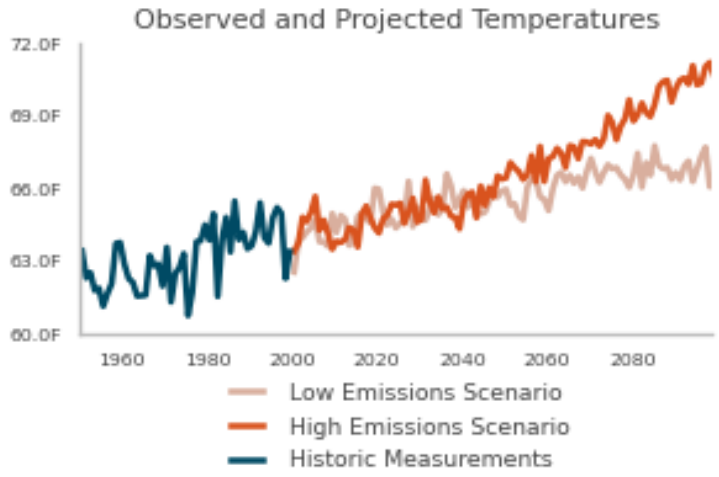
- **A reduction in the quality and supply of water from the Sierra snowpack.** If heat-trapping emissions continue unabated, more precipitation will fall as rain instead of snow, and the snow that does fall will melt earlier, reducing the Sierra Nevada spring snowpack by as much as 70 to 90 percent. This can lead to challenges in securing adequate water supplies. It can also lead to a potential reduction in hydropower.
- **Increased risk of large wildfires.** If rain increases as temperatures rise, wildfires in the grasslands and chaparral ecosystems of southern California are estimated to increase by approximately 30 percent toward the end of the 21st century because more winter rain will stimulate the growth of more plant "fuel" available to burn in the fall. In contrast, a hotter, drier climate could promote up to 90 percent more northern California fires by the end of the century by drying out and increasing the flammability of forest vegetation.
- **Reductions in the quality and quantity of certain agricultural products.** The crops and products likely to be adversely affected include wine grapes, fruit, nuts, and milk.

- **Exacerbation of air quality problems.** If temperatures rise to the medium warming range, there could be 75 to 85 percent more days with weather conducive to ozone formation in Los Angeles and the San Joaquin Valley, relative to today's conditions. This is more than twice the increase expected if rising temperatures remain in the lower warming range. This increase in air quality problems could result in an increase in asthma and other health-related problems.
- **A rise in sea levels resulting in the displacement of coastal businesses and residences.** During the past century, sea levels along California's coast have risen about seven inches. If emissions continue unabated and temperatures rise into the higher anticipated warming range, sea level is expected to rise an additional 22 to 35 inches by the end of the century. Elevations of this magnitude would inundate coastal areas with salt water, accelerate coastal erosion, threaten vital levees and inland water systems, and disrupt wetlands and natural habitats.
- **An increase temperature and extreme weather events.** Climate change is expected to lead to increases in the frequency, intensity, and duration of extreme heat events and heat waves in California. More heat waves can exacerbate chronic disease or heat-related illness.
- **A decrease in the health and productivity of California's forests.** Climate change can cause an increase in wildfires, an enhanced insect population, and establishment of non-native species.

Consequences of Climate Change in the Clovis Area

Figure 2 displays a chart of measured historical and projected annual average temperatures in the Clovis area. As shown in the figure, temperatures are expected to rise in the low and high GHG emissions scenarios. The results indicate that temperatures are predicted to increase by 3.7 degrees Fahrenheit (°F) under the low emission scenario and 6.5°F under the high emissions scenario (CalAdapt 2016).

Figure 2: Observed and Projected Temperatures for Climate Change in the City of Clovis Area



Source: CalAdapt 2016

Water Supply

The City of Clovis Public Utilities Department would provide water for the project. The City relies on groundwater and treated surface water for potable water supplies. The availability of surface water and the rate of groundwater recharge could decline if climate change results in reduced snowpack in the Sierra Nevada.

Wildfires

The project site is within an urban area with limited fuels that would be subject to a wildfire. Foothill and mountain areas located to the north and east of the Clovis area subject to wildfire. The potential for increased temperatures and drought conditions due to climate change would result in increased risk from wildfire in those areas.

Human Health Effects of GHG Emissions

GHG emissions from development projects would not result in concentrations that would directly impact public health. However, the cumulative effects of GHG emissions on climate change have the potential to cause adverse effects to human health.

The U.S. Global Change Research Program, in its report, Global Climate Change Impacts in the U.S. (2009), has analyzed the degree to which impacts on human health are expected to impact the United States.

Potential effects of climate change on public health include:

- Direct Temperature Effects: Climate change may directly affect human health through increases in average temperatures, which are predicted to increase the incidence of heat waves and hot extremes.
- Extreme Events: Climate change may affect the frequency and severity of extreme weather events, such as hurricanes and extreme heat and floods, which can be destructive to human health and well-being.
- Climate–Sensitive Diseases: Climate change may increase the risk of some infectious diseases, particularly those diseases that appear in warm areas and are spread by mosquitoes and other insects, such as malaria, dengue fever, yellow fever, and encephalitis.
- Air Quality: Respiratory disorders may be exacerbated by warming-induced increases in the frequency of smog (ground-level ozone) events and particulate air pollution (EPA 2009a).

Although there could be health effects resulting from changes in the climate and the consequences that can occur, inhalation of GHGs at levels currently in the atmosphere would not result in adverse health effects, with the exception of ozone and aerosols (particulate matter). The potential health effects of ozone and particulate matter are discussed in criteria pollutant analyses. At very high indoor concentrations (not at levels existing outside), carbon dioxide, methane, sulfur hexafluoride, and some chlorofluorocarbons can cause suffocation as the gases can displace oxygen (CDC 2010 and OSHA 2003).

3.2 - Greenhouse Gases

Gases that trap heat in the atmosphere are referred to as GHGs. The effect is analogous to the way a greenhouse retains heat. Common GHGs include water vapor, carbon dioxide, methane, NO_x, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Natural processes and human activities emit GHGs. The presence of GHGs in the atmosphere affects the earth's temperature. It is believed that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

Climate change is driven by forcings and feedbacks. Radiative forcing is the difference between the incoming energy and outgoing energy in the climate system. Positive forcing tends to warm the surface while negative forcing tends to cool it. Radiative forcing values are typically expressed in watts per square meter. A feedback is a climate process that can strengthen or weaken a forcing. For example, when ice or snow melts, it reveals darker land underneath which absorbs more radiation and causes more warming. The global warming potential is the potential of a gas or aerosol to trap heat in the atmosphere. The global warming potential of a gas is essentially a measurement of the radiative forcing of a GHG compared with the reference gas, CO_2.

Individual GHG compounds have varying global warming potential and atmospheric lifetimes. CO_2, the reference gas for global warming potential, has a global warming potential of one. The global warming potential of a GHG is a measure of how much a given mass of a GHG is estimated to contribute to global warming. To describe how much global warming a given type and amount of GHG may cause, the carbon dioxide equivalent is used. The calculation of the carbon dioxide equivalent is a consistent methodology for comparing GHG emissions since it normalizes various GHG emissions to a consistent reference gas, CO_2. For example, CH_4's warming potential of 21 indicates that CH_4 has 21 times greater warming effect than CO_2 on a molecule-per-molecule basis. A carbon dioxide equivalent is the mass emissions of an individual GHG multiplied by its global warming potential. GHGs defined by AB 32 (see the Climate Change Regulatory Environment section for a description) include CO_2, CH_4, NO_x, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. They are described in Table 7. A seventh GHG, nitrogen trifluoride (NF_3), was added to Health and Safety Code section 38505(g)(7) as a GHG of concern.

Table 7: Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Nitrous oxide	Nitrous oxide (laughing gas) is a colorless GHG. It has a lifetime of 114 years. Its global warming potential is 310.	Microbial processes in soil and water, fuel combustion, and industrial processes.
Methane	Methane is a flammable gas and is the main component of natural gas. It has a lifetime of 12 years. Its global warming potential is 21.	Methane is extracted from geological deposits (natural gas fields). Other sources are landfills, fermentation of manure, and decay of organic matter.

Table 7 (cont.): Description of Greenhouse Gases

Greenhouse Gas	Description and Physical Properties	Sources
Carbon dioxide	Carbon dioxide (CO_2) is an odorless, colorless, natural GHG. Carbon dioxide's global warming potential is 1. The concentration in 2005 was 379 parts per million (ppm), which is an increase of about 1.4 ppm per year since 1960.	Natural sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Anthropogenic sources are from burning coal, oil, natural gas, and wood.
Chlorofluorocarbons	These are gases formed synthetically by replacing all hydrogen atoms in methane or ethane with chlorine and/or fluorine atoms. They are nontoxic, nonflammable, insoluble, and chemically unreactive in the troposphere (the level of air at the earth's surface). Global warming potentials range from 3,800 to 8,100.	Chlorofluorocarbons were synthesized in 1928 for use as refrigerants, aerosol propellants, and cleaning solvents. They destroy stratospheric ozone. The Montreal Protocol on Substances that Deplete the Ozone Layer prohibited their production in 1987.
Hydrofluorocarbons	Hydrofluorocarbons are a group of GHGs containing carbon, chlorine, and at least one hydrogen atom. Global warming potentials range from 140 to 11,700.	Hydrofluorocarbons are synthetic manmade chemicals used as a substitute for chlorofluorocarbons in applications such as automobile air conditioners and refrigerants.
Perfluorocarbons	Perfluorocarbons have stable molecular structures and only break down by ultraviolet rays about 60 kilometers above Earth's surface. Because of this, they have long lifetimes, between 10,000 and 50,000 years. Global warming potentials range from 6,500 to 9,200.	Two main sources of perfluorocarbons are primary aluminum production and semiconductor manufacturing.
Sulfur hexafluoride	Sulfur hexafluoride (SF_6) is an inorganic, odorless, colorless, and nontoxic, nonflammable gas. It has a lifetime of 3,200 years. It has a high global warming potential, 23,900.	This gas is manmade and used for insulation in electric power transmission equipment, in the magnesium industry, in semiconductor manufacturing, and as a tracer gas.
Nitrogen trifluoride	Nitrogen trifluoride (NF_3) was added to Health and Safety Code section 38505(g)(7) as a GHG of concern. It has a high global warming potential of 17,200.	This gas is used in electronics manufacture for semiconductors and liquid crystal displays.
Sources: Compiled from a variety of sources, primarily Intergovernmental Panel on Climate Change 2007a and 2007b.		

The State has begun the process of addressing pollutants referred to as short-lived climate pollutants. Senate Bill 605, approved by the Governor on September 14, 2014 requires the ARB to complete a comprehensive strategy to reduce emissions of short-lived climate pollutants by January 1, 2016. The ARB released the Proposed Short-Lived Climate Pollutant Reduction Strategy in April 2016. ARB has completed an emission inventory of these pollutants, identified research needs,

identified existing and potential new control measures that offer co-benefits, and coordinate with other state agencies and districts to develop measures (ARB 2016).

The short-lived climate pollutants include three main components: black carbon, fluorinated gases, and methane. Fluorinated gases and methane are described in Table 7 and are already included in the California GHG inventory. Black carbon has not been included in past GHG inventories; however, ARB will include it in its comprehensive strategy (ARB 2015c).

Ozone is another short-lived climate pollutant that will be part of the strategy. Ozone affects evaporation rates, cloud formation, and precipitation levels. Ozone is not directly emitted, so its precursor emissions, volatile organic compounds (VOC) and oxides of nitrogen (NO_x) on a regional scale and CH_4 on a hemispheric scale will be subject of the strategy (ARB 2015c).

Black carbon is a component of fine particulate matter. Black carbon is formed by incomplete combustion of fossil fuels, biofuels, and biomass. Sources of black carbon within a jurisdiction may include exhaust from diesel trucks, vehicles, and equipment, as well as smoke from biogenic combustion. Biogenic combustion sources of black carbon include the burning of biofuels used for transportation, the burning of biomass for electricity generation and heating, prescribed burning of agricultural residue, and natural and unnatural wildfires. Black carbon is not a gas but an aerosol—particles or liquid droplets suspended in air. Black carbon only remains in the atmosphere for days to weeks, whereas other GHGs that can remain in the atmosphere for years. Black carbon can be deposited on snow, where it absorbs sunlight, reduces sunlight reflectivity, and hastens snowmelt. Direct effects include absorbing incoming and outgoing radiation; indirectly, black carbon can also affect cloud reflectivity, precipitation, and surface dimming (cooling).

Global warming potentials for black carbon were not defined by the IPCC in its Fourth Assessment Report. The ARB has identified a global warming potential of 3,200 using a 20-year time horizon and 900 using a 100-year time horizon from the IPCC Fifth Assessment. Sources of black carbon are already regulated by ARB, and air district criteria pollutant and toxic regulations that control fine particulate emissions from diesel engines and other combustion sources (ARB 2015c). Additional controls on the sources of black carbon specifically for their GHG impacts beyond those required for toxic and fine particulates are not likely to be needed.

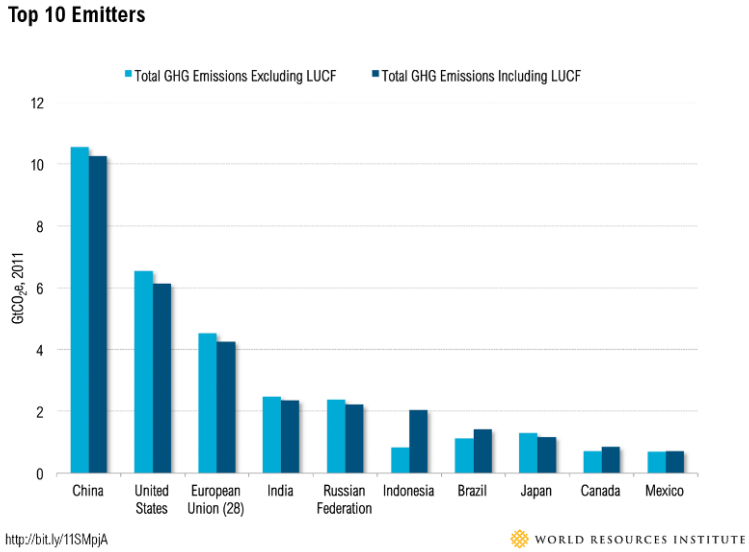
Water vapor is also considered a GHG. Water vapor is an important component of our climate system and is not regulated. Increasing water vapor leads to warmer temperatures, which causes more water vapor to be absorbed into the air. Warming and water absorption increase in a spiraling cycle. Water vapor feedback can also amplify the warming effect of other GHGs, such that the warming brought about by increased carbon dioxide allows more water vapor to enter the atmosphere (NASA 2015).

3.2.1 - Emissions Inventories

An emissions inventory is a database that lists, by source, the amount of air pollutants discharged into the atmosphere of a geographic area during a given time period. Emissions worldwide were approximately 43,286 million metric tons of carbon dioxide equivalents ($MMTCO_2e$) in 2012. As shown

in Figure 3, China was the largest GHG emitter with over 10 billion metric tons of CO_2e, and the United States was the second largest GHG emitter with over 6 billion metric tons of CO_2e (WRI 2014).

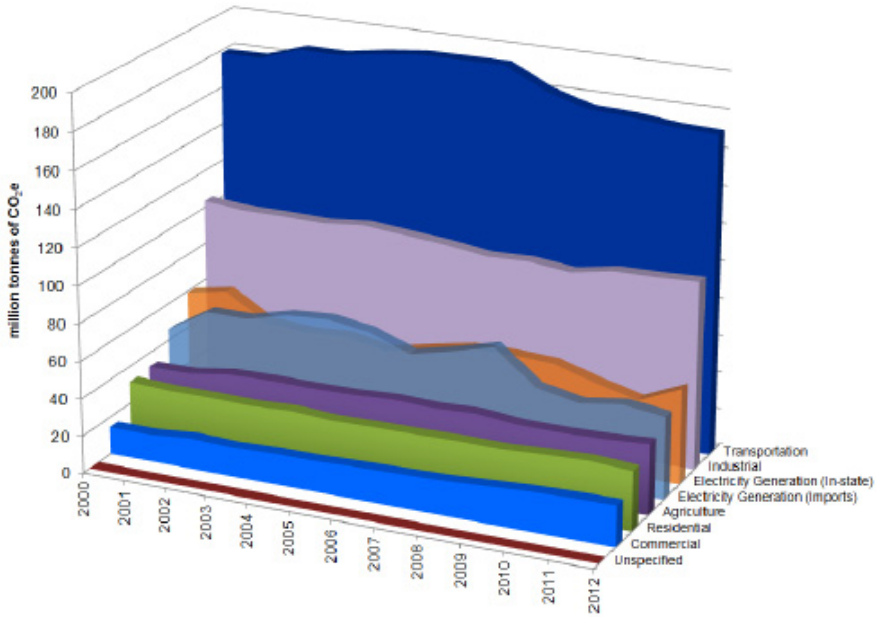
Figure 3: Greenhouse Gas Emissions Trends



Source: WRI 2014.

Figure 4 shows the contributors of GHG emissions in California between years 2000 and 2012 by economic sector. The main contributor was transportation. The second highest sector was industrial, which includes sources from refineries, general fuel use, oil and gas extraction, cement plants, and cogeneration heat output. ARB reported that California's GHG emissions inventory was 459 $MMTCO_2e$ in 2012 (ARB 2014a).

Figure 4: Greenhouse Gas Emission Trends by Sector in California



Source: ARB 2014a.

3.3 - Regulatory Environment

3.3.1 - International

International organizations such as the ones discussed below have made substantial efforts to reduce GHGs. Preventing human-induced climate change will require the participation of all nations in solutions to address the issue.

Intergovernmental Panel on Climate Change. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change to assess the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk of human-induced climate change, its potential impacts, and options for adaptation and mitigation.

United Nations Framework Convention on Climate Change (Convention). On March 21, 1994, the United States joined a number of countries around the world in signing the Convention. Under the Convention, governments gather and share information on GHG emissions, national policies, and best practices; launch national strategies for addressing GHG emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries; and cooperate in preparing for adaptation to the impacts of climate change.

Kyoto Protocol. The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing GHG emissions at average of five percent against 1990 levels over the five-year period from 2008–2012. The Convention (as discussed above) encouraged industrialized countries to stabilize emissions; however, the Protocol commits them to do so. Developed countries have contributed more emissions over the last 150 years; therefore, the Protocol places a heavier burden on developed nations under the principle of "common but differentiated responsibilities."

In 2001, President George W. Bush indicated that he would not submit the treaty to the U.S. Senate for ratification, which effectively ended American involvement in the Kyoto Protocol. In December 2009, international leaders met in Copenhagen to address the future of international climate change commitments post-Kyoto. No binding agreement was reached in Copenhagen; however, the Committee identified the long-term goal of limiting the maximum global average temperature increase to no more than 2°C above pre-industrial levels, subject to a review in 2015. The UN Climate Change Committee held additional meetings in Durban, South Africa in November 2011; Doha, Qatar in November 2012; and Warsaw, Poland in November 2013. The meetings are gradually gaining consensus among participants on individual climate change issues.

On September 23, 2014, more than 100 heads of state and government, and leaders from the private sector and civil society met at the Climate Summit in New York hosted by the United Nations. At the Summit, heads of government, business and civil society announced actions in areas that would have the greatest impact on reducing emissions, including climate finance, energy, transport, industry, agriculture, cities, forests, and building resilience.

Parties to the U.N. Framework Convention on Climate Change (UNFCCC) reached a landmark agreement on December 12 in Paris, charting a fundamentally new course in the two-decade-old global climate effort. Culminating a four-year negotiating round, the new treaty ends the strict differentiation between developed and developing countries that characterized earlier efforts, replacing it with a common framework that commits all countries to put forward their best efforts and to strengthen them in the years ahead. This includes, for the first time, requirements that all parties report regularly on their emissions and implementation efforts, and undergo international review.

The agreement and a companion decision by parties were the key outcomes of the conference, known as the 21st session of the UNFCCC Conference of the Parties, or COP 21. Together, the Paris Agreement and the accompanying COP decision:

- Reaffirm the goal of limiting global temperature increase well below 2 degrees Celsius, while urging efforts to limit the increase to 1.5 degrees;
- Establish binding commitments by all parties to make "nationally determined contributions" (NDCs), and to pursue domestic measures aimed at achieving them;
- Commit all countries to report regularly on their emissions and "progress made in implementing and achieving" their NDCs, and to undergo international review;
- Commit all countries to submit new NDCs every five years, with the clear expectation that they will "represent a progression" beyond previous ones;
- Reaffirm the binding obligations of developed countries under the UNFCCC to support the efforts of developing countries, while for the first time encouraging voluntary contributions by developing countries too;
- Extend the current goal of mobilizing $100 billion a year in support by 2020 through 2025, with a new, higher goal to be set for the period after 2025;
- Extend a mechanism to address "loss and damage" resulting from climate change, which explicitly will not "involve or provide a basis for any liability or compensation;"
- Require parties engaging in international emissions trading to avoid "double counting;" and
- Call for a new mechanism, similar to the Clean Development Mechanism under the Kyoto Protocol, enabling emission reductions in one country to be counted toward another country's NDC (C2ES 2015a).

3.3.2 - Federal Regulations

Prior to the last decade, there were no concrete federal regulations of GHGs or major planning for climate change adaptation. Since then, federal activity has increased. The following are actions regarding the federal government, GHGs, and fuel efficiency.

Greenhouse Gas Endangerment. *Massachusetts v. EPA* (Supreme Court Case 05-1120) was argued before the United States Supreme Court on November 29, 2006, in which it was petitioned that the

EPA regulate four GHGs, including carbon dioxide, under Section 202(a)(1) of the Clean Air Act. A decision was made on April 2, 2007, in which the Supreme Court found that GHGs are air pollutants covered by the Clean Air Act. The Court held that the Administrator must determine whether emissions of GHGs from new motor vehicles cause or contribute to air pollution, which may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision. On December 7, 2009, the EPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act:

- Endangerment Finding: The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride—in the atmosphere threaten the public health and welfare of current and future generations.
- Cause or Contribute Finding: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution, which threatens public health and welfare.

These findings do not impose requirements on industry or other entities. However, this was a prerequisite for implementing GHG emissions standards for vehicles, as discussed in the section "Clean Vehicles" below. After a lengthy legal challenge, the United States Supreme Court declined to review an Appeals Court ruling upholding that upheld the EPA Administrator findings (EPA 2009b).

Clean Vehicles. Congress first passed the Corporate Average Fuel Economy law in 1975 to increase the fuel economy of cars and light duty trucks. The law has become more stringent over time. On May 19, 2009, President Obama put in motion a new national policy to increase fuel economy for all new cars and trucks sold in the United States. On April 1, 2010, the EPA and the Department of Transportation's National Highway Safety Administration announced a joint final rule establishing a national program that would reduce GHG emissions and improve fuel economy for new cars and trucks sold in the United States.

The first phase of the national program applies to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. They require these vehicles to meet an estimated combined average emissions level of 250 grams of CO_2 per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this CO_2 level solely through fuel economy improvements. Together, these standards would cut CO_2 emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012–2016). The EPA and the National Highway Safety Administration issued final rules on a second-phase joint rulemaking, establishing national standards for light-duty vehicles for model years 2017 through 2025 in August 2012 (EPA 2012b). The new standards for model years 2017 through 2025 apply to passenger cars, light-duty trucks, and medium duty passenger vehicles. The final standards are projected to result in an average industry fleetwide level of 163 grams/mile of CO_2 in model year 2025, which is equivalent to 54.5 miles per gallon (mpg) if achieved exclusively through fuel economy improvements.

The EPA and the U.S. Department of Transportation issued final rules for the first national standards to reduce GHG emissions and improve fuel efficiency of heavy-duty trucks and buses on September 15, 2011, which became effective November 14, 2011. For combination tractors, the agencies are proposing engine and vehicle standards that began in the 2014 model year and achieve up to a 20-percent reduction in CO_2 emissions and fuel consumption by the 2018 model year. For heavy-duty pickup trucks and vans, the agencies are proposing separate gasoline and diesel truck standards, which phase in starting in the 2014 model year and achieve up to a 10-percent reduction for gasoline vehicles, and a 15-percent reduction for diesel vehicles by 2018 model year (12 and 17 percent respectively if accounting for air conditioning leakage). Lastly, for vocational vehicles, the engine and vehicle standards would achieve up to a 10-percent reduction in fuel consumption and CO_2 emissions from the 2014 to 2018 model years.

Mandatory Reporting of Greenhouse Gases. The Consolidated Appropriations Act of 2008, passed in December 2007, requires the establishment of mandatory GHG reporting requirements. On September 22, 2009, the EPA issued the Final Mandatory Reporting of Greenhouse Gases Rule, which became effective January 1, 2010. The rule requires reporting of GHG emissions from large sources and suppliers in the United States, and is intended to collect accurate and timely emissions data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHG emissions are required to submit annual reports to the EPA.

New Source Review. The EPA issued a final rule on May 13, 2010 that establishes thresholds for GHGs that define when permits under the New Source Review Prevention of Significant Deterioration and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these Clean Air Act permitting programs to limit which facilities will be required to obtain Prevention of Significant Deterioration and Title V permits. In the preamble to the revisions to the federal code of regulations, the EPA states:

> This rulemaking is necessary because without it the Prevention of Significant Deterioration and Title V requirements would apply, as of January 2, 2011, at the 100 or 250 tons per year levels provided under the Clean Air Act, greatly increasing the number of required permits, imposing undue costs on small sources, overwhelming the resources of permitting authorities, and severely impairing the functioning of the programs. EPA is relieving these resource burdens by phasing in the applicability of these programs to greenhouse gas sources, starting with the largest greenhouse gas emitters. This rule establishes two initial steps of the phase-in. The rule also commits the agency to take certain actions on future steps addressing smaller sources, but excludes certain smaller sources from Prevention of Significant Deterioration and Title V permitting for greenhouse gas emissions until at least April 30, 2016.

The EPA estimates that facilities responsible for nearly 70 percent of the national GHG emissions from stationary sources will be subject to permitting requirements under this rule. This includes the nation's largest GHG emitters—power plants, refineries, and cement production facilities.

Standards of Performance for Greenhouse Gas Emissions for New Stationary Sources: Electric Utility Generating Units. As required by a settlement agreement, the EPA proposed new performance standards for emissions of carbon dioxide for new, affected, fossil fuel-fired electric utility generating units on March 27, 2012. New sources greater than 25 megawatt would be required to meet an output based standard of 1,000 pounds of carbon dioxide per megawatt-hour, based on the performance of widely used natural gas combined cycle technology.

Cap and Trade. Cap and trade refers to a policy tool where emissions are limited to a certain amount and can be traded, or provides flexibility on how the emitter can comply. There is no federal GHG cap-and-trade program currently; however, some states have joined to create initiatives to provide a mechanism for cap and trade.

The Regional Greenhouse Gas Initiative is an effort to reduce GHGs among the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. Each state caps carbon dioxide emissions from power plants, auctions carbon dioxide emission allowances, and invests the proceeds in strategic energy programs that further reduce emissions, save consumers money, create jobs, and build a clean energy economy. The Initiative began in 2008.

The Western Climate Initiative partner jurisdictions have developed a comprehensive initiative to reduce regional GHG emissions to 15 percent below 2005 levels by 2020. The partners are California, British Columbia, Manitoba, Ontario, and Quebec. Currently only California and Quebec are participating in the cap and trade program (C2ES 2015b).

3.3.3 - California

Legislative Actions to Reduce GHGs

The State of California legislature has enacted a series of bills that constitute the most aggressive program to reduce GHGs of any state in the nation. Some legislation such as the landmark AB 32 California Global Warming Solutions Act of 2006 was specifically enacted to address GHG emissions. Other legislation such as Title 24 and Title 20 energy standards were originally adopted for other purposes such as energy and water conservation, but also provide GHG reductions. This section describes the major provisions of the legislation.

AB 32. The California State Legislature enacted AB 32, the California Global Warming Solutions Act of 2006. AB 32 requires that GHGs emitted in California be reduced to 1990 levels by the year 2020. "Greenhouse gases" as defined under AB 32 include carbon dioxide, methane, NO_x, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Since AB 32 was enacted, a seventh chemical, nitrogen trifluoride, has also been added to the list of GHGs. The ARB is the state agency charged with monitoring and regulating sources of GHGs. AB 32 states the following:

> Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California. The potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and

residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious diseases, asthma, and other human health-related problems.

The ARB approved the 1990 GHG emissions level of 427 $MMTCO_2e$ on December 6, 2007 (ARB 2007). Therefore, to meet the State's target, emissions generated in California in 2020 are required to be equal to or less than 427 $MMTCO_2e$. Emissions in 2020 in a Business as Usual (BAU) scenario were estimated to be 596 $MMTCO_2e$, which do not account for reductions from AB 32 regulations (ARB 2008). At that rate, a 28 percent reduction was required to achieve the 427 $MMTCO_2e$ 1990 inventory. In October 2010, ARB prepared an updated 2020 forecast to account for the effects of the 2008 recession and slower forecasted growth. The 2020 inventory without the benefits of adopted regulation is now estimated at 545 $MMTCO_2e$. Therefore, under the updated forecast, a 21.7 percent reduction from BAU is required to achieve 1990 levels (ARB 2010).

Progress in Achieving AB 32 Targets and Remaining Reductions Required

The State has made steady progress in implementing AB 32 and achieving targets included in Executive Order S-3-05. The progress is shown in updated emission inventories prepared by ARB for 2000 through 2012 to show progress achieved to date (ARB 2014a). The State has also achieved the Executive Order S-3-05 target for 2010 of reducing GHG emissions to 2000 levels. As shown below, the 2010 emission inventory achieved this target. Also shown are the average reductions needed from all statewide sources (including all existing sources) to reduce GHG emissions back to 1990 levels.

- 1990: 427 million $MTCO_2e$ (AB 32 2020 Target)
- 2000: 463 million $MTCO_2e$ (an average 8-percent reduction needed to achieve 1990 base)
- 2010: 450 million $MTCO_2e$ (an average 5-percent reduction needed to achieve 1990 base)
- 2020: 545 million $MTCO_2e$ BAU (an average 21.7-percent reduction from BAU needed to achieve 1990 base)

ARB Scoping Plan. The ARB's Climate Change Scoping Plan (Scoping Plan) contains measures designed to reduce the State's emissions to 1990 levels by the year 2020 to comply with AB 32 (ARB 2008). The Scoping Plan identifies recommended measures for multiple GHG emission sectors and the associated emission reductions needed to achieve the year 2020 emissions target—each sector has a different emission reduction target. Most of the measures target the transportation and electricity sectors. As stated in the Scoping Plan, the key elements of the strategy for achieving the 2020 GHG target include:

- Expanding and strengthening existing energy efficiency programs as well as building and appliance standards;
- Achieving a statewide renewables energy mix of 33 percent;
- Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system;
- Establishing targets for transportation-related GHG emissions for regions throughout California and pursuing policies and incentives to achieve those targets;

- Adopting and implementing measures pursuant to existing State laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
- Creating targeted fees, including a public goods charge on water use, fees on high global warming potential gases, and a fee to fund the administrative costs of the State's long-term commitment to AB 32 implementation.

In addition, the Scoping Plan differentiates between "capped" and "uncapped" strategies. Capped strategies are subject to the proposed cap-and-trade program. The Scoping Plan states that the inclusion of these emissions within the cap-and trade program will help ensure that the year 2020 emission targets are met despite some degree of uncertainty in the emission reduction estimates for any individual measure. Implementation of the capped strategies is calculated to achieve a sufficient amount of reductions by 2020 to achieve the emission target contained in AB 32. Uncapped strategies that will not be subject to the cap-and-trade emissions caps and requirements are provided as a margin of safety by accounting for additional GHG emission reductions (ARB 2008).

The ARB approved the First Update to the Scoping Plan (Update) on May 22, 2014. The Update identifies the next steps for California's climate change strategy. The Update shows how California continues on its path to meet the near-term 2020 GHG limit, but also sets a path toward long-term, deep GHG emission reductions. The report establishes a broad framework for continued emission reductions beyond 2020, on the path to 80 percent below 1990 levels by 2050. The Update identifies progress made to meet the near-term objectives of AB 32 and defines California's climate change priorities and activities Climate for the next several years. The Update does not set new targets for the State, but describes a path that would achieve the long term 2050 goal of Executive Order S-05-03 for emissions to decline to 80 percent below 1990 levels by 2050.

The ARB has no legislative mandate to set a target beyond the 2020 target from AB 32 or to adopt additional regulations to achieve a post-2020 target. The Update estimates that reductions averaging 5.2 percent per year would be required after 2020 to achieve the 2050 goal. With no estimate of future reduction commitments from the State, identifying a feasible strategy including plans and measures to be adopted by local agencies is not currently possible (ARB 2014b).

Cap and Trade Program. The Cap and Trade Program is a key element of the Scoping Plan. It sets a statewide limit on sources responsible for 85 percent of California's GHG emissions, and establishes a price signal needed to drive long-term investment in cleaner fuels and more efficient use of energy. The program is designed to provide covered entities the flexibility to seek out and implement the lowest cost options to reduce emissions. The program conducted its first auction in November 2012. Compliance obligations began for power plants and large industrial sources in January 2013. Other significant milestones include linkage to Quebec's cap and trade system in January 2014 and starting the compliance obligation for distributors of transportation fuels, natural gas, and other fuels in January 2015 (ARB 2015d).

The Cap-and-Trade Program provides a firm cap, ensuring that the 2020 statewide emission limit will not be exceeded. An inherent feature of the Cap-and-Trade program is that it does not guarantee

GHG emissions reductions in any discrete location or by any particular source. Rather, GHG emissions reductions are only guaranteed on an accumulative basis. As summarized by ARB in the First Update:

> The Cap-and-Trade Regulation gives companies the flexibility to trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more have to turn in more allowances or other compliance instruments. Companies that can cut their GHG emissions have to turn in fewer allowances. But as the cap declines, aggregate emissions must be reduced. In other words, a covered entity theoretically could increase its GHG emissions every year and still comply with the Cap-and-Trade Program if there is a reduction in GHG emissions from other covered entities. Such a focus on aggregate GHG emissions is considered appropriate because climate change is a global phenomenon, and the effects of GHG emissions are considered cumulative (ARB 2014b).

The Cap-and-Trade Program works with other direct regulatory measures and provides an economic incentive to reduce emissions. If California's direct regulatory measures reduce GHG emissions more than expected, then the Cap-and-Trade Program will be responsible for relatively fewer emissions reductions. If California's direct regulatory measures reduce GHG emissions less than expected, then the Cap-and-Trade Program will be responsible for relatively more emissions reductions. Thus, the Cap-and-Trade Program assures that California will meet its 2020 GHG emissions reduction mandate:

> The Cap-and-Trade Program establishes an overall limit on GHG emissions from most of the California economy—the "capped sectors." Within the capped sectors, some of the reductions are being accomplished through direct regulations, such as improved building and appliance efficiency standards, the [Low Carbon Fuel Standard] LCFS, and the 33 percent [Renewables Portfolio Standard] RPS. Whatever additional reductions are needed to bring emissions within the cap is accomplished through price incentives posed by emissions allowance prices. Together, direct regulation and price incentives assure that emissions are brought down cost-effectively to the level of the overall cap. The Cap-and-Trade Regulation provides assurance that California's 2020 limit will be met because the regulation sets a firm limit on 85 percent of California's GHG emissions. In sum, the Cap-and-Trade Program will achieve aggregate, rather than site specific or project-level, GHG emissions reductions. Also, due to the regulatory architecture adopted by ARB in AB 32, the reductions attributed to the Cap-and-Trade Program can change over time depending on the State's emissions forecasts and the effectiveness of direct regulatory measures (ARB 2014b).

SB 375—the Sustainable Communities and Climate Protection Act of 2008. Senate Bill (SB) 375 was signed into law on September 30, 2008. According to SB 375, the transportation sector is the largest contributor of GHG emissions, which emits over 40 percent of the total GHG emissions in California. SB 375 states, "Without improved land use and transportation policy, California will not be able to achieve the goals of AB 32." SB 375 does the following: (1) requires metropolitan planning

organizations to include sustainable community strategies in their regional transportation plans for reducing GHG emissions, (2) aligns planning for transportation and housing, and (3) creates specified incentives for the implementation of the strategies.

Concerning CEQA, SB 375, as codified in Public Resources Code Section 21159.28, states that CEQA findings determinations for certain projects are not required to reference, describe, or discuss (1) growth inducing impacts or (2) any project-specific or cumulative impacts from cars and light-duty truck trips generated by the project on global warming or the regional transportation network if the project:

1. Is in an area with an approved sustainable communities strategy or an alternative planning strategy that the ARB accepts as achieving the greenhouse gas emission reduction targets;
2. Is consistent with that strategy (in designation, density, building intensity, and applicable policies); and
3. Incorporates the mitigation measures required by an applicable prior environmental document.

AB 1493 Pavley Regulations and Fuel Efficiency Standards. California AB 1493, enacted on July 22, 2002, required the ARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light duty trucks. Implementation of the regulation was delayed by lawsuits filed by automakers and by the EPA's denial of an implementation waiver. The EPA subsequently granted the requested waiver in 2009, which was upheld by the by the U.S. District Court for the District of Columbia in 2011 (ARB 2013d).

The standards are to be phased in during the 2009 through 2016 model years. When fully phased in, the near-term (2009–2012) standards will result in an approximately 22-percent reduction compared with the 2002 fleet, and the mid-term (2013–2016) standards will result in about a 30-percent reduction. Several technologies stand out as providing significant reductions in emissions at favorable costs. These include discrete variable valve lift or camless valve actuation to optimize valve operation rather than relying on fixed valve timing and lift as has historically been done; turbocharging to boost power and allow for engine downsizing; improved multi-speed transmissions; and improved air conditioning systems that operate optimally, leak less, and/or use an alternative refrigerant (ARB 2013e).

The second phase of the implementation for the Pavley bill was incorporated into Amendments to the Low-Emission Vehicle Program referred to as LEV III or the Advanced Clean Cars program. The Advanced Clean Car program combines the control of smog-causing pollutants and GHG emissions into a single coordinated package of requirements for model years 2017 through 2025. The regulation will reduce GHGs from new cars by 34 percent from 2016 levels by 2025. The new rules will reduce pollutants from gasoline and diesel-powered cars, and deliver increasing numbers of zero-emission technologies, such as full battery electric cars, newly emerging plug-in hybrid electric vehicles and hydrogen fuel cell cars. The regulations will also ensure adequate fueling infrastructure is available for the increasing numbers of hydrogen fuel cell vehicles planned for deployment in California (ARB 2011).

SB 1368—Emission Performance Standards. In 2006, the State Legislature adopted SB 1368, which was subsequently signed into law by the Governor. SB 1368 directs the California Public Utilities Commission to adopt a performance standard for GHG emissions for the future power purchases of California utilities. SB 1368 seeks to limit carbon emissions associated with electrical energy consumed in California by forbidding procurement arrangements for energy longer than 5 years from resources that exceed the emissions of a relatively clean, combined cycle natural gas power plant. Because of the carbon content of its fuel source, a coal-fired plant cannot meet this standard because such plants emit roughly twice as much carbon as natural gas, combined cycle plants. Accordingly, the new law effectively prevents California's utilities from investing in, otherwise financially supporting, or purchasing power from new coal plants located in or out of the State. The California Public Utilities Commission adopted the regulations required by SB 1368 on August 29, 2007. The regulations implementing SB 1368 establish a standard for baseload generation owned by, or under long-term contract to publicly owned utilities, of 1,100 lbs CO_2 per megawatt-hour (MWh).

SB 1078—Renewable Electricity Standards. On September 12, 2002, Governor Gray Davis signed SB 1078, requiring California to generate 20 percent of its electricity from renewable energy by 2017. SB 107 changed the due date to 2010 instead of 2017. On November 17, 2008, Governor Arnold Schwarzenegger signed Executive Order S-14-08, which established a Renewable Portfolio Standard target for California requiring that all retail sellers of electricity serve 33 percent of their load with renewable energy by 2020. Governor Schwarzenegger also directed the ARB (Executive Order S-21-09) to adopt a regulation by July 31, 2010, requiring the State's load serving entities to meet a 33 percent renewable energy target by 2020. The ARB Board approved the Renewable Electricity Standard on September 23, 2010 by Resolution 10-23.

SB 350—Clean Energy and Pollution Reduction Act of 2015. The legislature recently approved and the Governor signed SB 350 which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the Bill due to opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.
- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly owned utilities.
- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

SBX 7-7—The Water Conservation Act of 2009. The legislation directs urban retail water suppliers to set individual 2020 per capita water use targets and begin implementing conservation measures

to achieve those goals. Meeting this statewide goal of 20 percent decrease in demand will result in a reduction of almost 2 million acre-feet in urban water use in 2020.

Executive Orders Related to GHG Emissions

California's Executive Branch has taken several actions to reduce GHGs through the use of Executive Orders. Although not regulatory, they set the tone for the State and guide the actions of state agencies.

Executive Order S-3-05. Former California Governor Arnold Schwarzenegger announced on June 1, 2005, through Executive Order S-3-05, the following reduction targets for GHG emissions:

- By 2010, reduce greenhouse gas emissions to 2000 levels.
- By 2020, reduce greenhouse gas emissions to 1990 levels.
- By 2050, reduce greenhouse gas emissions to 80 percent below 1990 levels.

The 2050 reduction goal represents what some scientists believe is necessary to reach levels that will stabilize the climate. The 2020 goal was established to be a mid-term target. Because this is an executive order, the goals are not legally enforceable for local governments or the private sector.

Executive Order B-30-15. On April 29, 2015, Governor Edmund G. Brown Jr. issued an executive order to establish a California GHG reduction target of 40 percent below 1990 levels by 2030. The Governor's executive order aligns California's GHG reduction targets with those of leading international governments ahead of the United Nations Climate Change Conference in Paris late 2015. The executive order sets a new interim statewide GHG emission reduction target to reduce GHG emissions to 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050, and directs the ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of $MMCO_2e$. The executive order also requires the State's climate adaptation plan to be updated every three years and for the State to continue its climate change research program, among other provisions. As with Executive Order S-3-05, this executive order is not legally enforceable against local governments and the private sector. Legislation that would update AB 32 to make post 2020 targets and requirements a mandate is in process in the State Legislature.

Executive Order S-01-07—Low Carbon Fuel Standard. The Governor signed Executive Order S 01-07 on January 18, 2007. The order mandates that a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020. In particular, the executive order established a Low Carbon Fuel Standard (LCFS) and directed the Secretary for Environmental Protection to coordinate the actions of the California Energy Commission, the ARB, the University of California, and other agencies to develop and propose protocols for measuring the "life-cycle carbon intensity" of transportation fuels. This analysis supporting development of the protocols was included in the State Implementation Plan for alternative fuels (State Alternative Fuels Plan adopted by California Energy Commission on December 24, 2007) and was submitted to ARB for consideration as an "early action" item under AB 32. The ARB adopted the Low Carbon Fuel Standard on April 23, 2009.

The Low Carbon Fuel Standard was subject to legal challenge in 2011. Ultimately, on August 8, 2013, the Fifth District Court of Appeal (California) ruled that ARB failed to comply with CEQA and the Administrative Procedure Act (APA) when adopting regulations for Low Carbon Fuel Standards. In a partially published opinion, the Court of Appeal directed that Resolution 09-31 and two executive orders of ARB approving LCFS regulations promulgated to reduce GHG emissions be set aside. However, the court tailored its remedy to protect the public interest by allowing the LCFS regulations to remain operative while ARB complies with the procedural requirements it failed to satisfy.

To address the Court ruling, ARB was required to bring a new LCFS regulation to the Board for consideration in February 2015. The proposed LCFS regulation was required to contain revisions to the 2010 LCFS as well as new provisions designed to foster investments in the production of the low-carbon fuels, offer additional flexibility to regulated parties, update critical technical information, simplify and streamline program operations, and enhance enforcement. The second public hearing for the new LCFS regulation was held on September 24, 2015 and September 25, 2015, where the LCFS Regulation was adopted. The Final Rulemaking Package adopting the regulation was filed with the Office of Administrative Law (OAL) on October 2, 2015. The OAL approved the regulation on November 16, 2015 (ARB 2015e).

Executive Order S-13-08. Executive Order S-13-08 states that "climate change in California during the next century is expected to shift precipitation patterns, accelerate sea level rise and increase temperatures, thereby posing a serious threat to California's economy, to the health and welfare of its population and to its natural resources." Pursuant to the requirements in the order, the 2009 California Climate Adaptation Strategy (California Natural Resources Agency 2009) was adopted, which is the ". . . first statewide, multi-sector, region-specific, and information-based climate change adaptation strategy in the United States." Objectives include analyzing risks of climate change in California, identifying and exploring strategies to adapt to climate change, and specifying a direction for future research.

California Regulations and Building Codes

California has a long history of adopting regulations to improve energy efficiency in new and remodeled buildings. These regulations have kept California's energy consumption relatively flat even with rapid population growth.

Title 20 Appliance Efficiency Regulations. California Code of Regulations, Title 20: Division 2, Chapter 4, Article 4, Sections 1601-1608: Appliance Efficiency Regulations regulates the sale of appliances in California. The Appliance Efficiency Regulations include standards for both federally regulated appliances and non-federally regulated appliances. Twenty-three categories of appliances are included in the scope of these regulations. The standards within these regulations apply to appliances that are sold or offered for sale in California, except those sold wholesale in California for final retail sale outside the State and those designed and sold exclusively for use in recreational vehicles or other mobile equipment (CEC 2012).

Title 24 Energy Efficiency Standards. California Code of Regulations Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings, was first adopted in 1978 in

response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficient technologies and methods. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases GHG emissions. The newest version of Title 24 was adopted by the California Energy Commission (CEC) on May 31, 2012. The standards became effective on July 1, 2014. The CEC has completed the process of preparing the 2016 Building Energy Efficiency Standards that are scheduled to go into effect on January 1, 2017 (CEC 2016).

Title 24 California Green Building Standards Code (California Code of Regulations Title 24, Part 11 code) is a comprehensive and uniform regulatory code for all residential, commercial, and school buildings that went in effect January 1, 2011. The code is updated on a regular basis, with the most recent update consisting of the 2013 California Green Building Code Standards that became effective January 1, 2014. Local jurisdictions are permitted to adopt more stringent requirements, as state law provides methods for local enhancements. The Code recognizes that many jurisdictions have developed existing construction and demolition ordinances, and defers to them as the ruling guidance provided they provide a minimum 50-percent diversion requirement. The code also provides exemptions for areas not served by construction and demolition recycling infrastructure. State building code provides the minimum standard that buildings need to meet in order to be certified for occupancy, which is generally enforced by the local building official.

The California Green Building Standards Code (California Code of Regulations Title 24, Part 11 code) requires:

- **Short-term bicycle parking**. If a commercial project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5 percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack (5.106.4.1.1).
- **Long-term bicycle parking**. For buildings with over 10 tenant-occupants, provide secure bicycle parking for 5 percent of tenant-occupied motorized vehicle parking capacity, with a minimum of one space (5.106.4.1.2).
- **Designated parking**. Provide designated parking in commercial projects for any combination of low-emitting, fuel-efficient and carpool/van pool vehicles as shown in Table 5.106.5.2 (5.106.5.2).
- **Recycling by Occupants**. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling. (5.410.1).
- **Construction waste**. A minimum 50-percent diversion of construction and demolition waste from landfills, increasing voluntarily to 65 and 80 percent for new homes and 80-percent for commercial projects. (5.408.1, A5.408.3.1 [nonresidential], A5.408.3.1 [residential]). All (100 percent) of trees, stumps, rocks and associated vegetation and soils resulting from land clearing shall be reused or recycled (5.408.3).
- **Wastewater reduction**. Each building shall reduce the generation of wastewater by one of the following methods:

1. The installation of water-conserving fixtures or
2. Using nonpotable water systems (5.303.4).

- **Water use savings**. 20-percent mandatory reduction in indoor water use with voluntary goal standards for 30, 35 and 40-percent reductions (5.303.2, A5303.2.3 [nonresidential]).
- **Water meters**. Separate water meters for buildings in excess of 50,000 square feet or buildings projected to consume more than 1,000 gallons per day (5.303.1).
- **Irrigation efficiency**. Moisture-sensing irrigation systems for larger landscaped areas (5.304.3).
- **Materials pollution control**. Low-pollutant emitting interior finish materials such as paints, carpet, vinyl flooring and particleboard (5.404).
- **Building commissioning**. Mandatory inspections of energy systems (i.e., heat furnace, air conditioner, mechanical equipment) for nonresidential buildings over 10,000 square feet to ensure that all are working at their maximum capacity according to their design efficiencies (5.410.2).

Model Water Efficient Landscape Ordinance. The Model Water Efficient Landscape Ordinance (Ordinance) was required by AB 1881 Water Conservation Act. The bill required local agencies to adopt a local landscape ordinance at least as effective in conserving water as the Model Ordinance by January 1, 2010. Reductions in water use of 20 percent consistent with (SBX-7-7) 2020 mandate are expected for Ordinance. Governor Brown's Drought Executive Order of April 1, 2015 (EO B-29-15) directed DWR to update the Ordinance through expedited regulation. The California Water Commission approved the revised Ordinance on July 15, 2015, which became effective on December 15, 2015. New development projects that include landscaped areas of 500 square feet or more are subject to the Ordinance. The update requires:

- More efficient irrigation systems
- Incentives for graywater usage
- Improvements in on-site stormwater capture
- Limiting the portion of landscapes that can be planted with high water use plants
- Reporting requirements for local agencies.

SB 97 and the CEQA Guidelines Update. Passed in August 2007, SB 97 added Section 21083.05 to the Public Resources Code. The code states "(a) On or before July 1, 2009, the Office of Planning and Research shall prepare, develop, and transmit to the Resources Agency guidelines for the mitigation of GHG emissions or the effects of GHG emissions as required by this division, including, but not limited to, effects associated with transportation or energy consumption. (b) On or before January 1, 2010, the Resources Agency shall certify and adopt guidelines prepared and developed by the Office of Planning and Research pursuant to subdivision (a)."

Section 21097 was also added to the Public Resources Code, which provided an exemption until January 1, 2010 for transportation projects funded by the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006 or projects funded by the Disaster Preparedness and Flood Prevention Bond Act of 2006, in stating that the failure to analyze adequately the effects of

GHGs would not violate CEQA. The Natural Resources Agency completed the approval process and the Amendments became effective on March 18, 2010.

The 2010 CEQA Amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of GHG emissions in CEQA documents. The CEQA Amendments fit within the existing CEQA framework by amending existing CEQA Guidelines to reference climate change.

Section 15064.4(b) of the CEQA Guidelines provides direction for lead agencies for assessing the significance of impacts of GHG emissions:

- The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;
- Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; or
- The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

The CEQA Guidelines amendments do not identify a threshold of significance for GHG emissions, nor do they prescribe assessment methodologies or specific mitigation measures. Instead, they call for a "good-faith effort, based on available information, to describe, calculate, or estimate the amount of greenhouse gas emissions resulting from a project." The amendments encourage lead agencies to consider many factors in performing a CEQA analysis and preserve lead agencies' discretion to make their own determinations based upon substantial evidence. The amendments also encourage public agencies to make use of programmatic mitigation plans and programs from which to tier when they perform individual project analyses.

Also amended were CEQA Guidelines Sections 15126.4 and 15130, which address mitigation measures and cumulative impacts, respectively. GHG mitigation measures are referenced in general terms, but no specific measures are championed. The revision to the cumulative impact discussion requirement (Section 15130) simply directs agencies to analyze GHG emissions in an EIR when a project's incremental contribution of emissions may be cumulatively considerable; however, it does not answer the question of when emissions are cumulatively considerable.

Section 15183.5 permits programmatic GHG analysis and later project-specific tiering, as well as the preparation of Greenhouse Gas Reduction Plans. Compliance with such plans can support a determination that a project's cumulative effect is not cumulatively considerable, according to Section 15183.5(b).

In addition, the amendments revised Appendix F of the CEQA Guidelines, which focuses on Energy Conservation. The sample environmental checklist in Appendix G was amended to include GHG questions.

CEQA emphasizes that the effects of GHG emissions are cumulative, and should be analyzed in the context of CEQA's requirements for cumulative impacts analysis (see CEQA Guidelines Section 15130(f)).

California Supreme Court GHG Ruling

In a November 30, 2015 ruling, the California Supreme Court in Center for Biological Diversity (CBD) v. California Department of Fish and Wildlife (CDFW) on the Newhall Ranch project concluded that whether the project was consistent with meeting statewide emission reduction goals is a legally permissible criterion of significance, but the significance finding for the project was not supported by a reasoned explanation based on substantial evidence. The Court offered potential solutions on pages 25-27 of the ruling to address this issue summarized below:

Specifically, the Court advised that:

- **Substantiation of Project Reductions from BAU**. A lead agency may use a BAU comparison based on the Scoping Plan's methodology if it also substantiates the reduction a particular project must achieve to comply with statewide goals. The Court suggested a lead agency could examine the "data behind the Scoping Plan's business-as-usual model" to determine the necessary project-level reductions from new land use development at the proposed location (p. 25).
- **Compliance with Regulatory Programs or Performance Based Standards**. A lead agency "might assess consistency with A.B. 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities. (See Final Statement of Reasons, supra, at p. 64 [greenhouse gas emissions 'may be best analyzed and mitigated at a programmatic level.'].) To the extent a project's design features comply with or exceed the regulations outlined in the Scoping Plan and adopted by the Air Resources Board or other state agencies, a lead agency could appropriately rely on their use as showing compliance with 'performance based standards' adopted to fulfill 'a statewide . . . plan for the reduction or mitigation of greenhouse gas emissions' (CEQA Guidelines § 15064.4(a)(2), (b)(3); see also id., § 15064(h)(3) [determination that impact is not cumulatively considerable may rest on compliance with previously adopted plans or regulations, including 'plans or regulations for the reduction of greenhouse gas emissions']) (p. 26).
- **Compliance with GHG Reduction Plans or Climate Action Plans (CAPs)**. A lead agency may utilize "geographically specific GHG emission reduction plans" such as climate action plans or greenhouse gas emission reduction plans to provide a basis for the tiering or streamlining of project-level CEQA analysis (p. 26).
- **Compliance with Local Air District Thresholds**. A lead agency may rely on "existing numerical thresholds of significance for greenhouse gas emissions" adopted by, for example, local air districts (p. 27).

Therefore, consistent with CEQA Guidelines Appendix G, the three factors identified in CEQA Guidelines Section 15064.4 and the recently issued Newhall Ranch opinion, the GHG impacts would be considered significant if the project would:

- Conflict with a compliant GHG Reduction Plan if adopted by the lead agency;
- Exceed the SJVAPCD GHG Reduction Threshold; or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emission of GHGs.

3.3.4 - San Joaquin Valley Air Pollution Control District

Climate Change Action Plan

On August 21, 2008, the SJVAPCD Governing Board approved a proposal called the Climate Change Action Plan (CCAP). The CCAP began with a public process bringing together stakeholders, land use agencies, environmental groups, and business groups to conduct public workshops to develop comprehensive policies for CEQA guidelines, a carbon exchange bank, and voluntary GHG emissions mitigation agreements for the Governing Board's consideration. The CCAP contains the following goals and actions:

- Develop GHG significance thresholds to address CEQA projects with GHG emission increases.
- Develop the San Joaquin Valley Carbon Exchange for banking and trading GHG reductions.
- Authorize use of the SJVAPCD's existing inventory reporting system to allow use for GHG reporting required by AB 32 regulations.
- Develop and administer GHG reduction agreements to mitigate proposed emission increases from new projects.
- Support climate protection measures that reduce greenhouse gas emissions as well as toxic and criteria pollutants. Oppose measures that result in a significant increase in toxic or criteria pollutant emissions in already impacted areas.

On December 17, 2009, the SJVAPCD Governing Board adopted "Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA," and the policy "District Policy—Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency." The SJVAPCD concluded that the existing science is inadequate to support quantification of the impacts that project-specific GHG emissions have on global climatic change. The SJVAPCD found the effects of project-specific emissions to be cumulative, and without mitigation, their incremental contribution to global climatic change could be considered cumulatively considerable. The SJVAPCD found that this cumulative impact is best addressed by requiring all projects to reduce their GHG emissions, whether through project design elements or mitigation.

The SJVAPCD's approach is intended to streamline the process of determining if project-specific GHG emissions would have a significant effect. Projects exempt from the requirements of CEQA, and projects complying with an approved plan or mitigation program would be determined to have a less

than significant cumulative impact. Such plans or programs must be specified in law or adopted by the public agency with jurisdiction over the affected resources, and must have a certified final CEQA document.

For non-exempt projects, those projects for which there is no applicable approved plan or program, or those projects not complying with an approved plan or program, the lead agency must evaluate the project against performance-based standards and would require the adoption of design elements, known as a Best Performance Standard, to reduce GHG emissions. The Best Performance Standards (BPS) have not yet fully been established, though they must be designed to effect a 29-percent reduction when compared with the BAU projections identified in ARB's AB 32 Scoping Plan.

BAU represents the emissions that would occur in 2020 if the average baseline emissions during the 2002–2004 period were grown to 2020 levels, without control. These standards thus would carry with them pre-quantified emissions reductions, eliminating the need for project-specific quantification. Therefore, projects incorporating BPS would not require specific quantification of GHG emissions, and automatically would be determined to have a less than significant cumulative impact for GHG emissions.

For stationary source permitting projects, BPS means, "The most stringent of the identified alternatives for control of GHG emissions, including type of equipment, design of equipment and operational and maintenance practices, which are achieved-in-practice for the identified service, operation, or emissions unit class." The SJVAPCD has identified BPS for the following sources: boilers; dryers and dehydrators; oil and gas extraction, storage, transportation, and refining operations; cogeneration; gasoline dispensing facilities; volatile organic compound control technology; and steam generators.

For development projects, BPS means, "Any combination of identified GHG emission reduction measures, including project design elements and land use decisions that reduce project-specific GHG emission reductions by at least 29 percent compared with business as usual."

Projects not incorporating BPS would require quantification of GHG emissions and demonstration that BAU GHG emissions have been reduced or mitigated by 29 percent. As stated earlier, ARB's adjusted inventory reduced the amount required by the State to achieve 1990 emission levels from 29 percent to 21.7 percent to account for slower growth experienced since the 2008 recession. According to SJVAPCD guidance, quantification of GHG emissions would be required for all projects for which the lead agency has determined that an environmental impact report is required, regardless of whether the project incorporates BPS.

San Joaquin Valley Carbon Exchange

The SJVAPCD initiated work on the San Joaquin Valley Carbon Exchange in November 2008. The purpose of the carbon exchange is to quantify, verify, and track voluntary GHG emissions reductions generated within the San Joaquin Valley. However, the SJVAPCD has pursued an alternative strategy that incorporates the GHG emissions into its existing Rule 2301—Emission Reduction Credit Offset Banking that formerly only addressed criteria pollutants. The SJVAPCD is also participating with the California Air Pollution Control Officers Association (CAPCOA), of which it is a member, in the

CAPCOA Greenhouse Gas Reduction Exchange (GHG Rx). The GHG Rx is operated cooperatively by air districts that have elected to participate. Participating districts have signed a Memorandum of Understanding (MOU) with CAPCOA and agree to post only those credits that meet the Rx standards for quality. The objective is to provide a secure, low-cost, high-quality, GHG exchange for credits created in California. The GHG Rx is intended to help fulfill compliance obligations, or mitigation needs of local projects subject to environmental review, reducing the uncertainty of using credits generated in distant locations. The SJVAPCD currently has no credits posted to the GHG Rx as of this writing (CAPCOA 2015).

Rule 2301

While the Climate Change Action Plan indicated that the GHG emission reduction program would be called the San Joaquin Valley Carbon Exchange, the District incorporated a method to register voluntary GHG emission reductions into its existing Rule 2301—Emission Reduction Credit Banking through amendments of the rule. Amendments to the rule were adopted on January 19, 2012. The purposes of the amendments to the rule include the following:

- Provide an administrative mechanism for sources to bank voluntary GHG emission reductions for later use.
- Provide an administrative mechanism for sources to transfer banked GHG emission reductions to others for any use.
- Define eligibility standards, quantitative procedures, and administrative practices to ensure that banked GHG emission reductions are real, permanent, quantifiable, surplus, and enforceable.

Fresno Council of Governments

2014 Regional Transportation Plan

The Fresno Council of Governments (Fresno COG) is the Regional Transportation Planning Agency (RTPA) for the Fresno County region. The Fresno COG is in the process of preparing the 2014 Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS). The 2014 RTP is a planning document in cooperation with the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), the California Department of Transportation (Caltrans), and other stakeholders, including transportation system users. SB 375 includes the following four primary findings related to the RTP/SCS development process:

- That the ARB develop regional GHG emission reduction targets for cars and light trucks for each of the 18 MPOs in California, including Fresno COG. ARB approved targets for the San Joaquin Valley in January 2013. The target for Fresno is a per capita reduction in GHG emissions from passenger vehicle travel of 5 percent by 2020 and 10 percent by 2035 relative to 2005 levels. However, the 2014 RTP/SCS includes a target of 9 percent per capita reduction by 2020 and an 11 percent reduction by 2035 relative to 2005 levels (ARB 2015f).
- During the next RTP update, the Fresno COG is required to prepare an SCS that specifies how the GHG emission reduction target set by ARB will be achieved. If the target cannot be met

through the SCS, then an Alternative Planning Strategy (APS) shall be prepared by Fresno COG. Chapter 4 of the 2014 RTP includes the SCS for Fresno COG.

- Streamlines CEQA requirements for specific residential and mixed-use developments that are consistent with the Fresno County SCS or APS (as determined by ARB) to achieve regional GHG emissions reduction target.

3.3.5 - Local

The City of Clovis does not currently have formal GHG emissions reduction plans or recommended emissions thresholds for determining significance associated with GHG emissions from development projects. However, the General Plan includes goals and policies to reduce GHG emissions that are listed below.

General Plan

The City of Clovis adopted its 2014 General Plan in August of 2014. The 2014 General Plan includes the following applicable goals and policies related to improving air quality that may also co-benefit climate change impacts:

Air Quality Element

- **Goal 1:** A local environment that is protected from air pollution and emissions.
- **Policy 1.1:** Land use and transportation. Reduce greenhouse gas and other local pollutant emissions through mixed use and transit-oriented development and well-designed transit, pedestrian, and bicycle systems.
- **Policy 1.6: Alternative fuel infrastructure.** Encourage public and private activity and employment centers to incorporate electric charging and alternative fuel stations.
- **Policy 1.8: Trees.** Maintain or plant trees where appropriate to provide shade, absorb carbon, improve oxygenation, slow stormwater runoff, and reduce the heat island effect.
- **Goal 2:** A region with healthy air quality and lower greenhouse gas emissions.
- **Policy 2.1:** Regional coordination. Support regional efforts to reduce air pollution (criteria air pollutants and greenhouse gas emissions) and collaborate with other agencies to improve air quality at the emission source and reduce vehicle miles traveled.
- **Policy 2.2:** Cross-jurisdictional issues. Collaborate with regional agencies and surrounding jurisdictions to address cross-jurisdictional transportation and air quality issues.
- **Policy 2.6:** Innovative mitigation. Encourage innovative mitigation measures to reduce air quality impacts by coordinating with the SJVAPCD, project applicants, and other interested parties.

Circulation Element

- **Goal 1:** A context-sensitive and “complete streets” transportation network that prioritizes effective connectivity and accommodates a comprehensive range of mobility needs.
- **Policy 1.1: Multimodal network.** The City shall plan, design, operate, and maintain the transportation network to promote safe and convenient travel for all users: pedestrian, bicyclists, transit riders, freight, and motorists.
- **Policy 1.2: Transportation decisions.** Decisions should balance the comfort, convenience, and safety of pedestrians, bicyclists, and motorists.

- **Policy 1.4: Jobs and housing.** Encourage infill development that would provide jobs and services closer to housing, and vice versa, to reduce citywide vehicle miles traveled and effectively utilize the existing transportation infrastructure.
- **Policy 1.5: Neighborhood connectivity.** The transportation network shall provide multimodal access between neighborhoods and neighborhood-serving uses (educational, recreational, or neighborhood commercial uses.
- **Goal 3:** A multimodal transportation network that is safe and comfortable in the context of adjacent neighborhoods.
- **Policy 3.11: Right-of-way design.** Design landscaped parkways, medians, and right-of-ways as aesthetic buffers to improve the community's appearance and encourage non-motorized transportation.
- **Goal 5:** A complete system of trails and pathways accessible to all residents.
- **Policy 5.1: Complete street amenities.** Upgrade existing streets and design new streets to include complete street amenities, prioritizing improvements to bicycle and pedestrian connectivity or safety (consistent with the Bicycle Transportation Master Plan and other master plans).
- **Policy 5.2: Development-funded facilities.** Require development to fund and construct facilities as shown in the Bicycle Transportation Plan when facilities are in or adjacent to the development.
- **Policy 5.4: Homeowner associations.** The city may require homeowner associations to maintain pathways and other bicycle and pedestrian facilities within the homeowner association area.
- **Policy 5.5: Pedestrian access.** Require sidewalks, paths, and crosswalks to provide access to schools, parks, and other activity centers and to provide general pedestrian connectivity throughout the city.

Open Space and Conservation Element

- **Goal 3:** A built environment that conserves and protects the use and quality of water and energy resources.
- **Policy 3.4: Drought-tolerant landscaping**. Promote water conservation through use of drought-tolerant landscaping on existing and new residential properties. Require drought-tolerant landscaping for all new commercial and industrial development and city-maintained landscaping, unless used for recreation purposes.
- **Policy 3.5: Energy and water conservation**. Encourage new development and substantial rehabilitation projects to exceed energy and water conservation and reduction standards set in the California Building Code.
- **Policy 3.6: Renewable Energy**. Promote the use of renewable and sustainable energy sources to serve public and private sector development.
- **Policy 3.7: Construction and design**. Encourage new construction to incorporate energy efficient building and site design strategies.

City of Clovis General Plan Program EIR

The General Plan PEIR includes the following mitigation measure regarding reducing GHG emissions associated with the General Plan Update:

7-1. Prior to issuance of construction permits, the City of Clovis Planning Division shall require that applicants for new development projects submit documentation showing that greenhouse gas (GHG) emissions meet a 29 percent reduction from business-as-usual (BAU) in accordance with the methodology identified by the San Joaquin Valley Air Pollution Control District (SJVAPCD). The documentation shall identify measures to be incorporated into the considered project that would reduce GHG emissions from BAU. Such measures include, but are not limited to the following:

- Provide a pedestrian access network that internally links all uses and connects to existing external streets and pedestrian facilities.
- Provide the minimum number of parking spaces required.
- Create a shared parking program, as feasible.
- Provide bicycle end-of-trip facilities (e.g., bike parking, showers, and lockers).
- Develop rideshare and ride-matching assistance programs.
- For planned residential development, design and incorporate a neighborhood electric vehicle system.
- Design buildings to be electric vehicle charging-station-ready.
- Coordinate with the City of Clovis and/or the Fresno Area Express to install bus stops at or near the project site.
- Design buildings to be energy efficient beyond the requirements of Title 24.
- Design and orient structures to maximize shade in the summer and sun exposure in the winter.
- Install vegetative roofs that cover at least 50 percent of the roof area.
- Design buildings to incorporate passive solar design and solar heaters.
- Install solar panels on carports and parking areas.
- Limit nonessential idling of commercial vehicles beyond Air Toxic Control Measures idling restrictions.

Waste Diversion

With the passage of SB 1016, the Per Capita Disposal Measurement System, only per capita disposal rates are measured. Targets are based on the per capita disposal rates. For 2011, 2012, and 2013, the target rate was 4.7 pounds per person. The City's disposal rates were well below the target with 3.4 pounds per person per day in 2011, 3.3 pounds per person per day in 2012, and 3.0 pounds per day in 2013. Data for later years had not been finalized. The City has met the per capita target on a per-resident basis for each year of the last three reporting years with finalized data (CalRecycle 2016a).

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SECTION 4: MODELING PARAMETERS AND ASSUMPTIONS

4.1 - Model Selection and Guidance

Air pollutant emissions can be estimated by using emission factors and a level of activity. Emission factors are the emission rate of a pollutant given the activity over time; for example, grams of NO_x per horsepower-hour. The ARB has published emission factors for on-road mobile vehicles/trucks in the EMFAC mobile source emissions model and emission factors for off-road equipment and vehicles in the OFFROAD emissions model. An air emissions model (or calculator) combines the emission factors and the various levels of activity and outputs the emissions for the various pieces of equipment.

The California Emissions Estimator Model (CalEEMod) version 2013.2.2 was developed by the South Coast Air Quality Management District in cooperation with other air districts throughout the State. CalEEMod is designed as a uniform platform for government agencies, land use planners, and environmental professionals to quantify potential criteria pollutant and GHG emissions associated with construction and operation from a variety of land uses.

The modeling follows District guidance where applicable from its GAMAQI. The models used in this analysis are summarized as follows:

- Construction emissions: CalEEMod, version 2013.2.2
- Operational emissions: CalEEMod, version 2013.2.2

4.2 - Air Pollutants and GHGs Assessed

4.2.1 - Criteria Pollutants Assessed

The following air pollutants are assessed in this analysis:

- Reactive organic gases (ROG)
- Nitrogen oxides (NO_x)
- Carbon monoxide (CO)
- Sulfur oxides (SO_x)
- Particulate matter less than 10 microns in diameter (PM_{10})
- Particulate matter less than 2.5 microns in diameter ($PM_{2.5}$)

Note that the project would emit ozone precursors ROG and NO_x. However, the project would not directly emit ozone, since it is formed in the atmosphere during the photochemical reaction of ozone precursors.

As noted previously, the project would emit ultrafine particles. However, there is currently no standard separate from the $PM_{2.5}$ standards for ultrafine particles and there is no accepted methodology to quantify or assess the significance of such particles.

4.2.2 - Greenhouse Gases Assessed

This analysis is restricted to GHGs identified by AB 32, which include carbon dioxide, methane, NO_x, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. The project would generate a variety of GHGs, including several defined by AB 32 such as carbon dioxide, methane, and NO_x.

The project may emit GHGs that are not defined by AB 32. For example, the project may generate aerosols through emissions of DPM from the vehicles and trucks that would access the project site. Aerosols are short-lived particles, as they remain in the atmosphere for about one week. Black carbon is a component of aerosol. Studies have indicated that black carbon has a high global warming potential; however, the Intergovernmental Panel on Climate Change states that it has a low level of scientific certainty (IPCC 2007a).

Water vapor could be emitted from evaporated water used for landscaping, but this is not a significant impact because water vapor concentrations in the upper atmosphere are primarily due to climate feedbacks rather than emissions from project-related activities.

The project would emit nitrogen oxides and volatile organic compounds, which are ozone precursors. Ozone is a GHG; however, unlike the other GHGs, ozone in the troposphere is relatively short-lived and can be reduced in the troposphere on a daily basis. Stratospheric ozone can be reduced through reactions with other pollutants.

Certain GHGs defined by AB 32 would not be emitted by the project. Perfluorocarbons and sulfur hexafluoride are typically used in industrial applications, none of which would be used by the project. Therefore, it is not anticipated that the project would emit perfluorocarbons or sulfur hexafluoride.

4.3 - Construction Modeling Assumptions

Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and prevailing weather conditions. Construction emissions result from on-site and off-site activities. On-site emissions principally consist of exhaust emissions from the activity levels of heavy-duty construction equipment, motor vehicle operation, and fugitive dust (mainly PM_{10}) from disturbed soil. Additionally, paving operations and application of architectural coatings would release VOC emissions. Off-site emissions are caused by motor vehicle exhaust from delivery vehicles, worker traffic, and road dust (PM_{10} and $PM_{2.5}$).

The construction schedule was estimated based on the applicant-provided construction schedule for a similar project; however, project-specific construction equipment assumptions are not currently known. CalEEMod default construction equipment schedule and equipment activity is based on detailed construction industry studies. The CalEEMod default construction phase durations consist of 1,005 total working days. Based on the anticipated construction schedule, the estimated number of total work days is 786. Because the CalEEMod default and applicant-provided detailed total construction durations differ, the equipment horsepower-hours were adjusted to conserve the total horsepower-hours consistent with the default estimates.

The construction equipment assumptions are shown in Table 8. The activity for construction equipment is based on the horsepower and load factors of the equipment. In general, the horsepower is the power of an engine—the greater the horsepower, the greater the power. The load factor is the average power of a given piece of equipment while in operation compared with its maximum rated horsepower. A load factor of 1.0 indicates that a piece of equipment continually operates at its maximum operating capacity. This analysis uses the CalEEMod default load factors for off-road equipment.

Table 8: Construction Equipment Assumptions

Activity	Equipment	Default Amount	Default Hours per Day	Project Amount	Project Hours per day	Default Horse-power	Default Load Factor
Demolition	Concrete/Industrial Saws	1	8	1	8	81	0.73
Demolition	Excavators	3	8	3	8	162	0.38
Demolition	Rubber Tired Dozers	2	8	2	8	255	0.4
Site Preparation	Rubber Tired Dozers	3	8	3	8	255	0.4
	Tractors/Loaders/Backhoes	4	8	4	8	97	0.37
Grading	Excavators	2	8	2	8	162	0.38
	Graders	1	8	1	8	174	0.41
	Rubber Tired Dozers	1	8	1	8	255	0.4
	Scrapers	2	8	2	8	361	0.48
	Tractors/Loaders/Backhoes	2	8	2	8	97	0.37
Building Construction	Cranes	1	7	2	5	226	0.29
	Forklifts	3	8	5	6.8	89	0.2
	Generator Sets	1	8	2	5.7	84	0.74
	Tractors/Loaders/Backhoes	3	7	5	6	97	0.37
	Welders	1	8	2	5.7	46	0.45
Paving	Pavers	2	8	2	8	125	0.42
	Paving Equipment	2	8	2	8	130	0.36
	Rollers	2	8	2	8	80	0.38
Architectural Coating	Air Compressors	1	6	1	6	78	0.48
Source: CalEEMod and FirstCarbon Solutions, see CalEEMod output (Appendix A)							

The project was assumed to start construction in July of 2016 and to be completed by July of 2019. If the construction dates move out to later years the emissions would decline due to cleaner off-road construction equipment as a result of regulations. The construction schedule is shown in Table 9. CalEEMod defaults for duration were used in the analysis for the following construction phases: demolition, site preparation, grading, paving, and architectural coating. The duration of the building

construction phase was shortened from 740 working days to 521 working days. As discussed above, the horsepower-hours were adjusted in the CalEEMod runs to provide the most conservative estimate of construction emissions.

Table 9: Construction Schedule

Phase	Phase Start Date	Phase End Date	Total Number of Days
Demolition	7/2/2016	9/9/2016	50
Site Preparation	9/10/2016	10/21/2016	30
Grading	10/22/2016	2/3/2017	75
Building Construction	2/4/2017	2/4/2019	521
Paving	2/5/2019	4/22/2019	55
Architectural Coating	4/23/2019	7/8/2019	55

4.3.1 - Construction Equipment Emission Factors

CalEEMod contains an inventory of construction equipment that incorporates estimates of the number of equipment, their age, their horsepower, and equipment tier from which rates of emissions are developed. The CalEEMod default equipment assumptions were used in this analysis for the estimation of emissions from on-site construction equipment for the unmitigated scenario. CalEEMod's off-road emission factors are based on the equipment populations from the OFFROAD model.

4.3.2 - Demolition

The project site includes several residential structures that will be removed to make way for the project. The site includes five single-family homes with associated outbuildings. Estimates of the volume of material to be removed in cubic yards were based on the square feet and estimated height of each structure.

4.3.3 - Grading

During grading activities, fugitive dust can be generated from the movement of dirt on the project site. CalEEMod estimates dust from dozers moving dirt around, dust from graders or scrapers leveling the land, and loading or unloading dirt into haul trucks. Each of those activities is calculated differently in CalEEMod, based on the number of acres traversed by the grading equipment.

Only some pieces of equipment generate fugitive dust in CalEEMod. The CalEEMod manual identifies various equipment and the acreage disturbed in an 8-hour day:

- Crawler tractors, graders, and rubber tired dozers: 0.5 acre per 8-hour day
- Scrapers: 1 acre per 8-hour day

Therefore, the following acres are the total quantities disturbed per day, per phase, according to the acreage disturbed quantities listed above:

- Demolition = 1 acre per day
- Site preparation = 1.5 acres per day
- Grading = 3 acres per day

It was assumed that soil would be balanced on-site and, therefore, there would be no material imported or exported from the project site.

4.3.4 - Building Construction, Paving, and Architectural Coatings

As discussed above, the duration of the building construction phase was shortened from 740 working days to 521 working days. The horsepower-hours were increased in the CalEEMod run to retain the horse-power hours projected when the CalEEMod default phase duration is used. The analysis uses the default modeling assumptions from CalEEMod for construction equipment during paving and application of architectural coatings.

4.3.5 - Construction Off-site Trips

Worker trips are accounted for during the construction phases, based on 1.25 trips per piece of equipment (the CalEEMod default). The CalEEMod default worker trip length of 10.8 miles was retained. The CalEEMod default vehicle fleet (LD Mix) was used for employee trips.

Vendor trips for the building construction phase are calculated from a study performed by the Sacramento Metropolitan Air Quality Management District (SMAQMD) based on land use and size. The CalEEMod defaults for vendor trips, trip length (7.3 miles), and vehicle fleet (Heavy Duty Truck Vehicle Fleet Mix) were used. The modeling results indicated that 45 haul trips are expected for this project, all of which would occur during the demolition phase.

A summary of the construction-related trips is shown in Table 10. Note that the total number of off-site construction trips would not necessarily occur on the same day, since the various construction activities would vary each day.

Table 10: Construction Off-site Trips

Activity	Construction Trips per Day		
	Worker	Vendor	Haul
Demolition	15	0	45
Site Preparation	18	0	0
Grading	20	0	0
Building Construction	35	10	0
Paving	15	0	0
Architectural Coating	7	0	0
Source: FirstCarbon Solutions and CalEEMod.			

4.4 - Operation

Operational emissions are those emissions that occur when the project is occupied by the future residents. The major sources are summarized below.

4.4.1 - Motor Vehicles

Motor vehicle emissions refer to exhaust and road dust emissions from the automobiles that would travel to and from the project residences.

Project trip generation was obtained from the Institute of Transportation Engineers Trip Generation Manual, 9th Edition for single-family dwelling units.

A pass-by trip accounts for vehicles already on the roadway network that stop at the project site as they pass-by; the pass-by trips are existing vehicle trips in the community. CalEEMod default rates of 3 percent pass-by trips were used in this analysis.

The vehicle fleet mix is defined as the mix of motor vehicle classes active during the operation of the project. Emission factors are assigned to the expected vehicle mix as a function of vehicle class, speed, and fuel use (gasoline and diesel-powered vehicles). The CalEEMod default vehicle fleet mix overstates the percentage of heavy-duty trucks for residential development projects; therefore, the SJVAPCD-approved Residential Fleet Mix was used in the analysis.

4.4.2 - Architectural Coatings (Painting)

Paints release VOC emissions during application and drying. The buildings in the project would be repainted on occasion. CalEEMod defaults were used for this purpose.

4.4.3 - Consumer Products

Consumer products are various solvents used in non-industrial applications, which emit VOCs during their product use. “Consumer Product” means a chemically formulated product used by household and institutional consumers, including but not limited to detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products, but it does not include other paint products, furniture coatings, or architectural coatings (ARB 2011b). The default emission factor developed for CalEEMod was used.

4.4.4 - Landscape Equipment

CalEEMod estimated the landscaping equipment using the default assumptions in the model.

4.4.5 - Electricity

There would be emissions from the power plants that would generate electricity to be used by the project (for lighting, etc.). Electricity emissions estimates are only used in the GHG analysis. CalEEMod was used to estimate these emissions from the project.

Electricity Emission Factor

The default CalEEMod emission factors for Pacific Gas & Electric (from the CEC's year 2006 data) are as follows:

- Carbon dioxide: 641.35 pounds per megawatt hour (lbs/MWh)
- Methane: 0.029 lb/MWh
- Nitrous oxide: 0.006 lb/MWh

It is assumed that the Renewable Electricity Standards would have taken effect by 2020. The Renewable Electricity Standard requires that electricity providers include a minimum of 33 percent renewable energy in their portfolios by the year 2020. In 2006, Pacific Gas & Electric had 12.6 percent renewable energy in its portfolio (California Public Utilities Commission 2011). Therefore, without the renewable energy, PG&E's emission factors in 2006 would have been as follows (shown as unadjusted energy intensity):

- Carbon dioxide: 733.81 lbs/MWh
- Methane: 0.033 lb/MWh
- Nitrous oxide: 0.007 lb/MWh

Compliance with the 33 percent RPS mandated is required by the year 2020. The emission factors for 2020 are therefore estimated by reducing the unadjusted 2006 emission factors by 33 percent, and are as follows:

- Carbon dioxide: 491.65 lbs/MWh
- Methane: 0.022 lb/MWh
- Nitrous oxide: 0.005 lb/MWh

4.4.6 - Electricity Consumption

CalEEMod has three categories for electricity consumption: electricity that is impacted by Title 24 regulations, non-Title 24 electricity, and lighting. The Title 24 uses are defined as the major building envelope systems covered by California's Building Code Title 24 Part 6, such as space heating, space cooling, water heating, and ventilation. Lighting is separate since it can be both part and not part of Title 24. Since lighting is not considered as part of the building envelope energy budget, CalEEMod does not consider lighting to have any further association with Title 24 references in the program. Non-Title 24 includes everything else such as appliances and electronics. Total electricity consumption in CalEEMod is divided into the three categories. The percentage for each category is determined by using percentages derived from the CalEEMod default electricity intensity factors. The percentages are then applied to the electricity consumption to result in the values used in the analysis.

4.4.7 - Natural Gas

There would be emissions from the combustion of natural gas used for the project (water heaters, heat, etc.). CalEEMod has two categories for natural gas consumption: Title 24 and non-Title 24. CalEEMod defaults were used.

4.4.8 - Water and Wastewater

GHG emissions are emitted from the use of electricity to pump water to the project and to treat wastewater. CalEEMod defaults were used.

4.4.9 - Refrigerants

During operation, there may be leakages of refrigerants (hydrofluorocarbons) from air conditioners and the refrigeration system. Hydrofluorocarbons are typically used for refrigerants, which are long-lived GHGs. Residential uses of refrigerants are minor; therefore, they were not estimated.

4.4.10 - Solid Waste

GHG emissions would be generated from the decomposition of solid waste generated by the project. CalEEMod was used to estimate the GHG emissions from this source. The CalEEMod default for the mix of landfill types is as follows:

- Landfill no gas capture: 6%
- Landfill capture gas flare: 94%
- Landfill capture gas energy recovery: 0%

4.4.11 - Vegetation

There is currently some carbon sequestration occurring on-site in the form of rural residential landscaping. The project would plant trees and integrate landscaping into the project design, which would provide carbon sequestration. However, the number of trees to be planted is unknown and data are insufficient to accurately determine the impact that the existing landscaping has on carbon sequestration. For this analysis, it was assumed that the loss and addition of carbon sequestration that are due to the project would be balanced; therefore, emissions due to carbon sequestration were not included.

SECTION 5: AIR QUALITY IMPACT ANALYSIS

This section calculates the expected emissions from construction and operation of the project as a necessary requisite for assessing the regulatory significance of project emissions on a regional and localized level.

5.1 - CEQA Guidelines

The CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on air quality, the type, level, and impact of emissions generated by the project must be evaluated.

The following air quality significance thresholds are contained in Appendix G of the CEQA Guidelines. A significant impact would occur if the project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable national or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);

d) Expose sensitive receptors to substantial pollutant concentrations; or

e) Create objectionable odors affecting a substantial number of people.

While the final determination of whether a project is significant is within the purview of the Lead Agency pursuant to Section 15064(b) of the CEQA Guidelines, the District recommends that its quantitative air pollution thresholds be used to determine the significance of project emissions. If the Lead Agency finds that the project has the potential to exceed these air pollution thresholds, the project should be considered to have significant air quality impacts. The applicable District thresholds and methodologies are contained under each impact statement below.

5.2 - Impact Analysis

5.2.1 - Consistency with Air Quality Plan

Impact AIR-1:	**The project would not conflict with or obstruct implementation of the applicable air quality plan.**

Impact Analysis

The CEQA Guidelines indicate that a significant impact would occur if the project would conflict with or obstruct implementation of the applicable air quality plan. The GAMAQI does not provide specific

guidance on analyzing conformity with the Air Quality Plan (AQP). Therefore, this document proposes the following criteria for determining project consistency with the current AQPs:

1. Will the project result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQPs? This measure is determined by comparison to the regional and localized thresholds identified by the District for Regional and Local Air Pollutants.
2. Will the project conform to the assumptions in the AQPs?
3. Will the project comply with applicable control measures in the AQPs?

The use of the criteria listed above is a standard approach for CEQA analysis of projects in the District's jurisdiction, as well as within other air districts, for the following reasons:

- Significant contribution to existing or new exceedances of the air quality standards would be inconsistent with the goal of attaining the air quality standards.
- AQP emissions inventories and attainment modeling are based on growth assumptions for the area within the air district's jurisdiction.
- AQPs rely on a set of air district-initiated control measures as well as implementation of federal and state measures to reduce emissions within their jurisdictions, with the goal of attaining the air quality standards.

AQPs are plans for reaching attainment of air quality standards. The growth assumptions, emission inventory, and control measures to reduce emissions are analyzed to determine if the Air Basin can reach attainment for the ambient air quality standards by the schedule required by the federal Clean Air Act. In order to show attainment of the standards, the District analyzes the growth projections in the valley, contributing factors in air pollutant emissions and formations, and existing and adopted emissions controls. The District then formulates a control strategy to reach attainment that includes both State and District regulations and other local programs and measures.

Contribution to Air Quality Violations

A measure for determining if the project is consistent with the air quality plans is if the project would not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the air quality plans. Regional air quality impacts and attainment of standards are the result of the cumulative impacts of all emission sources within the air basin. Individual projects are generally not large enough to contribute measurably to an existing violation of air quality standards. Therefore, the cumulative impact of the project is based on its cumulative contribution. Because of the region's nonattainment status for ozone, $PM_{2.5}$, and PM_{10}, if project-generated emissions of either of the ozone precursor pollutants (ROG and NO_x), PM_{10}, or $PM_{2.5}$ would exceed the District's significance thresholds, then the project would be considered to contribute to violations of the applicable standards and conflict with the attainment plans.

As discussed in Impact AIR-2 below, emissions of ROG, NO_x, PM_{10}, and $PM_{2.5}$ associated with the construction and operation of the project would not exceed the District's significance thresholds. As shown in Impact AIR-2, the project would not result in CO hotspots that would violate CO standards. Therefore, the project would not contribute to air quality violations.

Consistency with Assumptions in AQPs

The primary way of determining whether a project is consistent with the AQP's assumptions is to determine if the General Plan is consistent with the growth assumptions used in the AQPs for the Air Basin and if the project is consistent with the applicable General Plan. As required by California law, city and county General Plans contain a Land Use Element that details the types and quantities of land uses that the city or county estimates will be needed for future growth, and designates locations for land uses to regulate growth. The Fresno COG uses the growth projections and land use information in adopted general plans, among other sources, to estimate future average daily trips and then vehicle miles traveled (VMT), which are then provided to the District to estimate future emissions in the AQPs. Existing and future pollutant emissions computed in the AQP are based on land uses from area general plans. AQPs provide the amount of emission reductions required to reach attainment of the air standards based on the projected growth in emissions and includes control measures required to achieve those reductions by the deadlines mandated by the Clean Air Act.

The applicable General Plan for the project is the City of Clovis General Plan, which was adopted in 2014, which is after the SJVAPCD's adoption of the latest AQPs. In this case, the project site was outside the city boundary and within the sphere of influence in the City of Clovis 2014 General Plan. The project site was designated RR—Rural Residential (1 dwelling unit/2 acres) in the City of Clovis 2014 General Plan. The General Plan is amended up to four times per year to allow changes to the planned land use and other plan elements as needed to accommodate development proposals that are not currently consistent with the General Plan. Projects that are designated for development in the General Plan Land Use Plan are generally considered to be consistent with assumptions used to assess air quality impacts in the General Plan PEIR and can rely on the Statement of Overriding Considerations (SOC) adopted for significant and unavoidable air quality impacts. Projects requiring a General Plan Amendment (GPA) require their own assessment to determine consistency with the General Plan.

The changes in land use approved by the GPAs are incorporated into the modeling assumptions of the regional transportation model on a periodic basis. The modeling results from the regional transportation model are used to comply with federal Transportation Conformity that requires nonattainment pollutants not to exceed the emission budget from the AQP. As long as the projected Conformity inventory does not exceed the emission budget, the regional transportation plans can be found to be in conformity with the applicable AQP. The 2015 Conformity Analysis for 2015 Regional Transportation Improvement Program (RTIP) and the 2014 Regional Transportation Plan (RTP) found that the growth projected for the region would not result in emissions exceeding the Conformity budgets for the criteria pollutants ROG, NO_x, PM_{10}, and $PM_{2.5}$. The pollutant closest to the budget amount is NO_x. The transportation NO_x budget for Fresno County is 13.5 tons per day and the projected emissions are 11.9 tons per day providing a surplus of 1.6 tons per day (Fresno COG 2015). Therefore, the County is 11.9 percent below the NO_x budget for the 2023 ozone attainment year.

The project's NO_x emissions are 0.94 ton per year or 0.0025 ton per day. Although not currently accounted for in the AQP, the additional contribution of project emissions adds an insignificant amount to the County Conformity inventory. Designation of additional land for development increases the amount of land available for development but it does not necessarily increase the regional growth forecast since it may absorb growth already projected for elsewhere in the region. Even if the project resulted in an increased rate of growth, it would only consume 0.16 percent of the surplus NO_x. Therefore, it is reasonable to conclude that the project would not adversely affect the AQP.

The General Plan PEIR found the growth allowed by the plan to be inconsistent with the SJVAPCD AQP because the emissions at buildout exceeded the criteria pollutant emission thresholds (see Impact AIR-2) and found the impact to be significant and unavoidable and adopted a Statement of Overriding Considerations (SOC). The General Plan PEIR included mitigation measures to reduce the significant impact to the extent feasible. The General Plan PEIR indicates that application of SJVAPCD Rule 9510—Indirect Source Review and implementation of the General Plan policies and implementation actions would reduce impacts to the extent feasible. The project is required to comply with Rule 9510 and is consistent with General Plan policies and implementation actions as described in Table 11.

Table 11: Consistency with General Plan Policies

General Plan Policy	Project Consistency
Air Quality Policy 1.1: Land use and transportation. Reduce greenhouse gas and other local pollutant emissions through mixed use and transit-oriented development and well-designed transit, pedestrian, and bicycle systems.	**Consistent.** The project is approximately 3.6 miles from existing downtown Clovis and approximately 0.85 mile east of Woods Elementary School. An existing Class I Bike Path runs adjacent the northern boundary of the project site. Residents will have easy access to the City of Clovis's Proposed Class II Bike Lane, which will connect to the existing Class II Bike Lane approximately 0.5 mile from the project site. The proposed bike lane would run alongside the southern and eastern borders of the project site. The City's existing and proposed paths connect destinations throughout the area. Enhancements to encourage walking and bicycling will reduce driving and related pollutant emissions.
Air Quality Policy 1.2: Sensitive land uses. Prohibit the future siting of sensitive land uses within the distances of emission sources as defined by the California Air Resources Board, without sufficient mitigation.	**Consistent.** The project does not locate sensitive receptors within the distances of emission sources as defined by the California Air Resources Board.
Air Quality Policy 1.3: Construction activities. Encourage the use of best management practices during construction activities to reduce emissions of criteria pollutants as outlined by the San Joaquin Valley Air Pollution Control District (SJVAPCD).	**Consistent.** As shown in Table 13, the project's construction emissions would fall well below the thresholds for air pollutant emissions. In addition, the project will be required to prepare a Dust Control Plan containing BMPs to comply with Regulation VIII—Fugitive PM_{10} Prohibitions.

Table 11 (cont.): Consistency with General Plan Policies

General Plan Policy	Project Consistency
Air Quality Policy 1.6: Alternative fuel infrastructure. Encourage public and private activity and employment centers to incorporate electric charging and alternative fuel stations.	**Consistent.** The project would not preclude future installment of electrical vehicle charging systems in individual residences.
Air Quality Policy 1.8: Trees. Maintain or plant trees where appropriate to provide shade, absorb carbon, improve oxygenation, slow stormwater runoff, and reduce the heat island effect.	**Consistent.** The project would incorporate landscaping throughout the project site. The incorporated landscaping would provide shade, absorb carbon, improve oxygenation, slow stormwater runoff, and reduce the heat island effect.
Air Quality Policy 2.1: Regional coordination. Support regional efforts to reduce air pollution (criteria air pollutants and greenhouse gas emissions) and collaborate with other agencies to improve air quality at the emission source and reduce vehicle miles traveled.	**Not directly applicable.** However, residents can participate in educational and grant programs designed to reduce criteria pollutant emissions developed through regional coordination.
Air Quality Policy 2.2: Cross-jurisdictional issues. Collaborate with regional agencies and surrounding jurisdictions to address cross-jurisdictional transportation and air quality issues.	**Not directly applicable.** However, residents can participate in educational and grant programs designed to reduce criteria pollutant emissions developed through regional coordination.
Air Quality Policy 2.6: Innovative mitigation. Encourage innovative mitigation measures to reduce air quality impacts by coordinating with the SJVAPCD, project applicants, and other interested parties.	**Not directly applicable.** However, residents can participate in educational and grant programs designed to reduce criteria pollutant emissions developed through regional coordination.
Circulation Policy 1.1: Multimodal network. The City shall plan, design, and maintain the transportation network to promote safe and convenient travel for all users: pedestrian, bicyclists, transit riders, freight, and motorists.	**Consistent.** The project will be within the City of Clovis. The City's current Bicycle System Master Plan includes a variety of features designed to provide safe and convenient travel for users of all modes of transportation. Residents will have easy access to the trail systems that will connect to destinations throughout the area.
Circulation Policy 1.2: Transportation decisions. Decisions should balance the comfort, convenience, and safety of pedestrian, bicyclists, and motorists.	**Consistent.** Residents will have easy access to the existing and planned trail systems that provide convenience and safety for pedestrians and bicyclists. The project site is less than 0.1 mile from both an Existing Class I Bike Path and a Proposed Class II Bike Lane.
Circulation Policy 1.4: Jobs and housing. Encourage infill development that would provide jobs and services closer to housing, and vice versa, to reduce citywide vehicle miles traveled and effectively utilize the existing transportation infrastructure.	**Consistent.** The project is approximately 3.6 miles from existing downtown Clovis and approximately 0.85 mile east of Woods Elementary School. The project is within one mile of a mix of land uses including educational, commercial, and recreational.

Table 11 (cont.): Consistency with General Plan Policies

General Plan Policy	Project Consistency
Circulation Policy 1.5: Neighborhood connectivity. The transportation network shall provide multimodal access between neighborhoods and neighborhood-serving uses (educational, recreational, or neighborhood commercial uses).	**Consistent.** The project will be within the City of Clovis, which emphasizes neighborhood access and connectivity. The project is within 1 to 2 miles of multiple existing educational, recreational, and commercial uses.
Circulation Policy 3.11: Right-of-way design. Design landscaped parkways, medians, and right-of-ways as aesthetic buffers to improve the community's appearance and encourage non-motorized transportation.	**Consistent.** An existing Class I Bike Path runs adjacent to the northern boundary of the project site. In addition, the project site is approximately 0.5 mile from an existing Class II Bike Lane. The lane is proposed to continue and run adjacent to eastern and southern boundaries of the project site. Access to the trail systems will encourage future residents to use non-motorized transportation. The project will include atheistically pleasing landscaping.
Circulation Policy 5.1: Complete street amenities. Upgrade existing streets and design new streets to include complete street amenities, prioritizing improvements to bicycle and pedestrian connectivity or safety (consistent with the Bicycle Transportation Master Plan and other master plans).	**Consistent.** The project would be required to upgrade existing streets fronting the property in accordance with City standards.
Circulation Policy 5.5: Pedestrian access. Require sidewalks, paths, and crosswalks to provide access to schools, parks, and other activity centers to provide general pedestrian connectivity throughout the city.	**Consistent.** Future residents will be able to utilize sidewalks and paths constructed in compliance with City requirements in this area. An existing Class I Bike Path runs along the northern boundary of the project site and provides general pedestrian connectivity to destinations throughout the City.
Source: City of Clovis General Plan 2014.	

The air quality mitigation measures and standard conditions from the General Plan PEIR and a discussion of project compliance with each measure are provided in Table 12.

Table 12: Compliance with General Plan PEIR Mitigation Measures

Mitigation Measure	Project Compliance
SC-1: Prior to project approval, each applicant for individual, site-specific developments under the General Plan shall comply with the San Joaquin Valley Air Pollution Control District rules and regulations, including, without limitation, Indirect Source Rule 9510. The applicant shall document, to the City's reasonable satisfaction, its compliance with this standard condition.	The project is required to submit an Air Impact Assessment Application to the SJVAPCD to comply with Rule 9510. The project is required to submit a Dust Control Plan to comply with SJVAPCD Rule 8020.

Table 12 (cont.): Compliance with General Plan PEIR Mitigation Measures

Mitigation Measure	Project Compliance
3-1: Prior to issuance of any construction permits, development project applicants shall prepare and submit to the City of Clovis Planning Division a technical assessment evaluating potential project construction-related air quality impacts. The evaluation shall be prepared in conformance with San Joaquin Valley Air Pollution Control District (SJVAPCD) methodology in assessing air quality impacts. If construction-related criteria air pollutants are determined to have the potential to exceed the SJVAPCD adopted thresholds of significance, as identified in the Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), the City of Clovis Planning Division shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during construction activities to below these thresholds. These identified measures shall be incorporated into all appropriate construction documents (e.g., construction management plans) submitted to the City and shall be verified by the City's Planning Division.	The analysis of construction emissions is included herein. No criteria pollutant construction emissions exceed SJVPACD thresholds.
3-2: Prior to discretionary approval, applicants for phased development projects (i.e., construction would overlap operation/opening of the project) involving residential land uses shall coordinate with the San Joaquin Valley Air Pollution Control District (SJVAPCD) or the City of Clovis in conjunction with the SJVAPCD in preparation of a health risk assessment (HRA) for construction activities. If the construction HRA identifies risk impacts that exceed the standards as determined by the SVJAPCD at the time the project is considered, it shall identify measures to reduce these impacts to below these standards. Recommended measures may include those identified in Mitigation Measure 3-1. The recommendations of the construction HRA shall be incorporated into all construction management plans which shall be submitted to the City and verified by the City's Planning Division.	The project grading activities and site preparation activities that would generate the greatest amount of emissions during construction will not overlap with project operation. Most emissions during construction are emitted during the site preparation and grading phases when heavy equipment is used to prepare the land for construction. The entire site will be graded at one time; therefore, no grading would occur after housing is occupied. Limited amounts of diesel equipment are used during home construction that would not contribute substantially to the health risk during construction. Therefore, no HRA was needed for the analysis to comply with this measure.
3-3: Prior to project approval, development project applicants shall prepare and submit to the City of Clovis Planning Division a technical assessment evaluating potential project operation phase-related air quality impacts. The evaluation shall be prepared in conformance with San Joaquin Valley Air Pollution Control District (SJVAPCD) methodology in assessing air quality impacts. If operational-related criteria air pollutants are determined to have the potential to	The analysis of project operational emissions is included herein. No criteria pollutant operational emissions exceed SJVPACD thresholds.

Table 12 (cont.): Compliance with General Plan PEIR Mitigation Measures

Mitigation Measure	Project Compliance
exceed the SJVAPCD adopted thresholds of significance, as identified in the Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI), the City of Clovis Planning Division shall require that applicants for new development projects incorporate mitigation measures to reduce air pollutant emissions during operational activities. The identified measures shall be included as part of the Standard Conditions of Approval.	
3-4: Prior to project approval, the City of Clovis Planning Division shall require applicants for individual, site-specific developments to consider establishing a Voluntary Emission Reduction Agreement (VERA) with the San Joaquin Valley Air Pollution Control District. Under this agreement, project proponents may enter into an agreement where funds are used to develop and implement emission reduction projects.	The project does not exceed SJVAPCD significance thresholds; therefore, no VERA would be required to reduce project impacts.
3-5: Prior to discretionary project approval, the City of Clovis shall evaluate new development proposals for sensitive land uses (e.g., residential, schools, day care centers) within the City for potential incompatibilities with regard to the California Air Resources Board's Air Quality and Land Use Handbook: A Community Health Perspective (April 2005). Applicants for sensitive land uses that are within the recommended buffer distances shall submit a health risk assessment (HRA) to the City of Clovis prior to future discretionary project approval. The HRA shall be prepared in accordance with policies and procedures of the state Office of Environmental Health Hazard Assessment (OEHHA) and the San Joaquin Valley Air Pollution Control District. The latest OEHHA guidelines shall be used for the analysis, including age sensitivity factors, breathing rates, and body weights appropriate for children age 0 to 6 years. If the HRA shows that the incremental cancer risk exceeds ten in one million (10E-06), the appropriate non-cancer hazard index exceeds 1.0, or if the PM_{10} or $PM_{2.5}$ ambient air quality standard increment exceeds 2.5 µg/m3, the applicant will be required to identify and demonstrate that mitigation measures are capable of reducing potential cancer and non-cancer risks to an acceptable level (i.e., below ten in one million or a hazard index of 1.0), including appropriate enforcement mechanisms**.**	The evaluation of impacts to sensitive receptors is included herein. No sources of toxic emissions identified by the ARB Air Quality and Land Use Handbook were identified within the recommended buffer distances.

Table 12 (cont.): Compliance with General Plan PEIR Mitigation Measures

Mitigation Measure	Project Compliance
3-6: Prior to discretionary project approval, applicants for industrial or warehousing land uses shall coordinate with the San Joaquin Valley Air Pollution Control District (SJVAPCD) or the City of Clovis in conjunction with the SJVAPCD to determine the appropriate level of health risk assessment (HRA) required. All HRAs shall be submitted to the City of Clovis.	The project is a residential development. This mitigation measure is not applicable.

Air Quality Plan Control Measures

The AQP contains a number of control measures, which are enforceable requirements through the adoption of rules and regulations. A detailed description of rules and regulations that apply to this project is provided in Section 2.2, Regulatory Setting. The project would comply with all applicable SJVAPCD rules and regulations. Therefore, the project complies with this criterion and would not conflict with or obstruct implementation of the applicable air quality attainment plan.

Conclusion

The project's emissions are less than significant for all criteria pollutants and would not result in inconsistency with the AQP for this criterion. The project is currently within Clovis's Sphere of Influence, within unincorporated Fresno County; the project site would be annexed as part of the approval process. The project includes a general plan amendment from Rural Residential to Low Density Residential and zone change to change the zoning of the project area from R-R—Rural Residential (0-0.5 dwelling units per acre) to R-1. The project's proposed land use designation is consistent with the land use policies of the City of Clovis 2014 General Plan. The project complies with all applicable policies, implementation actions and mitigation measures of the 2014 General Plan; therefore, the project is not considered inconsistent with the AQP, and the impact would be less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.2 - Potential for Air Quality Standard Violation

Impact AIR-2: **The project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation.**

Impact Analysis

Regional Emissions

Air pollutant emissions have regional effects and localized effects. This analysis assesses the regional effects of the project's criteria pollutant emissions in comparison to SJVAPCD thresholds of significance for short-term construction activities and long-term operation of the project. Localized emissions from project construction and operation are also assessed using concentration-based thresholds that determine if the project would result in a localized exceedance of any ambient air quality standards or would make a cumulatively considerable contribution to an existing exceedance.

The primary pollutants of concern during project construction and operation are ROG, NO_x, PM_{10}, and $PM_{2.5}$. The SJVAPCD GAMAQI adopted in 2015 contains thresholds for CO, NO_x, ROG, SO_x, PM_{10}, and $PM_{2.5}$.

Ozone is a secondary pollutant that can be formed miles from the source of emissions, through reactions of ROG and NO_x emissions in the presence of sunlight. Therefore, ROG and NO_x are termed ozone precursors. The Air Basin often exceeds the state and national ozone standards. Therefore, if the project emits a substantial quantity of ozone precursors, the project may contribute to an exceedance of the ozone standard. The Air Basin also exceeds air quality standards for PM_{10}, and $PM_{2.5}$; therefore, substantial project emissions may contribute to an exceedance for these pollutants. The District's annual emission significance thresholds used for the project define the substantial contribution for both operational and construction emissions as follows:

- 100 tons per year CO
- 10 tons per year NO_x
- 10 tons per year ROG
- 27 tons per year SO_x
- 15 tons per year PM_{10}
- 15 tons per year $PM_{2.5}$

The project does not contain sources that would produce substantial quantities of SO_2 emissions during construction and operation. Modeling conducted for the project show that SO_2 emissions are well below the SJVAPCD GAMAQI thresholds, as shown in the modeling results contained in Appendix A. No further analysis of SO_2 is required.

Construction Emissions

Construction emissions associated with the project are shown for the years 2016, 2017, 2018, and 2019 in Table 13. For assumptions in estimating the emissions, please refer to Section 4, Modeling Parameters and Assumptions. As shown in Table 13, the emissions are below the significance thresholds in each construction year. Therefore, the emissions are less than significant on a project basis.

Table 13: Construction Air Pollutant Emissions Table (2016–2019)

Year	Emissions (tons per year)				
	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
2016 Construction					
Demolition	0.11	1.15	0.90	0.06	0.05
Site Preparation	0.08	0.82	0.63	0.17	0.11
2016 Grading	0.16	1.87	1.25	0.24	0.14
2016 Construction Subtotal	**0.35**	**3.84**	**2.78**	**0.47**	**0.31**
2017 Construction					
2017 Grading	0.08	0.87	0.60	0.19	0.10
2017 Building Construction	0.55	4.54	3.37	0.34	0.29
2017 Construction Subtotal	**0.62**	**5.41**	**3.96**	**0.53**	**0.39**
2018 Construction					
2018 Building Construction	0.52	4.45	3.59	0.32	0.28
2018 Construction Subtotal	**0.52**	**4.45**	**3.59**	**0.32**	**0.28**
2019 Construction					
2019 Building Construction	0.04	0.38	0.33	0.03	0.02
Paving	0.04	0.41	0.41	0.03	0.02
Architectural Coating	1.63	0.05	0.06	0.01	0.00
2019 Construction Subtotal	**1.71**	**0.85**	**0.80**	**0.06**	**0.05**
Significance threshold (tons/year)	10	10	100	15	15
Exceed threshold—significant impact?	No	No	No	No	No

Notes:
PM_{10} and $PM_{2.5}$ emissions are from the mitigated output to reflect compliance with Regulation VIII—Fugitive PM_{10} Prohibitions.
ROG = reactive organic gases NO_x = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Source: CalEEMod output (Appendix A).

Operational Emissions

Operational emissions occur over the lifetime of the project and are from two main sources: area sources and motor vehicles, or mobile sources. Construction is scheduled to be completed in a single phase. Operations were modeled for the earliest year when all units would be completed in 2019. The SJVAPCD considers construction and operational emissions separately when making significance determinations; in any case, the annual operational emissions combined with the annual construction emissions would not exceed the SJVAPCD thresholds of significance.

For assumptions in estimating the emissions, please refer to Section 4, Modeling Parameters and Assumptions. The emissions modeling results for project operation are summarized in Table 14.

Please note that these results include the benefits from compliance with mandated regulations not yet incorporated into CalEEMod, and project design and location using the CalEEMod mitigation component. These measures and regulations are considered part of the project baseline; however, the results are presented in the CalEEMod mitigated model output and are not considered mitigation required for CEQA compliance.

Reductions from land use and transportation measures related to the project's location, site design, and proximity to alternative modes of transportation are calculated by CalEEMod and are based on the methodology presented in California Air Pollution Control Officers Association's (CAPCOA's) 2010 report, Quantifying Greenhouse Gas Mitigation Measures. As shown in Table 14, the emissions are below the SJVAPCD significance thresholds and therefore would result in a less than significant impact.

Table 14: Operational Air Pollutant Emissions (2019)

Source	Emissions (tons per year)				
	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$
Area	0.87	0.01	0.72	0.01	0.01
Energy	0.01	0.11	0.05	0.01	0.01
Mobile	0.49	0.99	5.24	0.99	0.28
Total	**1.37**	**1.11**	**6.01**	**1.01**	**0.29**
Significance threshold	10	10	100	15	15
Exceed threshold—significant impact?	No	No	No	No	No

Notes:
ROG = reactive organic gases NO_x = nitrogen oxides PM_{10} and $PM_{2.5}$ = particulate matter
Area source emissions include emissions from natural gas, landscape, and painting.
Source: CalEEMod output (Appendix A).

Localized Pollutant Analysis

Emissions occurring at or near the project have the potential to create a localized impact also referred to as an air pollutant hotspot. Localized emissions are considered significant if when combined with background emissions, they would result in exceedance of any health-based air quality standard. In locations that already exceed standards for these pollutants, significance is based on a significant impact level (SIL) that represents the amount that is considered a cumulatively considerable contribution to an existing violation of an air quality standard.

The SJVAPCD's GAMAQI includes screening thresholds for identifying projects that need detailed analysis for localized impacts. Projects with on-site emission increases from construction activities or operational activities that exceed the 100 pounds per day screening level of any criteria pollutant after compliance with Rule 9510 and implementation of all enforceable mitigation measures would require preparation of an ambient air quality analysis. The criteria pollutants of concern for localized impact in the SJVAB are PM_{10}, $PM_{2.5}$, NO_2, and CO.

An analysis of maximum daily emissions during construction and operation was conducted to determine if emissions would exceed the 100 pounds per day screening threshold for any pollutant of concern. The results of the analysis are presented in Table 15. The project would not exceed daily emission thresholds during construction and operation for any pollutant of concern. Operational emissions include emissions generated on-site by area sources such as natural gas combustion and landscape maintenance, and off-site by motor vehicles accessing the project. Most motor vehicle emissions would occur distant from the site and would not contribute to a violation of ambient air quality standards, making the analysis highly conservative. CO violations require heavy traffic volumes and extreme traffic congestion that would not occur at or near the project site; therefore, operational CO emission hotspots are highly unlikely.

Table 15: Maximum Daily Air Pollutant Emissions

Source	Emissions (pounds per day)			
	NO_x	CO	PM_{10}	$PM_{2.5}$
2016 Construction	74.92	50.20	11.22	7.21
2017 Construction	69.68	47.74	7.39	4.71
2018 Construction	34.10	27.84	2.50	2.11
2019 Construction	30.74	27.05	2.20	1.83
Operations (2019)	6.73	40.44	6.09	1.85
Maximum Daily Emissions	**74.92**	**50.20**	**11.22**	**7.21**
Screening threshold	100	100	100	100
Exceed screening threshold?	No	No	No	No

Notes:
The highest emissions occur during the winter modeling run for NO_x, PM_{10}, and $PM_{2.5}$. The highest CO emissions occur during the summer modeling run for operations and 2016, 2017, and 2019 construction. The highest CO emissions occur during the winter modeling run for 2018 construction.
NO_x = nitrogen oxides CO = carbon monoxide PM_{10} and $PM_{2.5}$ = particulate matter
N/A—Not applicable
Source: CalEEMod output (Appendix A).

The project would not exceed SJVAPCD screening thresholds for requiring additional ambient air quality modeling; therefore, the project's localized criteria pollutant impacts are less than significant.

Carbon Monoxide Hot Spot Analysis

Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The SJVAPCD provides screening criteria to determine when to quantify local CO concentrations based on impacts to the level of service (LOS) of roadways in the project vicinity.

Construction of the project would result in minor increases in traffic for the surrounding road network during the duration of construction. Motor vehicles accessing the site when it becomes operational would result in a minor increase in daily trips that would not substantially reduce the LOS. Furthermore, local roadways are not identified as operating at unacceptable conditions under

existing and future buildout conditions, according the City of Clovis General Plan. In addition, the highest background 8-hour average of carbon monoxide, as shown in Table 2, is 2.06 ppm, which is 78 percent lower than the state ambient air quality standard of 9.0 ppm. Therefore, the project would not significantly contribute to an exceedance of state or federal CO standards.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.3 - Cumulative Impacts

Impact AIR-3:	**The project would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors).**

Impact Analysis

To result in a less than significant impact, the following criteria must be true:

1. Regional analysis: emissions of nonattainment pollutants must be below the District's regional significance thresholds. This is an approach recommended by the District in its GAMAQI.
2. Summary of projections: the project must be consistent with current air quality attainment plans including control measures and regulations. This is an approach consistent with Section 15130(b) of the CEQA Guidelines.
3. Cumulative health impacts: the project must result in less than significant cumulative health effects from the nonattainment pollutants. This approach correlates the significance of the regional analysis with health effects, consistent with the court decision, *Bakersfield Citizens for Local Control v. City of Bakersfield* (2004) 124 Cal.App.4th 1184, 1219-20.

Step 1: Regional Analysis

If an area is in nonattainment for a criteria pollutant, then the background concentration of that pollutant has historically exceeded the ambient air quality standard. It follows that if a project exceeds the regional threshold for that nonattainment pollutant, then it would result in a cumulatively considerable net increase of that pollutant and result in a significant cumulative impact.

The Air Basin is in nonattainment for PM_{10}, $PM_{2.5}$, and ozone. Therefore, if the project exceeds the regional thresholds for PM_{10}, or $PM_{2.5}$, then it contributes to a cumulatively considerable impact for

those pollutants. If the project exceeds the regional threshold for NO_x or ROG, then it follows that the project would contribute to a cumulatively considerable impact for ozone.

Regional emissions include those generated from all on-site and off-site activities. Regional significance thresholds have been established by the District because emissions from projects in the Air Basin can potentially contribute to the existing emission burden and possibly affect the attainment and maintenance of ambient air quality standards. Projects within the Air Basin region with regional emissions in excess of any of the thresholds presented previously are considered to have a significant regional air quality impact.

The criteria pollutant emissions analysis assessed whether the project would exceed the District's thresholds of significance. As shown in Table 13 to Table 15, criteria pollutant emissions would not exceed any threshold of significance during project construction or operation. Therefore, the combination of unmitigated project emissions with the criteria pollutants from other sources within the Air Basin would not cumulatively contribute to a significant impact according to this criterion.

Step 2: Plan Approach

Section 15130(b) of the CEQA Guidelines states the following:

> The following elements are necessary to an adequate discussion of significant cumulative impacts: 1) Either: (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.

In accordance with CEQA Guidelines 15130(b), this analysis of cumulative impacts is based on a summary of projections analysis. The SJVAPCD attainment plans are based on a summary of projections that accounts for projected growth throughout the Air Basin and the controls needed to achieve ambient air quality standards. This analysis considers the current CEQA Guidelines, which includes the amendments approved by the Natural Resources Agency and effective on March 18, 2010. The Air Basin is in nonattainment or maintenance status for ozone and particulate matter (PM_{10} and $PM_{2.5}$), which means that concentrations of those pollutants currently exceed the ambient air quality standards for those pollutants or that the standards have recently been attained in the case of pollutants with maintenance status. When concentrations of ozone, PM_{10}, or $PM_{2.5}$ exceed the ambient air quality standard, then those sensitive to air pollution (such as children, the elderly, and the infirm) could experience health effects such as decrease of pulmonary function and localized lung edema in humans and animals, increased mortality risk, and risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans. See Section 2.3, Existing Air Quality Conditions for additional correlation of the health impacts with the existing pollutant concentrations experienced in the Clovis area.

Under the amended CEQA Guidelines, cumulative impacts may be analyzed using other plans that evaluate relevant cumulative effects. The geographic scope for cumulative criteria pollution from air quality impacts is the Air Basin, because that is the area in which the air pollutants generated by the sources within the Air Basin circulate and are often trapped. The SJVAPCD is required to prepare and maintain air quality attainment plans and a State Implementation Plan to document the strategies and measures to be undertaken to reach attainment of ambient air quality standards. While the SJVAPCD does not have authority over land use decisions, it is recognized that changes in land use and circulation planning would help the Air Basin achieve clean air mandates. The District evaluated emissions from land uses and transportation in the entire Air Basin when it developed its attainment plans. Emission inventories used to predict attainment of NAAQS must be based on the latest planning assumptions for mobile sources.

In accordance with CEQA Guidelines Section 15064, subdivision (h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project complies with the requirements in a previously approved plan or mitigation program.

The history and development of the SJVAPCD's current Ozone Attainment Plan is described in Section 2.4, Air Quality Plans. The 2007 8-Hour Ozone Plan contains measures to achieve reductions in emissions of ozone precursors and sets plans towards attainment of ambient ozone standards by 2023. The 2012 $PM_{2.5}$ Plan and the 2015 $PM_{2.5}$ Plan for the 1997 $PM_{2.5}$ Standard require fewer NO_x reductions to attain the $PM_{2.5}$ standard than the Ozone Plan, so the Ozone Plan is considered the applicable plan for reductions of the ozone precursors NO_x and ROG. The 2012 $PM_{2.5}$ Plan requires reductions in directly emitted $PM_{2.5}$ from combustion sources such as diesel engines and fireplaces and from fugitive dust to attain the ambient standard and is the applicable plan for $PM_{2.5}$ emissions. $PM_{2.5}$ is also formed in secondary reactions in the atmosphere involving NO_x and ammonia to form nitrate particles. Reductions in NO_x required for ozone attainment are also sufficient for $PM_{2.5}$ attainment. As discussed in Impact AIR-1, the project is consistent with all applicable control measures in the air quality attainment plans. The project would comply with any District rules and regulations that may pertain to implementation of the AQPs. Therefore, impacts would be less than significant with regard to compliance with applicable rules and regulations.

Step 3: Cumulative Health Impacts

The Air Basin is in nonattainment for ozone, PM_{10}, (State only) and $PM_{2.5}$, which means that the background levels of those pollutants are at times higher than the ambient air quality standards. The air quality standards were set to protect public health, including the health of sensitive individuals (such as children, the elderly, and the infirm). Therefore, when the concentration of those pollutants exceeds the standard, it is likely that some sensitive individuals in the population would experience health effects that were described in Table 1. However, the health effects are a factor of the dose-response curve. Concentration of the pollutant in the air (dose), the length of time exposed, and the response of the individual are factors involved in the severity and nature of health impacts. If a significant health impact results from project emissions, it does not mean that 100 percent of the population would experience health effects.

Since the Basin is nonattainment for ozone, PM_{10}, and $PM_{2.5}$, it is considered to have an existing significant cumulative health impact without the project. When this occurs, the analysis considers

whether the project's contribution to the existing violation of air quality standards is cumulatively considerable. The SJVAPCD regional thresholds for NO_x, VOC, PM_{10}, or $PM_{2.5}$ are applied as cumulative contribution thresholds. Projects that exceed the regional thresholds would have a cumulatively considerable health impact. As shown in Table 13 and Table 14, the regional analysis of construction and operational emissions indicates that the project would not exceed the District's significance thresholds and the project is consistent with the applicable Air Quality Attainment Plan. Therefore, the project would not result in significant cumulative health impacts.

The SJVAPCD Air Quality Attainment Plans predict that nonattainment pollutant emissions will continue to decline each year as regulations adopted to reduce these emissions are implemented accounting for growth projected for the region. Therefore, the cumulative health impact will also decline even with the project's emission contribution.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.4 - Sensitive Receptors

Impact AIR-4:	**The project would not expose sensitive receptors to substantial pollutant concentrations.**

Impact Analysis

Sensitive Receptors

Those who are sensitive to air pollution include children, the elderly, and persons with preexisting respiratory or cardiovascular illness. The District considers a sensitive receptor to be a location that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants. Examples of sensitive receptors include hospitals, residences, convalescent facilities, and schools. The closest sensitive receptor is a single-family residence located approximately 23 feet west from the western boundary of the southern half of the project site.

Impacts to On-site Workers

The project is not a commercial or industrial operation that would have on-site workers. Therefore, a health risk assessment for on-site workers is not required or recommended.

Construction: ROG

ROG is emitted during the application of architectural coatings (painting). The amount emitted is dependent on the amount of ROG (or VOC) in the paint. ROG emissions are typically an indoor air

quality health hazard concern rather than an outdoor air quality health hazard concern. Therefore, exposure to ROG during architectural coatings is a less than significant health impact.

There are three types of asphalt that are typically used in paving: asphalt cements, cutback asphalts, and emulsified asphalts. However, SJVAPCD Rule 4641 prohibits the use of the following types of asphalt: rapid cure cutback asphalt; medium cure cutback asphalt; slow cure asphalt that contains more than one-half (0.5) percent of organic compounds that evaporate at 500°F or lower; and emulsified asphalt containing organic compounds, in excess of 3 percent by volume, that evaporate at 500°F or lower. An exception to this is medium cure asphalt when the National Weather Service official forecast of the high temperature for the 24-hour period following application is below 50°F.

The acute (short-term) health effects from worker direct exposure to asphalt fumes include irritation of the eyes, nose, and throat. Other effects include respiratory tract symptoms and pulmonary function changes. The studies were based on occupational exposure of fumes. Residents are not in the immediate vicinity of the fumes; therefore, they would not be subjected to concentrations high enough to evoke a negative response. In addition, the restrictions that are placed on asphalt in the San Joaquin Valley reduce ROG emissions from asphalt and exposure. The impact to nearby sensitive receptors from ROG during construction is less than significant.

Operation: ROG

During operation, ROG would be emitted primarily from motor vehicles. Direct exposure to ROG from project motor vehicles would not result in health effects, because the ROG would be distributed across miles and miles of roadway and in the air. The concentrations would not be great enough to result in direct health effects.

Construction: NO_x, PM_{10}, $PM_{2.5}$

As discussed in Impact AIR-2, emissions during construction would not exceed the significance thresholds and would not be expected to result in concentrations that would exceed ambient standards or contribute substantially to an existing exceedance of an ambient air quality standard.

Operation: PM_{10}, $PM_{2.5}$, CO, NO_2

As discussed in Impact AIR-2, localized concentrations of PM_{10}, $PM_{2.5}$, CO, and NO_2 would not exceed the ambient air quality standards. Residential development is an insignificant source of these pollutants except for projects that allow woodburning devices that emit PM_{10}, $PM_{2.5}$ in wood smoke. The project will include only natural gas fueled fireplaces and inserts that are insignificant sources of $PM_{2.5}$ and PM_{10}. Therefore, the project would not expose sensitive receptors to substantial criteria air pollutant concentrations during operation.

Construction: Toxic Air Contaminants

Project construction would involve the use of diesel-fueled vehicles and equipment that emit DPM, which is considered a TAC. The SJVAPCD's latest threshold of significance for TAC emissions is an increase in cancer risk for the maximally exposed individual of 20 in a million (formerly 10 in a million). The SJVAPCD's 2015 GAMAQI does not currently recommend analysis of TAC emissions from project construction activities, but instead focuses on projects with operational emissions that

would expose sensitive receptors over a typical lifetime of 70 years. Residential projects produce limited amounts of TAC emissions during operation and thus have not been subject to project TAC analysis. The highest rate of emissions during construction activities occur during the grading and site preparation phases that occur over the first 3 months of construction and do not overlap with project operations. Limited amounts of diesel equipment are used during ground-up construction of individual houses that occurs during the majority of the construction schedule when some units may be occupied. The project does not propose phasing that would require the preparation of a health risk assessment as required by General Plan PEIR Mitigation Measure 3-2. Construction equipment fleet operators are subject to ARB's In Use Offroad Equipment Fleet Regulation, which requires the use of increasing amounts of lower-emitting equipment that will help to ensure that risk would not exceed SJVAPCD thresholds.

Construction phase was assessed to determine if it would cause acute health risks as opposed to cancer risks, which are long-term. OEHHA has yet to define acute risk factors for diesel particulates that would allow the calculation of a hazards risk index; thus, evaluation of this impact would be speculative and no further discussion is necessary.

Operation: Toxic Air Contaminants

The ARB Air Quality and Land Use Handbook contains recommendations that will "help keep California's children and other vulnerable populations out of harm's way with respect to nearby sources of air pollution" (ARB 2005), including recommendations for distances between sensitive receptors and certain land uses. These recommendations are assessed as follows.

- Heavily traveled roads. ARB recommends avoiding new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles per day, or rural roads with 50,000 vehicles per day. Epidemiological studies indicate that the distance from the roadway and truck traffic densities were key factors in the correlation of health effects, particularly in children. The project site is bordered by East Teague Avenue to the south, bordered by North Fowler Avenue to the east, is approximately 442 feet south of Shepherd Avenue, and is approximately 1,349 feet west of North Sunnyside Avenue. Fresno Council of Governments provides traffic counts for roadways in Fresno County. East Teague Avenue, North Fowler Avenue, and Shepherd Avenue are not major roadways that would experience large traffic volumes. No roads serving the project would exceed this criterion (Fresno COG 2013).
- Distribution centers. ARB also recommends avoiding siting new sensitive land uses within 1,000 feet of a distribution center. The project is not located within 1,000 feet of a distribution center.
- Fueling stations. ARB recommends avoiding new sensitive land uses within 300 feet of a large fueling station (a facility with a throughput of 3.6 million gallons per year or greater). ARB recommends a 50-foot separation is recommended for typical gas dispensing facilities. The nearest gas station is approximately 1.45 miles southeast of the project site.
- Dry cleaning operations. ARB recommends avoiding siting new sensitive land uses within 300 feet of any dry cleaning operation that uses perchloroethylene. For operations with two or more machines, ARB recommends a buffer of 500 feet. For operations with three or more

machines, ARB recommends consultation with the local air district. The nearest dry cleaning operation is approximately 1.44 miles southeast of the project site.

Valley Fever

Valley fever, or coccidioidomycosis, is an infection caused by inhalation of the spores of the fungus, *Coccidioides immitis* (*C. immitis*). The spores live in soil and can live for an extended time in harsh environmental conditions. Activities or conditions that increase the amount of fugitive dust contribute to greater exposure, and they include dust storms, grading, and recreational off-road activities.

The San Joaquin Valley is considered an endemic area for Valley fever. By geographic region, hospitalizations for Valley fever in the San Joaquin Valley increased from 230 (6.9 per 100,000 population) in 2000 to 701 (17.7 per 100,000 population) in 2007. Within the region, Kern County reported the highest hospitalization rates, increasing from 121 (18.2 per 100,000 population) in 2000 to 285 (34.9 per 100,000 population) in 2007, and peaking in 2005 at 353 hospitalizations (45.8 per 100,000 population). The Centers for Disease Control and Prevention indicates that 752 of the 8,657 persons (8.7 percent) hospitalized in California between 2000 and 2007 for Valley fever died (CDC 2009).

The distribution of *C. immitis* within endemic areas is not uniform and growth sites are commonly small (a few tens of meters) and widely scattered. Known sites appear to have some ecological factors in common suggesting that certain physical, chemical, and biological conditions are more favorable for *C. immitis* growth. Avoidance, when possible, of sites favorable for the occurrence of *C. immitis* is a prudent risk management strategy. Listed below are ecologic factors and sites favorable for the occurrence of *C. immitis*:

1) Rodent burrows (often a favorable site for *C. immitis*, perhaps because temperatures are more moderate and humidity higher than on the ground surface)
2) Old (prehistoric) Indian campsites near fire pits
3) Areas with sparse vegetation and alkaline soils
4) Areas with high salinity soils
5) Areas adjacent to arroyos (where residual moisture may be available)
6) Packrat middens
7) Upper 30 centimeters of the soil horizon, especially in virgin undisturbed soils
8) Sandy well aerated soil with relatively high water holding capacities

Sites within endemic areas less favorable for the occurrence of *C. immitis* include:

1) Cultivated fields
2) Heavily vegetated areas (e.g. grassy lawns)
3) Higher elevations (above 7,000 feet)

4) Areas where commercial fertilizers (e.g. ammonium sulfate) have been applied
5) Areas that are continually wet
6) Paved (asphalt or concrete) or oiled areas
7) Soils containing abundant microorganisms
8) Heavily urbanized areas where there is little undisturbed virgin soil (USGS 2000).

The project site is situated in an urbanizing area of Clovis. The project site is currently developed with rural residential land uses that have been disturbed and would not provide suitable habitat for the spores. Therefore, implementation of the project would have a low probability of the site having *C. immitis* growth sites and exposure to the spores from disturbed soil.

Construction activities would generate fugitive dust that could contain *C. immitis* spores. The project will minimize the generation of fugitive dust during construction activities by complying with the District's Regulation VIII. Therefore, this regulation, combined with the relatively low probability of the presence of *C. immitis* spores would reduce valley fever impacts to less than significant.

During operations, dust emissions are anticipated to be negligible, because most of the project area would be occupied by residential buildings, pavement, and landscaped areas. This condition would preclude the possibility of the project from providing habitat suitable for *C. immitis* spores and for generating fugitive dust that may contribute to Valley fever exposure. Impacts would be less than significant.

Naturally Occurring Asbestos

According to a map of areas where naturally occurring asbestos in California are likely to occur (U.S. Geological Survey 2011), there are no such areas in the project area. Therefore, development of the project is not anticipated to expose receptors to naturally occurring asbestos. Impacts would be less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

5.2.5 - Objectionable Odors

Impact AIR-5: **The project would not create objectionable odors affecting a substantial number of people.**

Impact Analysis

Thresholds of Significance

Odor impacts on residential areas and other sensitive receptors, such as hospitals, day-care centers, schools, etc. warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate, such as recreational facilities, worksites, and commercial areas.

Two situations create a potential for odor impact. The first occurs when a new odor source is located near an existing sensitive receptor. The second occurs when a new sensitive receptor locates near an existing source of odor. The District has determined the common land use types that are known to produce odors in the Air Basin. These types are shown in Table 16.

Table 16: Screening Levels for Potential Odor Sources

Odor Generator	Screening Distance
Wastewater Treatment Facilities	2 miles
Sanitary Landfill	1 mile
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	1 mile
Chemical Manufacturing	1 mile
Fiberglass Manufacturing	1 mile
Painting/Coating Operations (e.g., auto body shop)	1 mile
Food Processing Facility	1 mile
Feed Lot/Dairy	1 mile
Rendering Plant	1 mile
Source: SJVAPCD 2015a.	

According to the SJVAPCD GAMAQI, analysis of potential odor impacts should be conducted for the following two situations:

- **Generators:** projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate, and
- **Receivers:** residential or other sensitive receptor projects or other projects built for the intent of attracting people locating near existing odor sources.

If the project were to result in sensitive receptors being located closer than the recommended distances to an odor generator in the list in Table 16, a more detailed analysis including a review of SJVAPCD odor complaint records is recommended. For a project locating near an existing source of odors, the project should be identified as having a significant odor impact if it is proposed for a site that is closer to an existing odor source than any location where there have been:

- More than one *confirmed* complaint per year averaged over a three-year period, or
- Three *unconfirmed* complaints per year averaged over a three-year period.

Project Analysis

Land uses that are typically identified as sources of objectionable odors include landfills, transfer stations, sewage treatment plants, wastewater pump stations, composting facilities, feed lots, coffee roasters, asphalt batch plants, and rendering plants. The project would not engage in any of these activities. Therefore, the project would not be considered to be a generator of objectionable odors during operations.

During construction, the various diesel-powered vehicles and equipment in use on-site would create localized odors. These odors would be temporary and would not likely be noticeable for extended periods of time beyond the project's site boundaries. The potential for diesel odor impacts is therefore less than significant.

As a residential project, the project has the potential to place sensitive receptors near existing odor sources. The project site is not located within 2 miles of a wastewater treatment facility or a petroleum refinery. There are no solid waste facilities or other major odor generating sources (as listed in Table 16) within screening distance of the site. Therefore, the uses in the vicinity of the project would not cause substantial odor impacts to the project.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

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SECTION 6: GREENHOUSE GAS IMPACT ANALYSIS

6.1 - CEQA Guidelines

CEQA Guidelines define a significant effect on the environment as "a substantial, or potentially substantial, adverse change in the environment." To determine if a project would have a significant impact on GHGs, the type, level, and impact of emissions generated by the project must be evaluated.

The following GHG significance thresholds are contained in Appendix G of the CEQA Guidelines, which were amendments adopted into the Guidelines on March 18, 2010, pursuant to SB 97. A significant impact would occur if the project would:

(a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or

(b) Conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of greenhouse gases.

6.2 - Impact Analysis

6.2.1 - Greenhouse Gas Inventory

Impact GHG-1:	**The project would generate direct and indirect greenhouse gas emissions; however, these emissions would not result in a significant impact on the environment.**

Impact Analysis

Threshold of Significance

Section 15064.4(b) of the CEQA Guidelines' amendments for GHG emissions states that a lead agency may take into account the following three considerations in assessing the significance of impacts from GHG emissions.

- **Consideration #1**: The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting.
- **Consideration #2**: Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project.
- **Consideration #3**: The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such regulations or requirements must be adopted by the relevant public agency through a public review process and must include specific requirements that reduce or mitigate the project's incremental contribution of greenhouse gas emissions. If there is substantial evidence that the possible effects of a particular project are still cumulatively considerable notwithstanding compliance with the adopted regulations or requirements, an EIR must be prepared for the project.

The City of Clovis has not adopted its own GHG thresholds or prepared a Climate Action Plan that can be used as a basis for determining project significance; however, General Plan PEIR Mitigation Measure 7-1 requires applicants to meet a 29 percent reduction from BAU in accordance with SJVAPCD methodologies. The SJVAPCD's Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA includes thresholds based on whether the project will reduce or mitigate GHG levels by 29 percent from BAU levels compared with 2005 levels (SJVAPCD 2009b). This level of GHG reduction is based on the target established by ARB's AB 32 Scoping Plan, approved in 2008.

The 2010 Cap and Trade Inventory Update provided revised inventory projections to reflect slower growth in emissions during the recession and lower future year projections. The State's 2020 BAU inventory was reduced from 596 $MMTCO_2e$ to 545 $MMTCO_2e$ (ARB 2014b). The new GHG reduction level for the State to reach 1990 emission levels by 2020 is 21.7 percent from BAU in 2020. The First Update to the Climate Change Scoping Plan confirmed that the State is on track to achieve the 2020 target and to maintain and continue reductions beyond 2020 as required by AB 32 (ARB 2014b).

Although a lower percentage reduction (21.7 percent) is required to achieve AB 32 targets, this analysis uses the 29 percent reduction from BAU to reflect that development related sources are called upon to provide more than average reductions to offset source categories like agriculture that are not able to provide as many reductions. The analysis prepared for the project also includes a qualitative assessment of compliance with Scoping Plan and General Plan measures to support GHG significance findings under Impact GHG-2. The SJVAPCD defines BAU as the total baseline emissions for all emissions sources within the development type, projected for the year 2020, assuming no change in GHG emissions per unit of activity as established for the baseline period.

Newhall Ranch

On November 30, 2015, the California Supreme Court issued its decision in *Newhall Ranch* invalidating the GHG analysis for a large master planned residential development in Los Angeles County consisting of over 20,000 residential dwelling units and other uses. In particular, the Court upheld: (1) use of the statewide emissions reduction goal in AB 32 as a significance criterion (pp. 15–19), (2) use of the Scoping Plan's BAU model "as a comparative tool for evaluating efficiency and conservation efforts" of the Project (pp. 18–19), and (3) a comparison of the project's expected emissions to a BAU model rather than a baseline of pre-project conditions (pp.15–19). The Court invalidated the GHG analysis on the grounds that the "administrative record discloses no substantial evidence that the Newhall Ranch's project-level reduction of 31 percent in comparison to [BAU] is consistent with achieving AB 32's statewide goal of a 29 percent reduction from [BAU]." The Court indicated that A lead agency may use a BAU comparison based on the Scoping Plan's methodology if it also substantiates the reduction a particular project must achieve to comply with statewide goals. The Court suggested a lead agency could examine the "data behind the Scoping Plan's business-as-usual model" to determine the necessary project-level reductions from new land use development at the proposed location (p. 25). "Second, a lead agency might assess consistency with A.B. 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities."

The substantial evidence needed to support a project BAU threshold can be derived from data used to develop the Scoping Plan inventory and control strategy and from analysis conducted by the ARB to track progress in achieving the AB 32 2020 target. The critical factor in determining the appropriate project threshold is whether the State requires additional reductions beyond that achieved by regulations to achieve its target. If no additional reductions are required from individual projects, no nexus exists to require a project to mitigate its emissions. In that case the percentage reductions achieved by projects is the amount needed to reach the AB 32 target.

The State's regulatory program implementing the 2008 Scoping Plan is now fully mature. All regulations envisioned in the Scoping Plan have been adopted and the effectiveness of those regulations have been estimated by the agencies during the adoption process and then are tracked to verify their effectiveness after implementation. The combined effect of this successful effort is that the State now projects that it will meet the 2020 target and achieve continued progress toward meeting post-2020 targets. Governor Brown in the introduction to Executive Order B-30-15 states "California is on track to meet or exceed the current target of reducing greenhouse gas emissions to 1990 levels by 2020, as established in the California Global Warming Solutions Act of 2006 (AB 32)".

The Supreme Court was concerned that new development may need to do more than existing development to reduce GHGs to demonstrate that it is doing its fair share of reductions. As will be shown below, new development does do more than existing development and, due to the nature of the sources of GHG emissions related to development, existing development is equally responsible for reducing emissions from the most important sources of emissions. It is important to note that most of the State's regulatory program applies to new and existing development.

The Scoping Plan reduction from BAU accounts for growth projected in the State and assumes that existing development would continue to emit GHGs at the same rate that occurred in the base year (2002-2004 average). The California Department of Finance (DOF) Report E-5 predicts that population growth in California from 2005 to 2020 will be 13.2 percent. This means that development that existed in 2005 will produce nearly 87 percent of the State's emissions in 2020. Conversely, new development is only responsible for about 13 percent of the emissions generated during this timeframe. If measures to reduce emissions from existing development were not available, new development could not provide sufficient reductions to reach the 2020 target even if their emissions were reduced to net zero.

The State's regulatory program is able to target both new and existing development because the two most important strategies, motor vehicle fuel efficiency, and emissions from electricity generation obtain reductions equally from existing sources and new sources. This is because all vehicle operators use cleaner low carbon fuels and buy vehicles subject to the fuel efficiency regulations and all building owners or operators purchase cleaner energy from the grid that is produced by increasing percentages of renewable fuels. This includes regulations on mobile sources such as the Pavley standards that apply to all vehicles purchased in California, the Low Carbon Fuel Standard (LCFS) that applies to all fuel used in California, and the Renewable Portfolio Standard and Renewable Energy Standard that apply to utilities providing electricity to all California homes and businesses. The reduction strategy where new development is required to do more than existing development is building energy efficiency and energy use related to water conservation regulations.

For example, new projects are subject to Title 24 Energy Efficiency standards and CalGreen Code and MWELO water conservation requirements. Buildings constructed to the 2013 Title 24 standards use 30 percent less energy than buildings complying with the 2008 standards. New buildings and landscapes are much more energy efficient and water efficient than the development that has been built over the past decades and will require much less energy.

As described above, the State requires an average reduction from all sources of the emission inventory of about 22 percent. The Scoping Plan strategy will achieve more than average reductions from energy and mobile source sectors that are the primary sources related to development projects and lower than average reductions from other sources such as agriculture. The amount of reduction estimated for each sector was based on technical feasibility and cost effectiveness. Review of the Scoping Plan inventory and strategy shows that the reduction from all development related sources is approximately 29 percent from BAU in order to make up for the below average sectors and achieve the required 22 percent average reduction.

As suggested by the Court, a project BAU analysis was prepared for this project that assesses "consistency with AB 32's goal in whole or part by looking to compliance with regulatory programs designed to reduce greenhouse gas emissions from particular activities." The analysis shows the extent to which the project complies with adopted regulations and the additional amount that will be achieved through project design features. At this point in time, no additional reductions are required from new development beyond regulations for the State to achieve its target. Therefore, this analysis meets the consistency test described by the Supreme Court.

The analysis prepared for the project also includes a qualitative assessment of compliance with Scoping Plan and General Plan measures to support GHG significance findings under Impact GHG-2. There are no measures that identify specific requirements on development projects, but the analysis shows how the applicable measures affect project emission sources.

To determine significance, the analysis first quantifies project-related GHG emissions under a BAU scenario, and then compares these emissions with those emissions that would occur when all project-related design features are accounted for, and when compliance with applicable regulatory measures is assumed. The standard and methodology is explained in further detail, below.

Impact Analysis

Construction

Total GHG emissions generated during all phases of construction were combined and are presented in Table 17. The SJVAPCD does not recommend assessing the significance of construction-related emissions. Any construction-related emissions would occur prior to the year 2020, which is the year the State is required to reduce its GHG emissions to 1990 levels. Additionally, emissions from construction would be temporary. However, other jurisdictions such as the SCAQMD and the SMAQMD have concluded that construction emissions should be included since they may remain in the atmosphere for years after construction is complete. In order to account for the construction emissions, the total emissions generated during construction were amortized based on the life of the development (residential—30 years) and added to the operational emissions.

Table 17: Construction Greenhouse Gas Emissions (2016–2019)

Construction Phase	On-site	Off-site	Total $MTCO_2e$
2016			
Demolition	93.27	4.14	97.42
Site Preparation	55.67	1.88	57.54
2016 Grading	146.41	3.47	149.88
2016 Subtotal	*295.35*	*9.49*	*304.84*
2017			
2017 Grading	72.05	1.67	73.72
2017 Building Construction	403.14	52.38	455.52
2017 Construction Subtotal	*475.19*	*54.05*	*529.24*
2018			
2018 Building Construction	442.67	56.64	499.31
2018 Construction Subtotal	*442.67*	*56.64*	*499.31*
2019			
2019 Building Construction	41.93	5.28	47.21
Paving	55.47	2.56	58.04
Architectural Coating	7.03	1.20	8.23
2019 Construction Subtotal	*104.43*	*9.04*	*113.47*
Total	**1,317.64**	**129.22**	**1,446.86**
Amortized over 30 years	—	—	*48.22*

Notes:
Due to rounding, total $MTCO_2e$ may be marginally different from CalEEMod output.
$MTCO_2e$ = metric tons of carbon dioxide equivalents
Source: CalEEMod output (Appendix A).

Operation

Operational or long-term emissions occur over the life of the project. Sources of emissions may include motor vehicles and trucks, energy usage, water usage, waste generation, and area sources, such as landscaping activities and residential wood burning. Operational GHG emissions associated with the project were estimated using CalEEMod 2013.2.2.

Business-as-Usual Operational Emissions

Operational emissions under the BAU scenario were modeled using CalEEMod 2013.2.2. Modeling assumptions for the year 2005 were used to represent 2020 BAU conditions (without the benefit of regulations adopted to reduce GHG emissions). The SJVAPCD guidance recommends using emissions in 2002-2004 in the baseline scenario to represent conditions as if regulations had not been adopted to allow the effect of projected growth on achieving reduction targets to be clearly defined.

CalEEMod defaults were used for project energy usage, water usage, waste generation, and area sources (architectural coating, consumer products, and landscaping). The vehicle fleet mix was revised to reflect the residential fleet mix approved by SJVAPCD for year 2020. The year 2020 was chosen because it is the AB 32 target year. Full assumptions and CalEEMod model outputs are provided in Appendix A. Results of this analysis are presented below in Table 19.

2020 Operational Emissions

Operational emissions for the year 2020 were modeled using CalEEMod. CalEEMod assumes compliance with some, but not all, applicable rules and regulations regarding energy efficiency, vehicle fuel efficiency, renewable energy usage, and other GHG reduction policies, as described in the CalEEMod User's Guide (SCAQMD 2011). The reductions obtained from each regulation and the source of the reduction amount used in the analysis are described below.

Emissions Accounting for Applicable Regulations

The following regulations are incorporated into the CalEEMod emission factors:

- Pavley I motor vehicle emission standards
- Low Carbon Fuel Standard (LCFS)
- 2005 and 2008 Title 24 Energy Efficiency Standards

The following regulations have not been incorporated into the CalEEMod emission factors and require alternative methods to account for emission reductions provided by the regulations:

- Pavley II (LEV III) Advanced Clean Cars Program
- 2013 Title 24 Energy Efficiency Standards
- Renewable Portfolio Standards (RPS)
- Green Building Code Standards (indoor water use)
- California Model Water Efficient Landscape Ordinance (Outdoor Water)
- CalRecycle Waste Diversion and Recycling Mandate (75 percent)

Pavley II/LEV III standards have not been incorporated in the latest version of CalEEMod. Reductions from standards are calculated by adjusting the CalEEMod GHG passenger car and light truck emission factors by ARB's estimated three percent reduction expected from the vehicle categories subject to the regulation by 2020 (ARB 2010).

Title 24 reductions for 2013 are not accounted for in the current version of CalEEMod. The California Energy Commission (CEC) estimates that 2013 Title 24 standards would result in an increase in energy efficiency of 25 percent in residential buildings compared to 2008 Title 24 (CEC 2014a). The benefits of 2013 Title 24 are applied in the CalEEMod mitigation component to correctly allocate the reductions only to building components subject to the regulation.

RPS is not accounted for in the current version of CalEEMod. Reductions from RPS are addressed by revising the electricity emission intensity factor in CalEEMod to account for the utility complying with the 33 percent renewable mandate by 2020 (ARB 2010 and CPUC 2011).

Energy savings from water conservation resulting from the Green Building Code Standards for indoor water use and California Model Water Efficient Landscape Ordinance for outdoor water use are not included in CalEEMod. The Water Conservation Act of 2009 mandates a 20 percent reduction in urban water use that is implemented with these regulations (CDWR 2013). Benefits of the water conservation regulations are applied in the CalEEMod mitigation component.

Regulations applicable to project sources and the percent reduction anticipated from each source are shown in Table 18. The percentage reductions are only applied to the specific sources subject to the regulations. For example, the Pavley Low Emission Vehicle Standards apply only to light duty cars and trucks.

Table 18: Reductions from Greenhouse Gas Regulations

Regulation	Project Applicability	Reduction Source	Percent Reduction in 2020
Pavley Low Emission Vehicle Standards	Light duty cars and trucks accessing the site are subject to the regulation	CalEEMod defaults (Pavley I)I	25.1[1]
		Adjusted GHG emission factor (Pavley II/LEV III) in CalEEMod.	3%[2]
Low Carbon Fuel Standard (LCFS)	Vehicles accessing the site will use fuel subject to the LCFS	CalEEMod defaults	10%[1]
Title 24 Energy Efficiency Standards	Project buildings will be constructed to meet the latest version of Title 24 (currently 2013). Reduction applies only to energy consumption subject to the regulation.	CalEEMod defaults (2008) and CalEEMod mitigation component (2013)	25%[3]
Green Building Code Standards	The project will include water conservation features required by the standard	CalEEMod mitigation component	20%[4]
Water Efficient Land Use Ordinance	The project landscaping will comply with the regulation	CalEEMod mitigation component	20%[5]
Renewable Portfolio Standard (RPS)	Electricity purchased for use at the project site is subject to the 33% RPS mandate	CalEEMod adjusted energy intensity factors from PG&E with RPS	23.3%[6]
Solid waste	The solid waste service provider will need to provide programs to increase diversion and recycling to meet the mandate.	CalEEMod mitigation component	25%[7]

Notes:
Regulations are described in Section 2.3 Regulatory Environment. The source of the percentage reductions from each measure are from the following sources:
[1] Pavley 1 + Low Carbon Fuel Standard Postprocessor Version 1.0 User's Guide (ARB 2010)
[2] ARB Staff Report for LEV III Amendments (ARB 2013e)
[3] California Energy Commission News Release: New Title 24 Standards Will Cut Residential Energy Use by 25 Percent, Save Water, and Reduce Greenhouse Gas Emissions (CEC 2014b)
[4] 2013 California Green Building Standards Code Section 5.303.2
[5] California Water Plan Update 2013 (CDWR 2013)
[6] Based on CalEEMod default PG&E rate for 2005 reduced to meet the 33% RPS requirement
[7] CalRecycle 75 Percent Initiative: Defining the Future (2016b)

In addition to rules and regulations, the project would incorporate design features and would obtain benefits from its location and infrastructure that would reduce project vehicle miles traveled compared to default values. The project would construct pedestrian infrastructure connecting to adjacent land uses. In addition, the project would provide electrical outlets for landscaping equipment that would be used in accordance with statewide usage rates for this type of equipment.

Note that CalEEMod nominally treats these design elements and conditions as "mitigation measures," despite their inclusion in the project description. Therefore, reported operational emissions are considered to represent unmitigated project conditions. Full assumptions and model outputs are provided in Appendix A. Results of this analysis are presented in Table 19.

Table 19: Project Operational Greenhouse Gases

Source	Emissions ($MTCO_2e$ per year)		Percent Reduction
	Business as Usual	2020 (with Regulation and Design Features)	
Area	77.28	77.26	0.02%
Energy	398.8	288.5	27.7%
Mobile	1,276.4	828.7	35.1%
Waste	45.0	36.5	19.0%
Water	21.7	15.4	28.8%
Amortized Construction Emissions	48.2	48.2	0.0%
Total	1,867.4	1,294.5	—
Reduction from BAU		572.9	—
Percent Reduction		30.7%	—
Significance Threshold		29%	—
Are emissions significant?		No	—

Notes:
$MTCO_2e$ = metric tons of carbon dioxide equivalents
The project achieves the SJVAPCD 29 percent reduction from BAU threshold and the 21.7 percent required to show consistency with AB 32 targets.
Source of BAU emissions: CalEEMod output using 2005 modeling year to represent emissions in 2020 without regulations (Appendix A).
Source of 2020 emissions: CalEEMod output for the year 2020 (Appendix A).

As shown in Table 19, the project has a reduction of 30.7 percent from BAU to the year 2020 with Regulations and Design features incorporated. This is above the 29 percent reduction required by the SJVAPCD threshold, and the 21.7 percent average reduction from all sources of GHG emissions now required to achieve AB 32 targets. The ARB originally identified a reduction of 29 percent from BAU as needed to achieve AB 32 targets. The 2008 recession and slower growth in the years since 2008 have reduced the growth forecasted for 2020, and the amount needed to be reduced to

achieve 1990 levels as required by AB 32. The project includes design features that result in reductions in energy use and support walking and bicycling. Measures that are included in the project design do not require additional mitigation measures to ensure they are accomplished. The impact is less than significant.

The Supreme Court in the Newhall Ranch case indicated that as 2020 gets closer, selection of a new post-2020 threshold will be necessary. The project is expected to be completed before 2020; therefore, a 2020 target is still appropriate. Nevertheless, without a new Scoping Plan that identifies the State's strategy for achieving a post-2020 target, a new project threshold is premature since the amount of reduction, if any, needed from new development is not known and would be speculative. Regarding goals for 2050 under Executive Order S-3-05, at this time it is not possible to quantify the emissions savings from future regulatory measures, as they have not yet been developed; however, it can be anticipated that operation of the project would comply with whatever measures are enacted that state lawmakers decide would lead to an 80-percent reduction below 1990 levels by 2050.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

6.2.2 - Greenhouse Gas Reduction Plans

Impact GHG-2:	**The project would not conflict with any applicable plan, policy or regulation of an agency adopted to reduce the emissions of greenhouse gases.**

Impact Analysis

The City of Clovis has not adopted a GHG reduction plan. In addition, the City has not completed the GHG inventory, benchmarking, and goal-setting process required to identify a reduction target and to take advantage of the streamlining provisions contained in the CEQA Guidelines amendments adopted for SB 97. The SJVAPCD has adopted a Climate Action Plan, but it does not contain measures that are applicable to development projects. Therefore, the SJVAPCD Climate Action Plan cannot be applied to the project. Since no other local or regional Climate Action Plan is in place, the project is assessed for its consistency with ARB's adopted Scoping Plan. This would be achieved with an assessment of the project's compliance with Scoping Plan measures.

Although the City of Clovis General Plan does not meet the CEQA Guidelines 15064.4(b)(3) requirements for an applicable plan to reduce GHG emissions, it contains policies intended to reduce vehicle travel and energy use that would provide GHG reductions. Therefore, the project's consistency with the General Plan policies is also assessed.

Scoping Plan

The California State Legislature adopted AB 32 in 2006. AB 32 focuses on reducing GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) to 1990 levels by the year 2020. Pursuant to the requirements in AB 32, the ARB adopted the Climate Change Scoping Plan (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. The Scoping Plan calls for an "ambitious but achievable" reduction in California's GHG emissions, cutting approximately 30 percent from BAU emission levels projected for 2020, or about 10 percent from 2008 levels. On a per-capita basis, that means reducing annual emissions of 14 tons of carbon dioxide for every man, woman, and child in California down to about 10 tons per person by 2020. As stated earlier, the ARB has updated its emission inventory forecasts and now estimates a reduction of 21.7 percent is required from BAU in 2020 to achieve AB 32 targets.

The Scoping Plan contains a variety of strategies to reduce the State's emissions. As shown in Table 20, the project is consistent with most of the strategies, while others are not applicable to the project.

Table 20: Scoping Plan Reduction Measures Consistency Analysis

Scoping Plan Reduction Measure	Consistency/Applicability Determination
1. California Cap-and-Trade Program Linked to Western Climate Initiative. Implement a broad-based California Cap-and-Trade program to provide a firm limit on emissions. Link the California cap-and-trade program with other Western Climate Initiative Partner programs to create a regional market system to achieve greater environmental and economic benefits for California. Ensure California's program meets all applicable AB 32 requirements for market-based mechanisms.	**Not applicable.** Although the cap-and-trade system has begun, products or services (such as electricity) would be covered and the cost of the cap-and-trade system would be transferred to the consumers.
2. California Light-Duty Vehicle Greenhouse Gas Standards. Implement adopted standards and planned second phase of the program. Align zero-emission vehicle, alternative and renewable fuel and vehicle technology programs with long-term climate change goals.	**Consistent.** This is a statewide measure that cannot be implemented by a project applicant or lead agency. However, the standards would be applicable to the light-duty vehicles that would access the project site.
3. Energy Efficiency. Maximize energy efficiency building and appliance standards; pursue additional efficiency including new technologies, policy, and implementation mechanisms. Pursue comparable investment in energy efficiency from all retail providers of electricity in California.	**Consistent.** This is a measure for the State to increase its energy efficiency standards in new buildings. The project is required to build to the new standards and would increase its energy efficiency through compliance.
4. Renewable Portfolio Standard. Achieve 33 percent renewable energy mix statewide. Renewable energy sources include (but are not limited to) wind, solar, geothermal, small hydroelectric, biomass, anaerobic digestion, and landfill gas.	**Consistent.** This is a statewide measure that cannot be implemented by a project applicant or lead agency. PG&E obtains 19 percent of its power supply from renewable sources such as solar and geothermal. It is required to increase this percentage to 33 percent by the year 2020 pursuant to various regulations.

Table 20 (cont.): Scoping Plan Reduction Measures Consistency Analysis

Scoping Plan Reduction Measure	Consistency/Applicability Determination
	The owners of residences within the project would purchase power that is composed of a greater amount of renewable sources and could install renewable solar power systems that will assist the utility in achieving the mandate.
5. Low Carbon Fuel Standard. Develop and adopt the Low Carbon Fuel Standard.	**Consistent.** This is a statewide measure that cannot be implemented by a project applicant or lead agency. When this measure is initiated, the standard would be applicable to the fuel used by vehicles that would access the project site.
6. Regional Transportation-Related Greenhouse Gas Targets. Develop regional greenhouse gas emissions reduction targets for passenger vehicles. This measure refers to SB 375.	**Consistent.** SB 375 has no requirements that apply directly to development projects; however, the development and density proposed by the project will contribute to achieving SB 375 regional targets.
7. Vehicle Efficiency Measures. Implement light-duty vehicle efficiency measures.	**Consistent.** When this measure is initiated, the standards would be applicable to the light-duty vehicles that would access the project site.
8. Goods Movement. Implement adopted regulations for the use of shore power for ships at berth. Improve efficiency in goods movement activities.	**Not applicable.** The project does not propose any changes to maritime, rail, or intermodal facilities or forms of transportation.
9. Million Solar Roofs Program. Install 3,000 MW of solar-electric capacity under California's existing solar programs.	**Consistent.** This measure is to increase solar throughout California, which is being done by various electricity providers and existing solar programs. The project would comply with Title 24, which requires new buildings to be "solar ready." The project would not preclude the implementation of this strategy.
10. Medium/Heavy-Duty Vehicles. Adopt medium and heavy-duty vehicle efficiency measures.	**Not applicable.** This is a statewide measure that cannot be implemented by a project applicant or lead agency. The standards phase-in over model years 2014 through 2018. Vehicles that access the project site are subject to the regulation.
11. Industrial Emissions. Require assessment of large industrial sources to determine whether individual sources within a facility can cost-effectively reduce greenhouse gas emissions and provide other pollution reduction co-benefits. Reduce greenhouse gas emissions from fugitive emissions from oil and gas extraction and gas transmission. Adopt and implement regulations to control fugitive methane emissions and reduce flaring at refineries.	**Not applicable.** This measure would apply to the direct GHG emissions at major industrial facilities emitting more than 25,000 $MTCO_2e$ per year. Furthermore, the project is not an industrial land use.
12. High Speed Rail. Support implementation of a high-speed rail system.	**Not applicable.** This is a statewide measure that cannot be implemented by a project applicant or lead agency.

Table 20 (cont.): Scoping Plan Reduction Measures Consistency Analysis

Scoping Plan Reduction Measure	Consistency/Applicability Determination
13. Green Building Strategy. Expand the use of green building practices to reduce the carbon footprint of California's new and existing inventory of buildings.	**Consistent.** The project would comply with the California Energy Code, and thus incorporate applicable energy efficiency features designed to reduce project energy consumption.
14. High Global Warming Potential Gases. Adopt measures to reduce high global warming potential gases.	**Not applicable.** This measure is applicable to the high global warming potential gases that would be used by sources with large equipment (such as in air conditioning and commercial refrigerators) that are not part of this residential project.
15. Recycling and Waste. Reduce methane emissions at landfills. Increase waste diversion, composting, and commercial recycling. Move toward zero-waste.	**Consistent**. The project would utilize City of Clovis recycling services. The City has consistently exceeded its state recycling mandates.
16. Sustainable Forests. Preserve forest sequestration and encourage the use of forest biomass for sustainable energy generation.	**Not applicable.** The project site is not forested; therefore, this measure is not applicable.
17. Water. Continue efficiency programs and use cleaner energy sources to move and treat water.	**Consistent.** The project would comply with Green Building Code regulations and would implement required water conservation features.
18. Agriculture. In the near-term, encourage investment in manure digesters and at the five-year Scoping Plan update determine if the program should be made mandatory by 2020.	**Not applicable.** The project site is not designated for agriculture purposes. No dairy or, feedlot that would generate manure are proposed to be implemented by the project.
Source of ARB Scoping Plan Reduction Measure: California Air Resources Board 2008. Source of Project Consistency or Applicability: FirstCarbon Solutions.	

General Plan Compliance

The City of Clovis updated and adopted its General Plan in August of 2014. The General Plan contains a limited number goals or policies that relate directly to climate change; however, some of the policies in the Air Quality and Circulation Element would likely reduce GHG emissions as well as the other criteria pollutant emissions, because they attempt to reduce vehicle miles traveled and increase energy efficiency. As shown in Table 21, the project is consistent with the feasible and applicable policies.

Table 21: Consistency with General Plan Policies

General Plan Policy	Project Consistency
Air Quality Policy 1.1: Land use and transportation. Reduce greenhouse gas and other local pollutant emissions through mixed use and transit-oriented development and well-designed transit, pedestrian, and bicycle systems.	**Consistent.** The project is approximately 3.6 miles from existing downtown Clovis and approximately 0.85 mile east of Woods Elementary School. An existing Class I Bike Path runs adjacent the northern boundary of the project site. Residents will have easy access to the City of Clovis's Proposed Class II Bike Lane, which will connect to the existing Class II Bike Lane approximately 0.5 mile from the project site. The proposed bike lane would run alongside the southern and eastern borders of the project site. The City's existing and proposed paths connect destinations throughout the area. Enhancements to encourage walking and bicycling will reduce driving and related pollutant emissions.
Air Quality Policy 1.6: Alternative fuel infrastructure. Encourage public and private activity and employment centers to incorporate electric charging and alternative fuel stations.	**Consistent.** The project would not preclude future installment of electrical vehicle charging systems.
Air Quality Policy 1.8: Trees. Maintain or plant trees where appropriate to provide shade, absorb carbon, improve oxygenation, slow stormwater runoff, and reduce the heat island effect.	**Consistent.** The project would incorporate landscaping throughout the project site. The incorporated landscaping would provide shade, absorb carbon, improve oxygenation, slow stormwater runoff, and reduce the heat island effect.
Air Quality Policy 2.1: Regional coordination. Support regional efforts to reduce air pollution (criteria air pollutants and greenhouse gas emissions) and collaborate with other agencies to improve air quality at the emission source and reduce vehicle miles traveled.	**Not directly applicable.** However, residents can participate in educational and grant programs designed to reduce GHG emissions developed through regional coordination.
Air Quality Policy 2.2: Cross-jurisdictional issues. Collaborate with regional agencies and surrounding jurisdictions to address cross-jurisdictional transportation and air quality issues.	**Not directly applicable.** However, residents can participate in educational and grant programs designed to reduce GHG emissions developed through regional coordination.
Air Quality Policy 2.6: Innovative mitigation. Encourage innovative mitigation measures to reduce air quality impacts by coordinating with the SJVAPCD, project applicants, and other interested parties.	**Not directly applicable.** However, residents can participate in educational and grant programs designed to reduce GHG emissions developed through regional coordination.
Circulation Policy 1.1: Multimodal network. The City shall plan, design, operate, and maintain the transportation network to promote safe and convenient travel for all users: pedestrian, bicyclists, transit riders, freight, and motorists.	**Consistent.** The project is will be within the City of Clovis. The City's current Bicycle System Master Plan includes a variety of features designed to provide safe and convenient travel for users of all modes of transportation. Residents will have easy access to the planned trail systems that will connect to destinations throughout the area.

Table 21 (cont.): Consistency with General Plan Policies

General Plan Policy	Project Consistency
Circulation Policy 1.2: Transportation decisions. Decisions should balance the comfort, convenience, and safety of pedestrians, bicyclists, and motorists.	**Consistent.** Residents will have easy access to the existing and planned trail systems that provide convenience and safety for pedestrians and bicyclists. The project site is less than 0.1 mile from both an Existing Class I Bike Path and a Proposed Class II Bike Lane.
Circulation Policy 1.4: Jobs and housing. Encourage infill development that would provide jobs and services closer to housing, and vice versa, to reduce citywide vehicle miles traveled and effectively utilize the existing transportation infrastructure.	**Consistent.** The project is approximately 3.6 miles from existing downtown Clovis and approximately 0.85 miles east of Woods Elementary School. The project is within one mile of a mix of land uses including educational, commercial, and recreational.
Circulation Policy 1.5: Neighborhood connectivity. The transportation network shall provide multimodal access between neighborhoods and neighborhood-serving uses (educational, recreational, or neighborhood commercial uses).	**Consistent.** The project will be within the City of Clovis, which emphasizes neighborhood access and connectivity. The project is within 1 to 2 miles of multiple existing educational, recreational, and commercial uses.
Circulation Policy 3.11: Right-of-way design. Design landscaped parkways, medians, and right-of-ways as aesthetic buffers to improve the community's appearance and encourage non-motorized transportation.	**Consistent.** An existing Class I Bike Path runs adjacent to the northern boundary of the project site. In addition, the project site is approximately 0.5 mile from an existing Class II Bike Lane. The lane is proposed to continue and run adjacent to eastern and southern boundaries of the project site. Access to the trail systems will encourage future residents to use non-motorized transportation. The project will include atheistically pleasing landscaping.
Circulation Policy 5.1: Complete street amenities. Upgrade existing streets and design new streets to include complete street amenities, prioritizing improvements to bicycle and pedestrian connectivity or safety (consistent with the Bicycle Transportation Master Plan and other master plans).	**Consistent.** The project would be required to upgrade existing streets fronting the property in accordance with City standards.
Circulation Policy 5.2: Development-funded facilities. Require development to fund and construct facilities as shown in the Bicycle Transportation Plan when facilities are in or adjacent to the development.	**Consistent.** The project will participate in fair-share funding of any facilities that are adjacent to the development if any are identified by the City.
Circulation Policy 5.4: Homeowner associations. The city may require homeowner associations to maintain pathways and other bicycle and pedestrian facilities within the homeowner association area.	**Consistent.** The project would not preclude the formation of homeowner associations.
Circulation Policy 5.5: Pedestrian access. Require sidewalks, paths, and crosswalks to provide access to schools, parks, and other activity centers to provide general pedestrian connectivity throughout the city.	**Consistent.** Future residents will be able to utilize sidewalks and paths constructed in compliance with City requirements in this area. An existing Class I Bike Path runs along the northern boundary of the project site and provides general pedestrian connectivity to destinations throughout the City.

Table 21 (cont.): Consistency with General Plan Policies

General Plan Policy	Project Consistency
Open Space and Conservation Element Policy 3.4: Drought-tolerant landscaping. Promote water conservation through use of drought-tolerant landscaping on existing and new residential properties. Require drought-tolerant landscaping for all new commercial and industrial development and city-maintained landscaping, unless used for recreation purposes.	**Consistent.** The project will promote water conservation through use of drought-tolerant landscaping on new residential properties.
Open Space and Conservation Element Policy 3.5: Energy and water conservation. Encourage new development and substantial rehabilitation projects to exceed energy and water conservation and reduction standards set in the California Building Code.	**Consistent:** The project will at a minimum comply with the 2013 Title 24 energy efficiency standards, which are 25 percent more stringent than previous standards.
Open Space and Conservation Element Policy 3.6: Renewable Energy. Promote the use of renewable and sustainable energy sources to serve public and private sector development.	**Consistent:** The project will comply with Green Building Code requirements for solar ready roofs.
Open Space and Conservation Element Policy 3.7: Construction and design. Encourage new construction to incorporate energy efficient building and site design strategies**.**	**Consistent:** The project will design homes to meet or exceed the latest most stringent energy standards.
Source: City of Clovis General Plan 2014.	

In summary, the project incorporates a number of features that would minimize GHG emissions. These features are consistent with project-level strategies identified by the ARB's Scoping Plan and the City of Clovis General Plan. As demonstrated in the impact analysis above, the project would achieve an approximately 30.7 percent reduction from the BAU inventory and, therefore, would not significantly hinder or delay the State's ability to meet the reduction targets contained in AB 32 or conflict with implementation of the Scoping Plan. The project promotes the goals of the Scoping Plan through implementation of design measures that reduce energy consumption, water consumption, and reduction in vehicle miles traveled. Therefore, the project does not conflict with any plans to reduce GHG emissions. The impact is less than significant.

Level of Significance Before Mitigation

Less than significant impact.

Mitigation Measures

No mitigation measures are required.

Level of Significance After Mitigation

Less than significant impact.

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Appendix A: CalEEMod Output

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CalEEMod Output

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Woodside Homes Tract No 6154

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	96.00	Dwelling Unit	43.23	172,800.00	275

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on site plan
96 single family homes on approximately 43.23 acres

Construction Phase - Estimated construction schedule

Off-road Equipment - Building construction equipment adjusted to conserve horsepower hours

Demolition - Approximate square footage of existing residential structures to be demolished

Vehicle Trips - ITE Trip Generation Manual, 9th Ed (ITE Code 210)
Weekday 9.52; Saturday 9.91; Sunday 8.62

Vechicle Emission Factors - SJVAPCD 2019 Residential Fleet Mix (Annual)

Vechicle Emission Factors - SJVAPCD 2019 Residential Fleet Mix (Summer)

Vechicle Emission Factors - SJVAPCD 2019 Residential Fleet Mix (Winter)

Woodstoves - Based on SJVAPCD Rule 4901

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	740.00	521.00
tblFireplaces	NumberGas	52.80	96.00
tblFireplaces	NumberNoFireplace	43.20	96.00
tblLandUse	LotAcreage	31.17	43.23
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	6.80
tblOffRoadEquipment	UsageHours	8.00	5.70
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	5.70
tblProjectCharacteristics	OperationalYear	2014	2019
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	LDA	0.44	0.51
tblVehicleEF	LDA	0.44	0.51
tblVehicleEF	LDA	0.44	0.51
tblVehicleEF	LDT1	0.06	0.21
tblVehicleEF	LDT1	0.06	0.21
tblVehicleEF	LDT1	0.06	0.21
tblVehicleEF	LDT2	0.16	0.17
tblVehicleEF	LDT2	0.16	0.17
tblVehicleEF	LDT2	0.16	0.17
tblVehicleEF	LHD1	0.04	2.1000e-003
tblVehicleEF	LHD1	0.04	2.1000e-003

tblVehicleEF	LHD1	0.04	2.1000e-003
tblVehicleEF	LHD2	7.0840e-003	1.0000e-003
tblVehicleEF	LHD2	7.0840e-003	1.0000e-003
tblVehicleEF	LHD2	7.0840e-003	1.0000e-003
tblVehicleEF	MCY	6.5790e-003	3.1000e-003
tblVehicleEF	MCY	6.5790e-003	3.1000e-003
tblVehicleEF	MCY	6.5790e-003	3.1000e-003
tblVehicleEF	MDV	0.17	0.06
tblVehicleEF	MDV	0.17	0.06
tblVehicleEF	MDV	0.17	0.06
tblVehicleEF	MH	1.8610e-003	2.3000e-003
tblVehicleEF	MH	1.8610e-003	2.3000e-003
tblVehicleEF	MH	1.8610e-003	2.3000e-003
tblVehicleEF	MHD	0.02	9.5000e-003
tblVehicleEF	MHD	0.02	9.5000e-003
tblVehicleEF	MHD	0.02	9.5000e-003
tblVehicleEF	OBUS	2.0630e-003	0.00
tblVehicleEF	OBUS	2.0630e-003	0.00
tblVehicleEF	OBUS	2.0630e-003	0.00
tblVehicleEF	SBUS	7.6400e-004	1.0000e-003
tblVehicleEF	SBUS	7.6400e-004	1.0000e-003
tblVehicleEF	SBUS	7.6400e-004	1.0000e-003
tblVehicleEF	UBUS	1.7560e-003	3.8000e-003
tblVehicleEF	UBUS	1.7560e-003	3.8000e-003
tblVehicleEF	UBUS	1.7560e-003	3.8000e-003
tblVehicleTrips	ST_TR	10.08	9.91
tblVehicleTrips	SU_TR	8.77	8.62
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	NumberCatalytic	4.80	43.23
tblWoodstoves	NumberNoncatalytic	4.80	43.23

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.3501	3.8427	2.7799	3.2500e-003	0.6107	0.1912	0.8018	0.2871	0.1766	0.4637	0.0000	303.0291	303.0291	0.0862	0.0000	304.8400
2017	0.6235	5.4141	3.9609	5.9500e-003	0.3678	0.3416	0.7094	0.1463	0.3200	0.4663	0.0000	526.6749	526.6749	0.1223	0.0000	529.2438
2018	0.5224	4.4471	3.5901	5.7200e-003	0.0450	0.2798	0.3248	0.0121	0.2630	0.2752	0.0000	497.0148	497.0148	0.1094	0.0000	499.3127
2019	1.7141	0.8472	0.7998	1.3000e-003	9.1500e-003	0.0489	0.0580	2.4500e-003	0.0457	0.0482	0.0000	112.8762	112.8762	0.0285	0.0000	113.4747
Total	**3.2101**	**14.5511**	**11.1307**	**0.0162**	**1.0326**	**0.8615**	**1.8941**	**0.4480**	**0.8053**	**1.2533**	**0.0000**	**1,439.5950**	**1,439.5950**	**0.3465**	**0.0000**	**1,446.8712**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.3501	3.8427	2.7799	3.2500e-003	0.2801	0.1912	0.4712	0.1306	0.1766	0.3072	0.0000	303.0288	303.0288	0.0862	0.0000	304.8396
2017	0.6235	5.4141	3.9609	5.9500e-003	0.1889	0.3416	0.5305	0.0722	0.3200	0.3922	0.0000	526.6743	526.6743	0.1223	0.0000	529.2433
2018	0.5224	4.4471	3.5901	5.7200e-003	0.0450	0.2798	0.3248	0.0121	0.2630	0.2752	0.0000	497.0142	497.0142	0.1094	0.0000	499.3122
2019	1.7141	0.8472	0.7998	1.3000e-003	9.1500e-003	0.0489	0.0580	2.4500e-003	0.0457	0.0482	0.0000	112.8761	112.8761	0.0285	0.0000	113.4746
Total	**3.2101**	**14.5510**	**11.1307**	**0.0162**	**0.5231**	**0.8615**	**1.3846**	**0.2173**	**0.8053**	**1.0226**	**0.0000**	**1,439.5934**	**1,439.5934**	**0.3465**	**0.0000**	**1,446.8697**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**49.34**	**0.00**	**26.90**	**51.49**	**0.00**	**18.41**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.7476	0.1388	8.7176	0.0261		1.3144	1.3144		1.3144	1.3144	174.7669	76.7788	251.5457	0.8196	1.3900e-003	269.1868
Energy	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	374.5732	374.5732	0.0128	4.9500e-003	376.3742
Mobile	0.4923	1.0106	5.3181	0.0129	0.9961	0.0158	1.0119	0.2665	0.0146	0.2811	0.0000	897.6936	897.6936	0.0367	0.0000	898.4633
Waste						0.0000	0.0000		0.0000	0.0000	20.0961	0.0000	20.0961	1.1877	0.0000	45.0367
Water						0.0000	0.0000		0.0000	0.0000	1.9844	13.8608	15.8451	0.2044	4.9400e-003	21.6704
Total	**2.2561**	**1.2881**	**14.0947**	**0.0399**	**0.9961**	**1.3414**	**2.3375**	**0.2665**	**1.3402**	**1.6067**	**196.8474**	**1,362.9064**	**1,559.7537**	**2.2611**	**0.0113**	**1,610.7314**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.8666	8.3000e-003	0.7168	4.0000e-005		9.2000e-003	9.2000e-003		9.1500e-003	9.1500e-003	0.0000	76.7788	76.7788	2.5900e-003	1.3900e-003	77.2629
Energy	0.0129	0.1106	0.0471	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	335.4192	335.4192	0.0118	4.2900e-003	336.9969
Mobile	0.4898	0.9936	5.2443	0.0127	0.9762	0.0155	0.9917	0.2612	0.0143	0.2755	0.0000	880.2781	880.2781	0.0360	0.0000	881.0339
Waste						0.0000	0.0000		0.0000	0.0000	20.0961	0.0000	20.0961	1.1877	0.0000	45.0367
Water						0.0000	0.0000		0.0000	0.0000	1.9844	13.8608	15.8451	0.2044	4.9300e-003	21.6672
Total	**1.3694**	**1.1125**	**6.0081**	**0.0134**	**0.9762**	**0.0337**	**1.0098**	**0.2612**	**0.0324**	**0.2936**	**22.0805**	**1,306.3368**	**1,328.4173**	**1.4425**	**0.0106**	**1,361.9977**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**39.30**	**13.63**	**57.37**	**66.40**	**2.00**	**97.49**	**56.80**	**2.00**	**97.58**	**81.73**	**88.78**	**4.15**	**14.83**	**36.20**	**5.94**	**15.44**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/2/2016	9/9/2016	5	50	
2	Site Preparation	Site Preparation	9/10/2016	10/21/2016	5	30	
3	Grading	Grading	10/22/2016	2/3/2017	5	75	
4	Building Construction	Building Construction	2/4/2017	2/4/2019	5	521	
5	Paving	Paving	2/5/2019	4/22/2019	5	55	
6	Architectural Coating	Architectural Coating	4/23/2019	7/8/2019	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 0

Residential Indoor: 349,920; Residential Outdoor: 116,640; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	2	5.00	226	0.29
Building Construction	Forklifts	5	6.80	89	0.20
Building Construction	Generator Sets	2	5.70	84	0.74
Building Construction	Tractors/Loaders/Backhoes	5	6.00	97	0.37

Building Construction	Welders	2	5.70	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	45.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	16	35.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	7.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.8900e-003	0.0000	4.8900e-003	7.4000e-004	0.0000	7.4000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1072	1.1414	0.8758	1.0000e-003		0.0573	0.0573		0.0534	0.0534	0.0000	92.7434	92.7434	0.0252	0.0000	93.2731
Total	**0.1072**	**1.1414**	**0.8758**	**1.0000e-003**	**4.8900e-003**	**0.0573**	**0.0622**	**7.4000e-004**	**0.0534**	**0.0542**	**0.0000**	**92.7434**	**92.7434**	**0.0252**	**0.0000**	**93.2731**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.1000e-004	6.0000e-003	5.5500e-003	2.0000e-005	3.8000e-004	9.0000e-005	4.8000e-004	1.1000e-004	9.0000e-005	1.9000e-004	0.0000	1.5378	1.5378	1.0000e-005	0.0000	1.5380
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3900e-003	1.7900e-003	0.0176	3.0000e-005	3.0000e-003	2.0000e-005	3.0200e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.6014	2.6014	1.4000e-004	0.0000	2.6044
Total	**1.9000e-003**	**7.7900e-003**	**0.0231**	**5.0000e-005**	**3.3800e-003**	**1.1000e-004**	**3.5000e-003**	**9.1000e-004**	**1.1000e-004**	**1.0100e-003**	**0.0000**	**4.1392**	**4.1392**	**1.5000e-004**	**0.0000**	**4.1424**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.2000e-003	0.0000	2.2000e-003	3.3000e-004	0.0000	3.3000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1072	1.1414	0.8758	1.0000e-003		0.0573	0.0573		0.0534	0.0534	0.0000	92.7433	92.7433	0.0252	0.0000	93.2729
Total	**0.1072**	**1.1414**	**0.8758**	**1.0000e-003**	**2.2000e-003**	**0.0573**	**0.0595**	**3.3000e-004**	**0.0534**	**0.0537**	**0.0000**	**92.7433**	**92.7433**	**0.0252**	**0.0000**	**93.2729**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.1000e-004	6.0000e-003	5.5500e-003	2.0000e-005	3.8000e-004	9.0000e-005	4.8000e-004	1.1000e-004	9.0000e-005	1.9000e-004	0.0000	1.5378	1.5378	1.0000e-005	0.0000	1.5380
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3900e-003	1.7900e-003	0.0176	3.0000e-005	3.0000e-003	2.0000e-005	3.0200e-003	8.0000e-004	2.0000e-005	8.2000e-004	0.0000	2.6014	2.6014	1.4000e-004	0.0000	2.6044
Total	**1.9000e-003**	**7.7900e-003**	**0.0231**	**5.0000e-005**	**3.3800e-003**	**1.1000e-004**	**3.5000e-003**	**9.1000e-004**	**1.1000e-004**	**1.0100e-003**	**0.0000**	**4.1392**	**4.1392**	**1.5000e-004**	**0.0000**	**4.1424**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2710	0.0000	0.2710	0.1490	0.0000	0.1490	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0762	0.8195	0.6166	5.9000e-004		0.0441	0.0441		0.0406	0.0406	0.0000	55.3157	55.3157	0.0167	0.0000	55.6661
Total	**0.0762**	**0.8195**	**0.6166**	**5.9000e-004**	**0.2710**	**0.0441**	**0.3151**	**0.1490**	**0.0406**	**0.1895**	**0.0000**	**55.3157**	**55.3157**	**0.0167**	**0.0000**	**55.6661**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-003	1.2900e-003	0.0126	3.0000e-005	2.1600e-003	2.0000e-005	2.1700e-003	5.7000e-004	1.0000e-005	5.9000e-004	0.0000	1.8730	1.8730	1.0000e-004	0.0000	1.8751
Total	**1.0000e-003**	**1.2900e-003**	**0.0126**	**3.0000e-005**	**2.1600e-003**	**2.0000e-005**	**2.1700e-003**	**5.7000e-004**	**1.0000e-005**	**5.9000e-004**	**0.0000**	**1.8730**	**1.8730**	**1.0000e-004**	**0.0000**	**1.8751**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1220	0.0000	0.1220	0.0670	0.0000	0.0670	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0762	0.8195	0.6166	5.9000e-004		0.0441	0.0441		0.0406	0.0406	0.0000	55.3156	55.3156	0.0167	0.0000	55.6660
Total	**0.0762**	**0.8195**	**0.6166**	**5.9000e-004**	**0.1220**	**0.0441**	**0.1660**	**0.0670**	**0.0406**	**0.1076**	**0.0000**	**55.3156**	**55.3156**	**0.0167**	**0.0000**	**55.6660**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-003	1.2900e-003	0.0126	3.0000e-005	2.1600e-003	2.0000e-005	2.1700e-003	5.7000e-004	1.0000e-005	5.9000e-004	0.0000	1.8730	1.8730	1.0000e-004	0.0000	1.8751
Total	**1.0000e-003**	**1.2900e-003**	**0.0126**	**3.0000e-005**	**2.1600e-003**	**2.0000e-005**	**2.1700e-003**	**5.7000e-004**	**1.0000e-005**	**5.9000e-004**	**0.0000**	**1.8730**	**1.8730**	**1.0000e-004**	**0.0000**	**1.8751**

3.4 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3253	0.0000	0.3253	0.1349	0.0000	0.1349	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1620	1.8703	1.2284	1.5400e-003		0.0896	0.0896		0.0824	0.0824	0.0000	145.4893	145.4893	0.0439	0.0000	146.4109
Total	**0.1620**	**1.8703**	**1.2284**	**1.5400e-003**	**0.3253**	**0.0896**	**0.4149**	**0.1349**	**0.0824**	**0.2173**	**0.0000**	**145.4893**	**145.4893**	**0.0439**	**0.0000**	**146.4109**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8500e-003	2.3800e-003	0.0234	5.0000e-005	4.0000e-003	3.0000e-005	4.0300e-003	1.0600e-003	3.0000e-005	1.0900e-003	0.0000	3.4686	3.4686	1.9000e-004	0.0000	3.4725
Total	**1.8500e-003**	**2.3800e-003**	**0.0234**	**5.0000e-005**	**4.0000e-003**	**3.0000e-005**	**4.0300e-003**	**1.0600e-003**	**3.0000e-005**	**1.0900e-003**	**0.0000**	**3.4686**	**3.4686**	**1.9000e-004**	**0.0000**	**3.4725**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1464	0.0000	0.1464	0.0607	0.0000	0.0607	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1620	1.8703	1.2284	1.5400e-003		0.0896	0.0896		0.0824	0.0824	0.0000	145.4891	145.4891	0.0439	0.0000	146.4107
Total	**0.1620**	**1.8703**	**1.2284**	**1.5400e-003**	**0.1464**	**0.0896**	**0.2360**	**0.0607**	**0.0824**	**0.1431**	**0.0000**	**145.4891**	**145.4891**	**0.0439**	**0.0000**	**146.4107**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8500e-003	2.3800e-003	0.0234	5.0000e-005	4.0000e-003	3.0000e-005	4.0300e-003	1.0600e-003	3.0000e-005	1.0900e-003	0.0000	3.4686	3.4686	1.9000e-004	0.0000	3.4725
Total	**1.8500e-003**	**2.3800e-003**	**0.0234**	**5.0000e-005**	**4.0000e-003**	**3.0000e-005**	**4.0300e-003**	**1.0600e-003**	**3.0000e-005**	**1.0900e-003**	**0.0000**	**3.4686**	**3.4686**	**1.9000e-004**	**0.0000**	**3.4725**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3253	0.0000	0.3253	0.1349	0.0000	0.1349	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0762	0.8699	0.5851	7.7000e-004		0.0415	0.0415		0.0382	0.0382	0.0000	71.5924	71.5924	0.0219	0.0000	72.0531
Total	**0.0762**	**0.8699**	**0.5851**	**7.7000e-004**	**0.3253**	**0.0415**	**0.3667**	**0.1349**	**0.0382**	**0.1730**	**0.0000**	**71.5924**	**71.5924**	**0.0219**	**0.0000**	**72.0531**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1000e-004	1.0500e-003	0.0103	2.0000e-005	2.0000e-003	1.0000e-005	2.0100e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6659	1.6659	8.0000e-005	0.0000	1.6677
Total	**8.1000e-004**	**1.0500e-003**	**0.0103**	**2.0000e-005**	**2.0000e-003**	**1.0000e-005**	**2.0100e-003**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.6659**	**1.6659**	**8.0000e-005**	**0.0000**	**1.6677**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1464	0.0000	0.1464	0.0607	0.0000	0.0607	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0762	0.8699	0.5851	7.7000e-004		0.0415	0.0415		0.0382	0.0382	0.0000	71.5923	71.5923	0.0219	0.0000	72.0530
Total	**0.0762**	**0.8699**	**0.5851**	**7.7000e-004**	**0.1464**	**0.0415**	**0.1878**	**0.0607**	**0.0382**	**0.0988**	**0.0000**	**71.5923**	**71.5923**	**0.0219**	**0.0000**	**72.0530**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.1000e-004	1.0500e-003	0.0103	2.0000e-005	2.0000e-003	1.0000e-005	2.0100e-003	5.3000e-004	1.0000e-005	5.4000e-004	0.0000	1.6659	1.6659	8.0000e-005	0.0000	1.6677
Total	**8.1000e-004**	**1.0500e-003**	**0.0103**	**2.0000e-005**	**2.0000e-003**	**1.0000e-005**	**2.0100e-003**	**5.3000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.6659**	**1.6659**	**8.0000e-005**	**0.0000**	**1.6677**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5194	4.4221	3.0355	4.4900e-003		0.2982	0.2982		0.2801	0.2801	0.0000	401.0718	401.0718	0.0987	0.0000	403.1448
Total	**0.5194**	**4.4221**	**3.0355**	**4.4900e-003**		**0.2982**	**0.2982**		**0.2801**	**0.2801**	**0.0000**	**401.0718**	**401.0718**	**0.0987**	**0.0000**	**403.1448**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0137	0.1037	0.1610	2.8000e-004	7.6400e-003	1.7200e-003	9.3600e-003	2.1900e-003	1.5800e-003	3.7700e-003	0.0000	24.9406	24.9406	2.1000e-004	0.0000	24.9449
Worker	0.0133	0.0174	0.1691	3.8000e-004	0.0329	2.3000e-004	0.0331	8.7400e-003	2.1000e-004	8.9500e-003	0.0000	27.4042	27.4042	1.3900e-003	0.0000	27.4334
Total	**0.0270**	**0.1210**	**0.3301**	**6.6000e-004**	**0.0405**	**1.9500e-003**	**0.0425**	**0.0109**	**1.7900e-003**	**0.0127**	**0.0000**	**52.3448**	**52.3448**	**1.6000e-003**	**0.0000**	**52.3783**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.5194	4.4221	3.0355	4.4900e-003		0.2982	0.2982		0.2801	0.2801	0.0000	401.0713	401.0713	0.0987	0.0000	403.1443
Total	**0.5194**	**4.4221**	**3.0355**	**4.4900e-003**		**0.2982**	**0.2982**		**0.2801**	**0.2801**	**0.0000**	**401.0713**	**401.0713**	**0.0987**	**0.0000**	**403.1443**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0137	0.1037	0.1610	2.8000e-004	7.6400e-003	1.7200e-003	9.3600e-003	2.1900e-003	1.5800e-003	3.7700e-003	0.0000	24.9406	24.9406	2.1000e-004	0.0000	24.9449
Worker	0.0133	0.0174	0.1691	3.8000e-004	0.0329	2.3000e-004	0.0331	8.7400e-003	2.1000e-004	8.9500e-003	0.0000	27.4042	27.4042	1.3900e-003	0.0000	27.4334
Total	**0.0270**	**0.1210**	**0.3301**	**6.6000e-004**	**0.0405**	**1.9500e-003**	**0.0425**	**0.0109**	**1.7900e-003**	**0.0127**	**0.0000**	**52.3448**	**52.3448**	**1.6000e-003**	**0.0000**	**52.3783**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4963	4.3265	3.2603	4.9900e-003		0.2778	0.2778		0.2612	0.2612	0.0000	440.4049	440.4049	0.1078	0.0000	442.6684
Total	**0.4963**	**4.3265**	**3.2603**	**4.9900e-003**		**0.2778**	**0.2778**		**0.2612**	**0.2612**	**0.0000**	**440.4049**	**440.4049**	**0.1078**	**0.0000**	**442.6684**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0131	0.1034	0.1625	3.1000e-004	8.4900e-003	1.7500e-003	0.0102	2.4300e-003	1.6100e-003	4.0400e-003	0.0000	27.2105	27.2105	2.2000e-004	0.0000	27.2152
Worker	0.0131	0.0173	0.1672	4.3000e-004	0.0365	2.5000e-004	0.0368	9.7100e-003	2.3000e-004	9.9400e-003	0.0000	29.3993	29.3993	1.4200e-003	0.0000	29.4291
Total	**0.0261**	**0.1206**	**0.3298**	**7.4000e-004**	**0.0450**	**2.0000e-003**	**0.0470**	**0.0121**	**1.8400e-003**	**0.0140**	**0.0000**	**56.6098**	**56.6098**	**1.6400e-003**	**0.0000**	**56.6443**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4963	4.3264	3.2603	4.9900e-003		0.2778	0.2778		0.2612	0.2612	0.0000	440.4044	440.4044	0.1078	0.0000	442.6679
Total	**0.4963**	**4.3264**	**3.2603**	**4.9900e-003**		**0.2778**	**0.2778**		**0.2612**	**0.2612**	**0.0000**	**440.4044**	**440.4044**	**0.1078**	**0.0000**	**442.6679**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0131	0.1034	0.1625	3.1000e-004	8.4900e-003	1.7500e-003	0.0102	2.4300e-003	1.6100e-003	4.0400e-003	0.0000	27.2105	27.2105	2.2000e-004	0.0000	27.2152
Worker	0.0131	0.0173	0.1672	4.3000e-004	0.0365	2.5000e-004	0.0368	9.7100e-003	2.3000e-004	9.9400e-003	0.0000	29.3993	29.3993	1.4200e-003	0.0000	29.4291
Total	**0.0261**	**0.1206**	**0.3298**	**7.4000e-004**	**0.0450**	**2.0000e-003**	**0.0470**	**0.0121**	**1.8400e-003**	**0.0140**	**0.0000**	**56.6098**	**56.6098**	**1.6400e-003**	**0.0000**	**56.6443**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0419	0.3735	0.3049	4.8000e-004		0.0229	0.0229		0.0215	0.0215	0.0000	41.7127	41.7127	0.0102	0.0000	41.9259
Total	**0.0419**	**0.3735**	**0.3049**	**4.8000e-004**		**0.0229**	**0.0229**		**0.0215**	**0.0215**	**0.0000**	**41.7127**	**41.7127**	**0.0102**	**0.0000**	**41.9259**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1300e-003	8.9700e-003	0.0147	3.0000e-005	8.1000e-004	1.5000e-004	9.7000e-004	2.3000e-004	1.4000e-004	3.7000e-004	0.0000	2.5611	2.5611	2.0000e-005	0.0000	2.5616
Worker	1.1300e-003	1.5000e-003	0.0145	4.0000e-005	3.5000e-003	2.0000e-005	3.5200e-003	9.3000e-004	2.0000e-005	9.5000e-004	0.0000	2.7162	2.7162	1.3000e-004	0.0000	2.7189
Total	**2.2600e-003**	**0.0105**	**0.0292**	**7.0000e-005**	**4.3100e-003**	**1.7000e-004**	**4.4900e-003**	**1.1600e-003**	**1.6000e-004**	**1.3200e-003**	**0.0000**	**5.2774**	**5.2774**	**1.5000e-004**	**0.0000**	**5.2804**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0419	0.3735	0.3049	4.8000e-004		0.0229	0.0229		0.0215	0.0215	0.0000	41.7127	41.7127	0.0102	0.0000	41.9258
Total	**0.0419**	**0.3735**	**0.3049**	**4.8000e-004**		**0.0229**	**0.0229**		**0.0215**	**0.0215**	**0.0000**	**41.7127**	**41.7127**	**0.0102**	**0.0000**	**41.9258**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1300e-003	8.9700e-003	0.0147	3.0000e-005	8.1000e-004	1.5000e-004	9.7000e-004	2.3000e-004	1.4000e-004	3.7000e-004	0.0000	2.5611	2.5611	2.0000e-005	0.0000	2.5616
Worker	1.1300e-003	1.5000e-003	0.0145	4.0000e-005	3.5000e-003	2.0000e-005	3.5200e-003	9.3000e-004	2.0000e-005	9.5000e-004	0.0000	2.7162	2.7162	1.3000e-004	0.0000	2.7189
Total	**2.2600e-003**	**0.0105**	**0.0292**	**7.0000e-005**	**4.3100e-003**	**1.7000e-004**	**4.4900e-003**	**1.1600e-003**	**1.6000e-004**	**1.3200e-003**	**0.0000**	**5.2774**	**5.2774**	**1.5000e-004**	**0.0000**	**5.2804**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0392	0.4107	0.3950	6.1000e-004		0.0223	0.0223		0.0205	0.0205	0.0000	55.1085	55.1085	0.0174	0.0000	55.4747
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0392**	**0.4107**	**0.3950**	**6.1000e-004**		**0.0223**	**0.0223**		**0.0205**	**0.0205**	**0.0000**	**55.1085**	**55.1085**	**0.0174**	**0.0000**	**55.4747**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0700e-003	1.4200e-003	0.0137	4.0000e-005	3.3000e-003	2.0000e-005	3.3200e-003	8.8000e-004	2.0000e-005	9.0000e-004	0.0000	2.5610	2.5610	1.2000e-004	0.0000	2.5635
Total	**1.0700e-003**	**1.4200e-003**	**0.0137**	**4.0000e-005**	**3.3000e-003**	**2.0000e-005**	**3.3200e-003**	**8.8000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**2.5610**	**2.5610**	**1.2000e-004**	**0.0000**	**2.5635**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0392	0.4107	0.3950	6.1000e-004		0.0223	0.0223		0.0205	0.0205	0.0000	55.1085	55.1085	0.0174	0.0000	55.4746
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0392**	**0.4107**	**0.3950**	**6.1000e-004**		**0.0223**	**0.0223**		**0.0205**	**0.0205**	**0.0000**	**55.1085**	**55.1085**	**0.0174**	**0.0000**	**55.4746**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0700e-003	1.4200e-003	0.0137	4.0000e-005	3.3000e-003	2.0000e-005	3.3200e-003	8.8000e-004	2.0000e-005	9.0000e-004	0.0000	2.5610	2.5610	1.2000e-004	0.0000	2.5635
Total	**1.0700e-003**	**1.4200e-003**	**0.0137**	**4.0000e-005**	**3.3000e-003**	**2.0000e-005**	**3.3200e-003**	**8.8000e-004**	**2.0000e-005**	**9.0000e-004**	**0.0000**	**2.5610**	**2.5610**	**1.2000e-004**	**0.0000**	**2.5635**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.6219					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.3300e-003	0.0505	0.0506	8.0000e-005		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	7.0215	7.0215	5.9000e-004	0.0000	7.0339
Total	**1.6292**	**0.0505**	**0.0506**	**8.0000e-005**		**3.5400e-003**	**3.5400e-003**		**3.5400e-003**	**3.5400e-003**	**0.0000**	**7.0215**	**7.0215**	**5.9000e-004**	**0.0000**	**7.0339**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	6.6000e-004	6.3800e-003	2.0000e-005	1.5400e-003	1.0000e-005	1.5500e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.1951	1.1951	6.0000e-005	0.0000	1.1963
Total	**5.0000e-004**	**6.6000e-004**	**6.3800e-003**	**2.0000e-005**	**1.5400e-003**	**1.0000e-005**	**1.5500e-003**	**4.1000e-004**	**1.0000e-005**	**4.2000e-004**	**0.0000**	**1.1951**	**1.1951**	**6.0000e-005**	**0.0000**	**1.1963**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.6219					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.3300e-003	0.0505	0.0506	8.0000e-005		3.5400e-003	3.5400e-003		3.5400e-003	3.5400e-003	0.0000	7.0214	7.0214	5.9000e-004	0.0000	7.0339
Total	**1.6292**	**0.0505**	**0.0506**	**8.0000e-005**		**3.5400e-003**	**3.5400e-003**		**3.5400e-003**	**3.5400e-003**	**0.0000**	**7.0214**	**7.0214**	**5.9000e-004**	**0.0000**	**7.0339**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	6.6000e-004	6.3800e-003	2.0000e-005	1.5400e-003	1.0000e-005	1.5500e-003	4.1000e-004	1.0000e-005	4.2000e-004	0.0000	1.1951	1.1951	6.0000e-005	0.0000	1.1963
Total	**5.0000e-004**	**6.6000e-004**	**6.3800e-003**	**2.0000e-005**	**1.5400e-003**	**1.0000e-005**	**1.5500e-003**	**4.1000e-004**	**1.0000e-005**	**4.2000e-004**	**0.0000**	**1.1951**	**1.1951**	**6.0000e-005**	**0.0000**	**1.1963**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4898	0.9936	5.2443	0.0127	0.9762	0.0155	0.9917	0.2612	0.0143	0.2755	0.0000	880.2781	880.2781	0.0360	0.0000	881.0339
Unmitigated	0.4923	1.0106	5.3181	0.0129	0.9961	0.0158	1.0119	0.2665	0.0146	0.2811	0.0000	897.6936	897.6936	0.0367	0.0000	898.4633

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	913.92	951.36	827.52	2,656,993	2,603,853
Total	913.92	951.36	827.52	2,656,993	2,603,853

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.511700	0.213500	0.169100	0.060900	0.002100	0.001000	0.009500	0.022000	0.000000	0.003800	0.003100	0.001000	0.002300

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	207.3195	207.3195	9.3700e-003	1.9400e-003	208.1176
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	214.0283	214.0283	9.6800e-003	2.0000e-003	214.8522
NaturalGas Mitigated	0.0129	0.1106	0.0471	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	128.0998	128.0998	2.4600e-003	2.3500e-003	128.8794
NaturalGas Unmitigated	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	160.5450	160.5450	3.0800e-003	2.9400e-003	161.5220

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.0085e+006	0.0162	0.1386	0.0590	8.8000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	160.5450	160.5450	3.0800e-003	2.9400e-003	161.5220
Total		**0.0162**	**0.1386**	**0.0590**	**8.8000e-004**		**0.0112**	**0.0112**		**0.0112**	**0.0112**	**0.0000**	**160.5450**	**160.5450**	**3.0800e-003**	**2.9400e-003**	**161.5220**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	2.4005e+006	0.0129	0.1106	0.0471	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	128.0998	128.0998	2.4600e-003	2.3500e-003	128.8794
Total		**0.0129**	**0.1106**	**0.0471**	**7.1000e-004**		**8.9400e-003**	**8.9400e-003**		**8.9400e-003**	**8.9400e-003**	**0.0000**	**128.0998**	**128.0998**	**2.4600e-003**	**2.3500e-003**	**128.8794**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	735716	214.0283	9.6800e-003	2.0000e-003	214.8522
Total		**214.0283**	**9.6800e-003**	**2.0000e-003**	**214.8522**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	712655	207.3195	9.3700e-003	1.9400e-003	208.1176
Total		**207.3195**	**9.3700e-003**	**1.9400e-003**	**208.1176**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8666	8.3000e-003	0.7168	4.0000e-005		9.2000e-003	9.2000e-003		9.1500e-003	9.1500e-003	0.0000	76.7788	76.7788	2.5900e-003	1.3900e-003	77.2629
Unmitigated	1.7476	0.1388	8.7176	0.0261		1.3144	1.3144		1.3144	1.3144	174.7669	76.7788	251.5457	0.8196	1.3900e-003	269.1868

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1622					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6749					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.8887	0.1305	8.0013	0.0261		1.3105	1.3105		1.3104	1.3104	174.7669	75.6144	250.3813	0.8185	1.3900e-003	267.9985
Landscaping	0.0219	8.3000e-003	0.7163	4.0000e-005		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003	0.0000	1.1644	1.1644	1.1400e-003	0.0000	1.1884
Total	**1.7476**	**0.1388**	**8.7176**	**0.0261**		**1.3144**	**1.3144**		**1.3144**	**1.3144**	**174.7669**	**76.7787**	**251.5457**	**0.8196**	**1.3900e-003**	**269.1868**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Consumer Products	0.6749					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	7.6400e-003	0.0000	4.2000e-004	0.0000		5.2800e-003	5.2800e-003		5.2200e-003	5.2200e-003	0.0000	75.6144	75.6144	1.4500e-003	1.3900e-003	76.0746
Landscaping	0.0219	8.3000e-003	0.7163	4.0000e-005		3.9300e-003	3.9300e-003		3.9300e-003	3.9300e-003	0.0000	1.1644	1.1644	1.1400e-003	0.0000	1.1884
Architectural Coating	0.1622					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.8666**	**8.3000e-003**	**0.7168**	**4.0000e-005**		**9.2100e-003**	**9.2100e-003**		**9.1500e-003**	**9.1500e-003**	**0.0000**	**76.7787**	**76.7787**	**2.5900e-003**	**1.3900e-003**	**77.2629**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	15.8451	0.2044	4.9300e-003	21.6672
Unmitigated	15.8451	0.2044	4.9400e-003	21.6704

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	6.25479 / 3.94323	15.8451	0.2044	4.9400e-003	21.6704
Total		**15.8451**	**0.2044**	**4.9400e-003**	**21.6704**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	6.25479 / 3.94323	15.8451	0.2044	4.9300e-003	21.6672
Total		**15.8451**	**0.2044**	**4.9300e-003**	**21.6672**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	20.0961	1.1877	0.0000	45.0367
Unmitigated	20.0961	1.1877	0.0000	45.0367

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	99	20.0961	1.1877	0.0000	45.0367
Total		**20.0961**	**1.1877**	**0.0000**	**45.0367**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	99	20.0961	1.1877	0.0000	45.0367
Total		**20.0961**	**1.1877**	**0.0000**	**45.0367**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Woodside Homes Tract No 6154

Fresno County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	96.00	Dwelling Unit	43.23	172,800.00	275

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on site plan
96 single family homes on approximately 43.23 acres

Construction Phase - Estimated construction schedule

Off-road Equipment - Building construction equipment adjusted to conserve horsepower hours

Demolition - Approximate square footage of existing residential structures to be demolished

Vehicle Trips - ITE Trip Generation Manual, 9th Ed (ITE Code 210)
Weekday 9.52; Saturday 9.91; Sunday 8.62

Vechicle Emission Factors - SJVAPCD 2019 Residential Fleet Mix (Annual)

Vechicle Emission Factors - SJVAPCD 2019 Residential Fleet Mix (Summer)

Vechicle Emission Factors - SJVAPCD 2019 Residential Fleet Mix (Winter)

Woodstoves - Based on SJVAPCD Rule 4901

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	740.00	521.00
tblFireplaces	NumberGas	52.80	96.00
tblFireplaces	NumberNoFireplace	43.20	96.00
tblLandUse	LotAcreage	31.17	43.23
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	6.80
tblOffRoadEquipment	UsageHours	8.00	5.70
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	5.70
tblProjectCharacteristics	OperationalYear	2014	2019
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	LDA	0.44	0.51
tblVehicleEF	LDA	0.44	0.51
tblVehicleEF	LDA	0.44	0.51
tblVehicleEF	LDT1	0.06	0.21
tblVehicleEF	LDT1	0.06	0.21
tblVehicleEF	LDT1	0.06	0.21
tblVehicleEF	LDT2	0.16	0.17
tblVehicleEF	LDT2	0.16	0.17
tblVehicleEF	LDT2	0.16	0.17
tblVehicleEF	LHD1	0.04	2.1000e-003
tblVehicleEF	LHD1	0.04	2.1000e-003

tblVehicleEF	LHD1	0.04	2.1000e-003
tblVehicleEF	LHD2	7.0840e-003	1.0000e-003
tblVehicleEF	LHD2	7.0840e-003	1.0000e-003
tblVehicleEF	LHD2	7.0840e-003	1.0000e-003
tblVehicleEF	MCY	6.5790e-003	3.1000e-003
tblVehicleEF	MCY	6.5790e-003	3.1000e-003
tblVehicleEF	MCY	6.5790e-003	3.1000e-003
tblVehicleEF	MDV	0.17	0.06
tblVehicleEF	MDV	0.17	0.06
tblVehicleEF	MDV	0.17	0.06
tblVehicleEF	MH	1.8610e-003	2.3000e-003
tblVehicleEF	MH	1.8610e-003	2.3000e-003
tblVehicleEF	MH	1.8610e-003	2.3000e-003
tblVehicleEF	MHD	0.02	9.5000e-003
tblVehicleEF	MHD	0.02	9.5000e-003
tblVehicleEF	MHD	0.02	9.5000e-003
tblVehicleEF	OBUS	2.0630e-003	0.00
tblVehicleEF	OBUS	2.0630e-003	0.00
tblVehicleEF	OBUS	2.0630e-003	0.00
tblVehicleEF	SBUS	7.6400e-004	1.0000e-003
tblVehicleEF	SBUS	7.6400e-004	1.0000e-003
tblVehicleEF	SBUS	7.6400e-004	1.0000e-003
tblVehicleEF	UBUS	1.7560e-003	3.8000e-003
tblVehicleEF	UBUS	1.7560e-003	3.8000e-003
tblVehicleEF	UBUS	1.7560e-003	3.8000e-003
tblVehicleTrips	ST_TR	10.08	9.91
tblVehicleTrips	SU_TR	8.77	8.62
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	NumberCatalytic	4.80	43.23
tblWoodstoves	NumberNoncatalytic	4.80	43.23

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.5667	74.9019	50.1998	0.0638	18.2141	3.5854	21.1539	9.9699	3.2986	12.6745	0.0000	6,582.6633	6,582.6633	1.9432	0.0000	6,623.4708
2017	6.1759	69.6702	47.7414	0.0638	8.8376	3.3183	12.1559	3.6401	3.0529	6.6929	0.0000	6,474.4639	6,474.4639	1.9419	0.0000	6,515.2428
2018	4.0148	34.0375	27.4426	0.0442	0.3540	2.1441	2.4982	0.0953	2.0154	2.1106	0.0000	4,222.9398	4,222.9398	0.9243	0.0000	4,242.3497
2019	59.2656	30.6820	26.6474	0.0442	0.3540	1.8448	2.1988	0.0953	1.7343	1.8296	0.0000	4,167.7109	4,167.7109	0.9080	0.0000	4,186.7786
Total	**76.0229**	**209.2915**	**152.0312**	**0.2158**	**27.7598**	**10.8926**	**38.0068**	**13.8005**	**10.1012**	**23.3076**	**0.0000**	**21,447.7778**	**21,447.7778**	**5.7173**	**0.0000**	**21,567.8419**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.5667	74.9019	50.1998	0.0638	8.2777	3.5854	11.2174	4.5080	3.2986	7.2126	0.0000	6,582.6633	6,582.6633	1.9432	0.0000	6,623.4708
2017	6.1759	69.6702	47.7414	0.0638	4.0673	3.3183	7.3856	1.6620	3.0529	4.7149	0.0000	6,474.4639	6,474.4639	1.9419	0.0000	6,515.2428
2018	4.0148	34.0375	27.4426	0.0442	0.3540	2.1441	2.4982	0.0953	2.0154	2.1106	0.0000	4,222.9398	4,222.9398	0.9243	0.0000	4,242.3497
2019	59.2656	30.6820	26.6474	0.0442	0.3540	1.8448	2.1988	0.0953	1.7343	1.8296	0.0000	4,167.7109	4,167.7109	0.9080	0.0000	4,186.7786
Total	**76.0229**	**209.2915**	**152.0312**	**0.2158**	**13.0531**	**10.8926**	**23.3000**	**6.3605**	**10.1012**	**15.8677**	**0.0000**	**21,447.7778**	**21,447.7778**	**5.7173**	**0.0000**	**21,567.8419**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.98**	**0.00**	**38.70**	**53.91**	**0.00**	**31.92**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	26.5047	3.2756	203.1129	0.6371		32.0065	32.0065		32.0052	32.0052	4,698.7206	2,047.2022	6,745.9228	22.0185	0.0373	7,219.8657
Energy	0.0889	0.7596	0.3232	4.8500e-003		0.0614	0.0614		0.0614	0.0614		969.7015	969.7015	0.0186	0.0178	975.6029
Mobile	3.2687	5.5040	32.7237	0.0808	5.8971	0.0912	5.9883	1.5744	0.0841	1.6585		6,164.9212	6,164.9212	0.2331		6,169.8156
Total	**29.8622**	**9.5392**	**236.1598**	**0.7228**	**5.8971**	**32.1591**	**38.0562**	**1.5744**	**32.1507**	**33.7250**	**4,698.7206**	**9,181.8249**	**13,880.5455**	**22.2702**	**0.0551**	**14,365.2843**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.0166	0.0922	7.9695	4.2000e-004		0.1724	0.1724		0.1710	0.1710	0.0000	2,047.2022	2,047.2022	0.0530	0.0373	2,059.8683
Energy	0.0709	0.6061	0.2579	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.7305	773.7305	0.0148	0.0142	778.4393
Mobile	3.2532	5.4115	32.2109	0.0792	5.7792	0.0895	5.8687	1.5429	0.0826	1.6254		6,045.0917	6,045.0917	0.2289		6,049.8980
Total	**8.3408**	**6.1098**	**40.4383**	**0.0835**	**5.7792**	**0.3109**	**6.0900**	**1.5429**	**0.3026**	**1.8455**	**0.0000**	**8,866.0244**	**8,866.0244**	**0.2967**	**0.0515**	**8,888.2056**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**72.07**	**35.95**	**82.88**	**88.44**	**2.00**	**99.03**	**84.00**	**2.00**	**99.06**	**94.53**	**100.00**	**3.44**	**36.13**	**98.67**	**6.52**	**38.13**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/2/2016	9/9/2016	5	50	
2	Site Preparation	Site Preparation	9/10/2016	10/21/2016	5	30	
3	Grading	Grading	10/22/2016	2/3/2017	5	75	
4	Building Construction	Building Construction	2/4/2017	2/4/2019	5	521	
5	Paving	Paving	2/5/2019	4/22/2019	5	55	
6	Architectural Coating	Architectural Coating	4/23/2019	7/8/2019	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 0

Residential Indoor: 349,920; Residential Outdoor: 116,640; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	2	5.00	226	0.29
Building Construction	Forklifts	5	6.80	89	0.20
Building Construction	Generator Sets	2	5.70	84	0.74
Building Construction	Tractors/Loaders/Backhoes	5	6.00	97	0.37

Building Construction	Welders	2	5.70	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	45.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	16	35.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	7.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1957	0.0000	0.1957	0.0296	0.0000	0.0296			0.0000			0.0000
Off-Road	4.2876	45.6559	35.0303	0.0399		2.2921	2.2921		2.1365	2.1365		4,089.2841	4,089.2841	1.1121		4,112.6374
Total	**4.2876**	**45.6559**	**35.0303**	**0.0399**	**0.1957**	**2.2921**	**2.4878**	**0.0296**	**2.1365**	**2.1662**		**4,089.2841**	**4,089.2841**	**1.1121**		**4,112.6374**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0189	0.2291	0.1900	6.7000e-004	0.0158	3.7100e-003	0.0195	4.3200e-003	3.4100e-003	7.7300e-003		67.8706	67.8706	5.1000e-004		67.8812
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0655	0.0661	0.7968	1.5400e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		125.7619	125.7619	6.1700e-003		125.8915
Total	**0.0844**	**0.2952**	**0.9868**	**2.2100e-003**	**0.1390**	**4.5900e-003**	**0.1436**	**0.0370**	**4.2200e-003**	**0.0412**		**193.6325**	**193.6325**	**6.6800e-003**		**193.7727**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0880	0.0000	0.0880	0.0133	0.0000	0.0133			0.0000			0.0000
Off-Road	4.2876	45.6559	35.0303	0.0399		2.2921	2.2921		2.1365	2.1365	0.0000	4,089.2841	4,089.2841	1.1121		4,112.6374
Total	**4.2876**	**45.6559**	**35.0303**	**0.0399**	**0.0880**	**2.2921**	**2.3802**	**0.0133**	**2.1365**	**2.1499**	**0.0000**	**4,089.2841**	**4,089.2841**	**1.1121**		**4,112.6374**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0189	0.2291	0.1900	6.7000e-004	0.0158	3.7100e-003	0.0195	4.3200e-003	3.4100e-003	7.7300e-003		67.8706	67.8706	5.1000e-004		67.8812
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0655	0.0661	0.7968	1.5400e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		125.7619	125.7619	6.1700e-003		125.8915
Total	**0.0844**	**0.2952**	**0.9868**	**2.2100e-003**	**0.1390**	**4.5900e-003**	**0.1436**	**0.0370**	**4.2200e-003**	**0.0412**		**193.6325**	**193.6325**	**6.6800e-003**		**193.7727**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	5.0771	54.6323	41.1053	0.0391		2.9387	2.9387		2.7036	2.7036		4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**5.0771**	**54.6323**	**41.1053**	**0.0391**	**18.0663**	**2.9387**	**21.0049**	**9.9307**	**2.7036**	**12.6343**		**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0785	0.0793	0.9561	1.8400e-003	0.1479	1.0600e-003	0.1489	0.0392	9.7000e-004	0.0402		150.9143	150.9143	7.4000e-003		151.0698
Total	**0.0785**	**0.0793**	**0.9561**	**1.8400e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.7000e-004**	**0.0402**		**150.9143**	**150.9143**	**7.4000e-003**		**151.0698**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	5.0771	54.6323	41.1053	0.0391		2.9387	2.9387		2.7036	2.7036	0.0000	4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**5.0771**	**54.6323**	**41.1053**	**0.0391**	**8.1298**	**2.9387**	**11.0685**	**4.4688**	**2.7036**	**7.1724**	**0.0000**	**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0785	0.0793	0.9561	1.8400e-003	0.1479	1.0600e-003	0.1489	0.0392	9.7000e-004	0.0402		150.9143	150.9143	7.4000e-003		151.0698
Total	**0.0785**	**0.0793**	**0.9561**	**1.8400e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.7000e-004**	**0.0402**		**150.9143**	**150.9143**	**7.4000e-003**		**151.0698**

3.4 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	6.4795	74.8137	49.1374	0.0617		3.5842	3.5842		3.2975	3.2975		6,414.9807	6,414.9807	1.9350		6,455.6154
Total	**6.4795**	**74.8137**	**49.1374**	**0.0617**	**8.6733**	**3.5842**	**12.2576**	**3.5965**	**3.2975**	**6.8940**		**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0873	0.0881	1.0624	2.0500e-003	0.1643	1.1700e-003	0.1655	0.0436	1.0800e-003	0.0447		167.6826	167.6826	8.2300e-003		167.8554
Total	**0.0873**	**0.0881**	**1.0624**	**2.0500e-003**	**0.1643**	**1.1700e-003**	**0.1655**	**0.0436**	**1.0800e-003**	**0.0447**		**167.6826**	**167.6826**	**8.2300e-003**		**167.8554**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	6.4795	74.8137	49.1374	0.0617		3.5842	3.5842		3.2975	3.2975	0.0000	6,414.9807	6,414.9807	1.9350		6,455.6154
Total	**6.4795**	**74.8137**	**49.1374**	**0.0617**	**3.9030**	**3.5842**	**7.4872**	**1.6184**	**3.2975**	**4.9159**	**0.0000**	**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0873	0.0881	1.0624	2.0500e-003	0.1643	1.1700e-003	0.1655	0.0436	1.0800e-003	0.0447		167.6826	167.6826	8.2300e-003		167.8554
Total	**0.0873**	**0.0881**	**1.0624**	**2.0500e-003**	**0.1643**	**1.1700e-003**	**0.1655**	**0.0436**	**1.0800e-003**	**0.0447**		**167.6826**	**167.6826**	**8.2300e-003**		**167.8554**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	6.0991	69.5920	46.8050	0.0617		3.3172	3.3172		3.0518	3.0518		6,313.3690	6,313.3690	1.9344		6,353.9915
Total	**6.0991**	**69.5920**	**46.8050**	**0.0617**	**8.6733**	**3.3172**	**11.9905**	**3.5965**	**3.0518**	**6.6483**		**6,313.3690**	**6,313.3690**	**1.9344**		**6,353.9915**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0768	0.0782	0.9364	2.0500e-003	0.1643	1.1200e-003	0.1654	0.0436	1.0300e-003	0.0446		161.0949	161.0949	7.4500e-003		161.2513
Total	**0.0768**	**0.0782**	**0.9364**	**2.0500e-003**	**0.1643**	**1.1200e-003**	**0.1654**	**0.0436**	**1.0300e-003**	**0.0446**		**161.0949**	**161.0949**	**7.4500e-003**		**161.2513**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	6.0991	69.5920	46.8050	0.0617		3.3172	3.3172		3.0518	3.0518	0.0000	6,313.3690	6,313.3690	1.9344		6,353.9915
Total	**6.0991**	**69.5920**	**46.8050**	**0.0617**	**3.9030**	**3.3172**	**7.2202**	**1.6184**	**3.0518**	**4.6702**	**0.0000**	**6,313.3690**	**6,313.3690**	**1.9344**		**6,353.9915**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0768	0.0782	0.9364	2.0500e-003	0.1643	1.1200e-003	0.1654	0.0436	1.0300e-003	0.0446		161.0949	161.0949	7.4500e-003		161.2513
Total	**0.0768**	**0.0782**	**0.9364**	**2.0500e-003**	**0.1643**	**1.1200e-003**	**0.1654**	**0.0436**	**1.0300e-003**	**0.0446**		**161.0949**	**161.0949**	**7.4500e-003**		**161.2513**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.4206	37.6350	25.8339	0.0382		2.5377	2.5377		2.3835	2.3835		3,762.6038	3,762.6038	0.9261		3,782.0518
Total	**4.4206**	**37.6350**	**25.8339**	**0.0382**		**2.5377**	**2.5377**		**2.3835**	**2.3835**		**3,762.6038**	**3,762.6038**	**0.9261**		**3,782.0518**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1072	0.8480	1.1245	2.3800e-003	0.0665	0.0146	0.0811	0.0190	0.0134	0.0324		234.7298	234.7298	1.9100e-003		234.7699
Worker	0.1343	0.1368	1.6387	3.5800e-003	0.2875	1.9600e-003	0.2895	0.0763	1.8100e-003	0.0781		281.9160	281.9160	0.0130		282.1897
Total	**0.2415**	**0.9848**	**2.7632**	**5.9600e-003**	**0.3541**	**0.0165**	**0.3706**	**0.0953**	**0.0152**	**0.1105**		**516.6458**	**516.6458**	**0.0150**		**516.9596**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.4206	37.6350	25.8339	0.0382		2.5377	2.5377		2.3835	2.3835	0.0000	3,762.6038	3,762.6038	0.9261		3,782.0518
Total	**4.4206**	**37.6350**	**25.8339**	**0.0382**		**2.5377**	**2.5377**		**2.3835**	**2.3835**	**0.0000**	**3,762.6038**	**3,762.6038**	**0.9261**		**3,782.0518**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1072	0.8480	1.1245	2.3800e-003	0.0665	0.0146	0.0811	0.0190	0.0134	0.0324		234.7298	234.7298	1.9100e-003		234.7699
Worker	0.1343	0.1368	1.6387	3.5800e-003	0.2875	1.9600e-003	0.2895	0.0763	1.8100e-003	0.0781		281.9160	281.9160	0.0130		282.1897
Total	**0.2415**	**0.9848**	**2.7632**	**5.9600e-003**	**0.3541**	**0.0165**	**0.3706**	**0.0953**	**0.0152**	**0.1105**		**516.6458**	**516.6458**	**0.0150**		**516.9596**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8027	33.1529	24.9834	0.0382		2.1289	2.1289		2.0014	2.0014		3,720.0257	3,720.0257	0.9104		3,739.1445
Total	**3.8027**	**33.1529**	**24.9834**	**0.0382**		**2.1289**	**2.1289**		**2.0014**	**2.0014**		**3,720.0257**	**3,720.0257**	**0.9104**		**3,739.1445**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0926	0.7618	0.9941	2.3700e-003	0.0665	0.0133	0.0799	0.0190	0.0123	0.0313		230.5851	230.5851	1.8500e-003		230.6241
Worker	0.1195	0.1229	1.4651	3.5900e-003	0.2875	1.9200e-003	0.2894	0.0763	1.7700e-003	0.0780		272.3290	272.3290	0.0120		272.5812
Total	**0.2121**	**0.8847**	**2.4592**	**5.9600e-003**	**0.3540**	**0.0153**	**0.3693**	**0.0953**	**0.0140**	**0.1093**		**502.9141**	**502.9141**	**0.0139**		**503.2052**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8027	33.1529	24.9834	0.0382		2.1289	2.1289		2.0014	2.0014	0.0000	3,720.0257	3,720.0257	0.9104		3,739.1445
Total	**3.8027**	**33.1529**	**24.9834**	**0.0382**		**2.1289**	**2.1289**		**2.0014**	**2.0014**	**0.0000**	**3,720.0257**	**3,720.0257**	**0.9104**		**3,739.1445**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0926	0.7618	0.9941	2.3700e-003	0.0665	0.0133	0.0799	0.0190	0.0123	0.0313		230.5851	230.5851	1.8500e-003		230.6241
Worker	0.1195	0.1229	1.4651	3.5900e-003	0.2875	1.9200e-003	0.2894	0.0763	1.7700e-003	0.0780		272.3290	272.3290	0.0120		272.5812
Total	**0.2121**	**0.8847**	**2.4592**	**5.9600e-003**	**0.3540**	**0.0153**	**0.3693**	**0.0953**	**0.0140**	**0.1093**		**502.9141**	**502.9141**	**0.0139**		**503.2052**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3508	29.8797	24.3952	0.0382		1.8307	1.8307		1.7213	1.7213		3,678.4321	3,678.4321	0.8950		3,697.2280
Total	**3.3508**	**29.8797**	**24.3952**	**0.0382**		**1.8307**	**1.8307**		**1.7213**	**1.7213**		**3,678.4321**	**3,678.4321**	**0.8950**		**3,697.2280**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0840	0.6905	0.9220	2.3700e-003	0.0665	0.0123	0.0788	0.0190	0.0113	0.0303		226.5835	226.5835	1.7900e-003		226.6211
Worker	0.1086	0.1118	1.3302	3.5900e-003	0.2875	1.8800e-003	0.2894	0.0763	1.7500e-003	0.0780		262.6953	262.6953	0.0112		262.9296
Total	**0.1925**	**0.8022**	**2.2522**	**5.9600e-003**	**0.3540**	**0.0141**	**0.3682**	**0.0953**	**0.0130**	**0.1083**		**489.2788**	**489.2788**	**0.0130**		**489.5506**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3508	29.8797	24.3952	0.0382		1.8307	1.8307		1.7213	1.7213	0.0000	3,678.4321	3,678.4321	0.8950		3,697.2280
Total	**3.3508**	**29.8797**	**24.3952**	**0.0382**		**1.8307**	**1.8307**		**1.7213**	**1.7213**	**0.0000**	**3,678.4321**	**3,678.4321**	**0.8950**		**3,697.2280**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0840	0.6905	0.9220	2.3700e-003	0.0665	0.0123	0.0788	0.0190	0.0113	0.0303		226.5835	226.5835	1.7900e-003		226.6211
Worker	0.1086	0.1118	1.3302	3.5900e-003	0.2875	1.8800e-003	0.2894	0.0763	1.7500e-003	0.0780		262.6953	262.6953	0.0112		262.9296
Total	**0.1925**	**0.8022**	**2.2522**	**5.9600e-003**	**0.3540**	**0.0141**	**0.3682**	**0.0953**	**0.0130**	**0.1083**		**489.2788**	**489.2788**	**0.0130**		**489.5506**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4259	14.9353	14.3652	0.0223		0.8094	0.8094		0.7447	0.7447		2,208.9731	2,208.9731	0.6989		2,223.6499
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4259**	**14.9353**	**14.3652**	**0.0223**		**0.8094**	**0.8094**		**0.7447**	**0.7447**		**2,208.9731**	**2,208.9731**	**0.6989**		**2,223.6499**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0465	0.0479	0.5701	1.5400e-003	0.1232	8.1000e-004	0.1240	0.0327	7.5000e-004	0.0334		112.5837	112.5837	4.7800e-003		112.6841
Total	**0.0465**	**0.0479**	**0.5701**	**1.5400e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.5000e-004**	**0.0334**		**112.5837**	**112.5837**	**4.7800e-003**		**112.6841**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4259	14.9353	14.3652	0.0223		0.8094	0.8094		0.7447	0.7447	0.0000	2,208.9731	2,208.9731	0.6989		2,223.6499
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4259**	**14.9353**	**14.3652**	**0.0223**		**0.8094**	**0.8094**		**0.7447**	**0.7447**	**0.0000**	**2,208.9731**	**2,208.9731**	**0.6989**		**2,223.6499**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0465	0.0479	0.5701	1.5400e-003	0.1232	8.1000e-004	0.1240	0.0327	7.5000e-004	0.0334		112.5837	112.5837	4.7800e-003		112.6841
Total	**0.0465**	**0.0479**	**0.5701**	**1.5400e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.5000e-004**	**0.0334**		**112.5837**	**112.5837**	**4.7800e-003**		**112.6841**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	58.9774					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		281.9473
Total	**59.2439**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**281.9473**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0217	0.0224	0.2660	7.2000e-004	0.0575	3.8000e-004	0.0579	0.0153	3.5000e-004	0.0156		52.5391	52.5391	2.2300e-003		52.5859
Total	**0.0217**	**0.0224**	**0.2660**	**7.2000e-004**	**0.0575**	**3.8000e-004**	**0.0579**	**0.0153**	**3.5000e-004**	**0.0156**		**52.5391**	**52.5391**	**2.2300e-003**		**52.5859**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	58.9774					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		281.9473
Total	**59.2439**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**281.9473**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0217	0.0224	0.2660	7.2000e-004	0.0575	3.8000e-004	0.0579	0.0153	3.5000e-004	0.0156		52.5391	52.5391	2.2300e-003		52.5859
Total	**0.0217**	**0.0224**	**0.2660**	**7.2000e-004**	**0.0575**	**3.8000e-004**	**0.0579**	**0.0153**	**3.5000e-004**	**0.0156**		**52.5391**	**52.5391**	**2.2300e-003**		**52.5859**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.2532	5.4115	32.2109	0.0792	5.7792	0.0895	5.8687	1.5429	0.0826	1.6254		6,045.0917	6,045.0917	0.2289		6,049.8980
Unmitigated	3.2687	5.5040	32.7237	0.0808	5.8971	0.0912	5.9883	1.5744	0.0841	1.6585		6,164.9212	6,164.9212	0.2331		6,169.8156

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	913.92	951.36	827.52	2,656,993	2,603,853
Total	913.92	951.36	827.52	2,656,993	2,603,853

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.511700	0.213500	0.169100	0.060900	0.002100	0.001000	0.009500	0.022000	0.000000	0.003800	0.003100	0.001000	0.002300

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0709	0.6061	0.2579	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.7305	773.7305	0.0148	0.0142	778.4393
NaturalGas Unmitigated	0.0889	0.7596	0.3232	4.8500e-003		0.0614	0.0614		0.0614	0.0614		969.7015	969.7015	0.0186	0.0178	975.6029

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	8242.46	0.0889	0.7596	0.3232	4.8500e-003		0.0614	0.0614		0.0614	0.0614		969.7015	969.7015	0.0186	0.0178	975.6029
Total		**0.0889**	**0.7596**	**0.3232**	**4.8500e-003**		**0.0614**	**0.0614**		**0.0614**	**0.0614**		**969.7015**	**969.7015**	**0.0186**	**0.0178**	**975.6029**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	6.57671	0.0709	0.6061	0.2579	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.7305	773.7305	0.0148	0.0142	778.4393
Total		**0.0709**	**0.6061**	**0.2579**	**3.8700e-003**		**0.0490**	**0.0490**		**0.0490**	**0.0490**		**773.7305**	**773.7305**	**0.0148**	**0.0142**	**778.4393**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.0166	0.0922	7.9695	4.2000e-004		0.1724	0.1724		0.1710	0.1710	0.0000	2,047.2022	2,047.2022	0.0530	0.0373	2,059.8683
Unmitigated	26.5047	3.2756	203.1129	0.6371		32.0065	32.0065		32.0052	32.0052	4,698.7206	2,047.2022	6,745.9228	22.0185	0.0373	7,219.8657

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	3.6979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	21.6744	3.1834	195.1535	0.6367		31.9629	31.9629		31.9616	31.9616	4,698.7206	2,032.9412	6,731.6618	22.0045	0.0373	7,205.3107
Landscaping	0.2436	0.0922	7.9594	4.2000e-004		0.0436	0.0436		0.0436	0.0436		14.2610	14.2610	0.0140		14.5550
Architectural Coating	0.8887					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**26.5047**	**3.2756**	**203.1129**	**0.6371**		**32.0065**	**32.0065**		**32.0052**	**32.0052**	**4,698.7206**	**2,047.2022**	**6,745.9228**	**22.0185**	**0.0373**	**7,219.8657**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	3.6979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1864	1.0000e-005	0.0102	0.0000		0.1288	0.1288		0.1274	0.1274	0.0000	2,032.9412	2,032.9412	0.0390	0.0373	2,045.3133
Landscaping	0.2436	0.0922	7.9594	4.2000e-004		0.0436	0.0436		0.0436	0.0436		14.2610	14.2610	0.0140		14.5550
Architectural Coating	0.8887					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**5.0166**	**0.0922**	**7.9695**	**4.2000e-004**		**0.1724**	**0.1724**		**0.1710**	**0.1710**	**0.0000**	**2,047.2022**	**2,047.2022**	**0.0530**	**0.0373**	**2,059.8683**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Woodside Homes Tract No 6154

Fresno County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	96.00	Dwelling Unit	43.23	172,800.00	275

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2019
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on site plan
96 single family homes on approximately 43.23 acres

Construction Phase - Estimated construction schedule

Off-road Equipment - Building construction equipment adjusted to conserve horsepower hours

Demolition - Approximate square footage of existing residential structures to be demolished
Vehicle Trips - ITE Trip Generation Manual, 9th Ed (ITE Code 210)
Weekday 9.52; Saturday 9.91; Sunday 8.62

Vechicle Emission Factors - SJVAPCD 2019 Residential Fleet Mix (Annual)

Vechicle Emission Factors - SJVAPCD 2019 Residential Fleet Mix (Summer)

Vechicle Emission Factors - SJVAPCD 2019 Residential Fleet Mix (Winter)

Woodstoves - Based on SJVAPCD Rule 4901

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	740.00	521.00
tblFireplaces	NumberGas	52.80	96.00
tblFireplaces	NumberNoFireplace	43.20	96.00
tblLandUse	LotAcreage	31.17	43.23
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	5.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	UsageHours	7.00	5.00
tblOffRoadEquipment	UsageHours	8.00	6.80
tblOffRoadEquipment	UsageHours	8.00	5.70
tblOffRoadEquipment	UsageHours	7.00	6.00
tblOffRoadEquipment	UsageHours	8.00	5.70
tblProjectCharacteristics	OperationalYear	2014	2019
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	LDA	0.44	0.51
tblVehicleEF	LDA	0.44	0.51
tblVehicleEF	LDA	0.44	0.51
tblVehicleEF	LDT1	0.06	0.21
tblVehicleEF	LDT1	0.06	0.21
tblVehicleEF	LDT1	0.06	0.21
tblVehicleEF	LDT2	0.16	0.17
tblVehicleEF	LDT2	0.16	0.17
tblVehicleEF	LDT2	0.16	0.17
tblVehicleEF	LHD1	0.04	2.1000e-003
tblVehicleEF	LHD1	0.04	2.1000e-003

tblVehicleEF	LHD1	0.04	2.1000e-003
tblVehicleEF	LHD2	7.0840e-003	1.0000e-003
tblVehicleEF	LHD2	7.0840e-003	1.0000e-003
tblVehicleEF	LHD2	7.0840e-003	1.0000e-003
tblVehicleEF	MCY	6.5790e-003	3.1000e-003
tblVehicleEF	MCY	6.5790e-003	3.1000e-003
tblVehicleEF	MCY	6.5790e-003	3.1000e-003
tblVehicleEF	MDV	0.17	0.06
tblVehicleEF	MDV	0.17	0.06
tblVehicleEF	MDV	0.17	0.06
tblVehicleEF	MH	1.8610e-003	2.3000e-003
tblVehicleEF	MH	1.8610e-003	2.3000e-003
tblVehicleEF	MH	1.8610e-003	2.3000e-003
tblVehicleEF	MHD	0.02	9.5000e-003
tblVehicleEF	MHD	0.02	9.5000e-003
tblVehicleEF	MHD	0.02	9.5000e-003
tblVehicleEF	OBUS	2.0630e-003	0.00
tblVehicleEF	OBUS	2.0630e-003	0.00
tblVehicleEF	OBUS	2.0630e-003	0.00
tblVehicleEF	SBUS	7.6400e-004	1.0000e-003
tblVehicleEF	SBUS	7.6400e-004	1.0000e-003
tblVehicleEF	SBUS	7.6400e-004	1.0000e-003
tblVehicleEF	UBUS	1.7560e-003	3.8000e-003
tblVehicleEF	UBUS	1.7560e-003	3.8000e-003
tblVehicleEF	UBUS	1.7560e-003	3.8000e-003
tblVehicleTrips	ST_TR	10.08	9.91
tblVehicleTrips	SU_TR	8.77	8.62
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	NumberCatalytic	4.80	43.23
tblWoodstoves	NumberNoncatalytic	4.80	43.23

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.5547	74.9180	50.0818	0.0635	18.2141	3.5854	21.1539	9.9699	3.2986	12.6745	0.0000	6,561.9955	6,561.9955	1.9432	0.0000	6,602.8030
2017	6.1646	69.6844	47.6305	0.0635	8.8376	3.3183	12.1559	3.6401	3.0529	6.6929	0.0000	6,454.5793	6,454.5793	1.9419	0.0000	6,495.3582
2018	4.0162	34.1006	27.8420	0.0437	0.3540	2.1443	2.4983	0.0953	2.0156	2.1108	0.0000	4,187.5349	4,187.5349	0.9243	0.0000	4,206.9460
2019	59.2621	30.7384	27.0480	0.0437	0.3540	1.8450	2.1990	0.0953	1.7345	1.8297	0.0000	4,133.5005	4,133.5005	0.9080	0.0000	4,152.5693
Total	**75.9975**	**209.4414**	**152.6024**	**0.2144**	**27.7598**	**10.8930**	**38.0071**	**13.8005**	**10.1015**	**23.3079**	**0.0000**	**21,337.6102**	**21,337.6102**	**5.7174**	**0.0000**	**21,457.6765**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	6.5547	74.9180	50.0818	0.0635	8.2777	3.5854	11.2174	4.5080	3.2986	7.2126	0.0000	6,561.9955	6,561.9955	1.9432	0.0000	6,602.8030
2017	6.1646	69.6844	47.6305	0.0635	4.0673	3.3183	7.3856	1.6620	3.0529	4.7149	0.0000	6,454.5793	6,454.5793	1.9419	0.0000	6,495.3582
2018	4.0162	34.1006	27.8420	0.0437	0.3540	2.1443	2.4983	0.0953	2.0156	2.1108	0.0000	4,187.5349	4,187.5349	0.9243	0.0000	4,206.9460
2019	59.2621	30.7384	27.0480	0.0437	0.3540	1.8450	2.1990	0.0953	1.7345	1.8297	0.0000	4,133.5005	4,133.5005	0.9080	0.0000	4,152.5693
Total	**75.9975**	**209.4414**	**152.6024**	**0.2144**	**13.0531**	**10.8930**	**23.3003**	**6.3605**	**10.1015**	**15.8680**	**0.0000**	**21,337.6102**	**21,337.6102**	**5.7174**	**0.0000**	**21,457.6765**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.98**	**0.00**	**38.69**	**53.91**	**0.00**	**31.92**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	26.5047	3.2756	203.1129	0.6371		32.0065	32.0065		32.0052	32.0052	4,698.7206	2,047.2022	6,745.9228	22.0185	0.0373	7,219.8657
Energy	0.0889	0.7596	0.3232	4.8500e-003		0.0614	0.0614		0.0614	0.0614		969.7015	969.7015	0.0186	0.0178	975.6029
Mobile	2.8918	6.1309	32.4273	0.0721	5.8971	0.0916	5.9887	1.5744	0.0845	1.6588		5,525.3697	5,525.3697	0.2333		5,530.2681
Total	**29.4854**	**10.1662**	**235.8634**	**0.7140**	**5.8971**	**32.1595**	**38.0566**	**1.5744**	**32.1510**	**33.7254**	**4,698.7206**	**8,542.2734**	**13,240.9940**	**22.2704**	**0.0551**	**13,725.7368**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	5.0166	0.0922	7.9695	4.2000e-004		0.1724	0.1724		0.1710	0.1710	0.0000	2,047.2022	2,047.2022	0.0530	0.0373	2,059.8683
Energy	0.0709	0.6061	0.2579	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.7305	773.7305	0.0148	0.0142	778.4393
Mobile	2.8779	6.0274	32.0259	0.0707	5.7792	0.0899	5.8691	1.5429	0.0830	1.6258		5,418.2249	5,418.2249	0.2291		5,423.0352
Total	**7.9654**	**6.7256**	**40.2533**	**0.0750**	**5.7792**	**0.3113**	**6.0905**	**1.5429**	**0.3030**	**1.8458**	**0.0000**	**8,239.1576**	**8,239.1576**	**0.2969**	**0.0515**	**8,261.3428**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**72.99**	**33.84**	**82.93**	**89.50**	**2.00**	**99.03**	**84.00**	**2.00**	**99.06**	**94.53**	**100.00**	**3.55**	**37.78**	**98.67**	**6.52**	**39.81**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	7/2/2016	9/9/2016	5	50	
2	Site Preparation	Site Preparation	9/10/2016	10/21/2016	5	30	
3	Grading	Grading	10/22/2016	2/3/2017	5	75	
4	Building Construction	Building Construction	2/4/2017	2/4/2019	5	521	
5	Paving	Paving	2/5/2019	4/22/2019	5	55	
6	Architectural Coating	Architectural Coating	4/23/2019	7/8/2019	5	55	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 187.5

Acres of Paving: 0

Residential Indoor: 349,920; Residential Outdoor: 116,640; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	2	5.00	226	0.29
Building Construction	Forklifts	5	6.80	89	0.20
Building Construction	Generator Sets	2	5.70	84	0.74
Building Construction	Tractors/Loaders/Backhoes	5	6.00	97	0.37
Building Construction	Welders	2	5.70	46	0.45

Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	45.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	16	35.00	10.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	7.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.1957	0.0000	0.1957	0.0296	0.0000	0.0296			0.0000			0.0000
Off-Road	4.2876	45.6559	35.0303	0.0399		2.2921	2.2921		2.1365	2.1365		4,089.2841	4,089.2841	1.1121		4,112.6374
Total	**4.2876**	**45.6559**	**35.0303**	**0.0399**	**0.1957**	**2.2921**	**2.4878**	**0.0296**	**2.1365**	**2.1662**		**4,089.2841**	**4,089.2841**	**1.1121**		**4,112.6374**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0224	0.2441	0.2673	6.7000e-004	0.0158	3.7200e-003	0.0195	4.3200e-003	3.4200e-003	7.7400e-003		67.7116	67.7116	5.1000e-004		67.7224
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0564	0.0782	0.7083	1.3500e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		110.2611	110.2611	6.1700e-003		110.3907
Total	**0.0788**	**0.3223**	**0.9756**	**2.0200e-003**	**0.1390**	**4.6000e-003**	**0.1436**	**0.0370**	**4.2300e-003**	**0.0412**		**177.9727**	**177.9727**	**6.6800e-003**		**178.1130**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0880	0.0000	0.0880	0.0133	0.0000	0.0133			0.0000			0.0000
Off-Road	4.2876	45.6559	35.0303	0.0399		2.2921	2.2921		2.1365	2.1365	0.0000	4,089.2841	4,089.2841	1.1121		4,112.6374
Total	**4.2876**	**45.6559**	**35.0303**	**0.0399**	**0.0880**	**2.2921**	**2.3802**	**0.0133**	**2.1365**	**2.1499**	**0.0000**	**4,089.2841**	**4,089.2841**	**1.1121**		**4,112.6374**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0224	0.2441	0.2673	6.7000e-004	0.0158	3.7200e-003	0.0195	4.3200e-003	3.4200e-003	7.7400e-003		67.7116	67.7116	5.1000e-004		67.7224
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0564	0.0782	0.7083	1.3500e-003	0.1232	8.8000e-004	0.1241	0.0327	8.1000e-004	0.0335		110.2611	110.2611	6.1700e-003		110.3907
Total	**0.0788**	**0.3223**	**0.9756**	**2.0200e-003**	**0.1390**	**4.6000e-003**	**0.1436**	**0.0370**	**4.2300e-003**	**0.0412**		**177.9727**	**177.9727**	**6.6800e-003**		**178.1130**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	5.0771	54.6323	41.1053	0.0391		2.9387	2.9387		2.7036	2.7036		4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**5.0771**	**54.6323**	**41.1053**	**0.0391**	**18.0663**	**2.9387**	**21.0049**	**9.9307**	**2.7036**	**12.6343**		**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0677	0.0939	0.8500	1.6100e-003	0.1479	1.0600e-003	0.1489	0.0392	9.7000e-004	0.0402		132.3133	132.3133	7.4000e-003		132.4688
Total	**0.0677**	**0.0939**	**0.8500**	**1.6100e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.7000e-004**	**0.0402**		**132.3133**	**132.3133**	**7.4000e-003**		**132.4688**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	5.0771	54.6323	41.1053	0.0391		2.9387	2.9387		2.7036	2.7036	0.0000	4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**5.0771**	**54.6323**	**41.1053**	**0.0391**	**8.1298**	**2.9387**	**11.0685**	**4.4688**	**2.7036**	**7.1724**	**0.0000**	**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0677	0.0939	0.8500	1.6100e-003	0.1479	1.0600e-003	0.1489	0.0392	9.7000e-004	0.0402		132.3133	132.3133	7.4000e-003		132.4688
Total	**0.0677**	**0.0939**	**0.8500**	**1.6100e-003**	**0.1479**	**1.0600e-003**	**0.1489**	**0.0392**	**9.7000e-004**	**0.0402**		**132.3133**	**132.3133**	**7.4000e-003**		**132.4688**

3.4 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	6.4795	74.8137	49.1374	0.0617		3.5842	3.5842		3.2975	3.2975		6,414.9807	6,414.9807	1.9350		6,455.6154
Total	**6.4795**	**74.8137**	**49.1374**	**0.0617**	**8.6733**	**3.5842**	**12.2576**	**3.5965**	**3.2975**	**6.8940**		**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0752	0.1043	0.9444	1.7900e-003	0.1643	1.1700e-003	0.1655	0.0436	1.0800e-003	0.0447		147.0148	147.0148	8.2300e-003		147.1876
Total	**0.0752**	**0.1043**	**0.9444**	**1.7900e-003**	**0.1643**	**1.1700e-003**	**0.1655**	**0.0436**	**1.0800e-003**	**0.0447**		**147.0148**	**147.0148**	**8.2300e-003**		**147.1876**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	6.4795	74.8137	49.1374	0.0617		3.5842	3.5842		3.2975	3.2975	0.0000	6,414.9807	6,414.9807	1.9350		6,455.6154
Total	**6.4795**	**74.8137**	**49.1374**	**0.0617**	**3.9030**	**3.5842**	**7.4872**	**1.6184**	**3.2975**	**4.9159**	**0.0000**	**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0752	0.1043	0.9444	1.7900e-003	0.1643	1.1700e-003	0.1655	0.0436	1.0800e-003	0.0447		147.0148	147.0148	8.2300e-003		147.1876
Total	**0.0752**	**0.1043**	**0.9444**	**1.7900e-003**	**0.1643**	**1.1700e-003**	**0.1655**	**0.0436**	**1.0800e-003**	**0.0447**		**147.0148**	**147.0148**	**8.2300e-003**		**147.1876**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	6.0991	69.5920	46.8050	0.0617		3.3172	3.3172		3.0518	3.0518		6,313.3690	6,313.3690	1.9344		6,353.9915
Total	**6.0991**	**69.5920**	**46.8050**	**0.0617**	**8.6733**	**3.3172**	**11.9905**	**3.5965**	**3.0518**	**6.6483**		**6,313.3690**	**6,313.3690**	**1.9344**		**6,353.9915**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0654	0.0924	0.8255	1.7900e-003	0.1643	1.1200e-003	0.1654	0.0436	1.0300e-003	0.0446		141.2103	141.2103	7.4500e-003		141.3667
Total	**0.0654**	**0.0924**	**0.8255**	**1.7900e-003**	**0.1643**	**1.1200e-003**	**0.1654**	**0.0436**	**1.0300e-003**	**0.0446**		**141.2103**	**141.2103**	**7.4500e-003**		**141.3667**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	6.0991	69.5920	46.8050	0.0617		3.3172	3.3172		3.0518	3.0518	0.0000	6,313.3690	6,313.3690	1.9344		6,353.9915
Total	**6.0991**	**69.5920**	**46.8050**	**0.0617**	**3.9030**	**3.3172**	**7.2202**	**1.6184**	**3.0518**	**4.6702**	**0.0000**	**6,313.3690**	**6,313.3690**	**1.9344**		**6,353.9915**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0654	0.0924	0.8255	1.7900e-003	0.1643	1.1200e-003	0.1654	0.0436	1.0300e-003	0.0446		141.2103	141.2103	7.4500e-003		141.3667
Total	**0.0654**	**0.0924**	**0.8255**	**1.7900e-003**	**0.1643**	**1.1200e-003**	**0.1654**	**0.0436**	**1.0300e-003**	**0.0446**		**141.2103**	**141.2103**	**7.4500e-003**		**141.3667**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.4206	37.6350	25.8339	0.0382		2.5377	2.5377		2.3835	2.3835		3,762.6038	3,762.6038	0.9261		3,782.0518
Total	**4.4206**	**37.6350**	**25.8339**	**0.0382**		**2.5377**	**2.5377**		**2.3835**	**2.3835**		**3,762.6038**	**3,762.6038**	**0.9261**		**3,782.0518**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1325	0.8943	1.7070	2.3700e-003	0.0665	0.0148	0.0813	0.0190	0.0136	0.0326		232.9365	232.9365	1.9600e-003		232.9777
Worker	0.1145	0.1617	1.4446	3.1400e-003	0.2875	1.9600e-003	0.2895	0.0763	1.8100e-003	0.0781		247.1180	247.1180	0.0130		247.3918
Total	**0.2470**	**1.0560**	**3.1516**	**5.5100e-003**	**0.3541**	**0.0167**	**0.3708**	**0.0953**	**0.0154**	**0.1106**		**480.0545**	**480.0545**	**0.0150**		**480.3694**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	4.4206	37.6350	25.8339	0.0382		2.5377	2.5377		2.3835	2.3835	0.0000	3,762.6038	3,762.6038	0.9261		3,782.0518
Total	**4.4206**	**37.6350**	**25.8339**	**0.0382**		**2.5377**	**2.5377**		**2.3835**	**2.3835**	**0.0000**	**3,762.6038**	**3,762.6038**	**0.9261**		**3,782.0518**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1325	0.8943	1.7070	2.3700e-003	0.0665	0.0148	0.0813	0.0190	0.0136	0.0326		232.9365	232.9365	1.9600e-003		232.9777
Worker	0.1145	0.1617	1.4446	3.1400e-003	0.2875	1.9600e-003	0.2895	0.0763	1.8100e-003	0.0781		247.1180	247.1180	0.0130		247.3918
Total	**0.2470**	**1.0560**	**3.1516**	**5.5100e-003**	**0.3541**	**0.0167**	**0.3708**	**0.0953**	**0.0154**	**0.1106**		**480.0545**	**480.0545**	**0.0150**		**480.3694**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8027	33.1529	24.9834	0.0382		2.1289	2.1289		2.0014	2.0014		3,720.0257	3,720.0257	0.9104		3,739.1445
Total	**3.8027**	**33.1529**	**24.9834**	**0.0382**		**2.1289**	**2.1289**		**2.0014**	**2.0014**		**3,720.0257**	**3,720.0257**	**0.9104**		**3,739.1445**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1127	0.8027	1.5788	2.3600e-003	0.0665	0.0135	0.0800	0.0190	0.0124	0.0314		228.8175	228.8175	1.9100e-003		228.8575
Worker	0.1008	0.1450	1.2798	3.1400e-003	0.2875	1.9200e-003	0.2894	0.0763	1.7700e-003	0.0780		238.6918	238.6918	0.0120		238.9440
Total	**0.2135**	**0.9477**	**2.8586**	**5.5000e-003**	**0.3540**	**0.0154**	**0.3695**	**0.0953**	**0.0142**	**0.1095**		**467.5092**	**467.5092**	**0.0139**		**467.8015**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.8027	33.1529	24.9834	0.0382		2.1289	2.1289		2.0014	2.0014	0.0000	3,720.0257	3,720.0257	0.9104		3,739.1445
Total	**3.8027**	**33.1529**	**24.9834**	**0.0382**		**2.1289**	**2.1289**		**2.0014**	**2.0014**	**0.0000**	**3,720.0257**	**3,720.0257**	**0.9104**		**3,739.1445**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1127	0.8027	1.5788	2.3600e-003	0.0665	0.0135	0.0800	0.0190	0.0124	0.0314		228.8175	228.8175	1.9100e-003		228.8575
Worker	0.1008	0.1450	1.2798	3.1400e-003	0.2875	1.9200e-003	0.2894	0.0763	1.7700e-003	0.0780		238.6918	238.6918	0.0120		238.9440
Total	**0.2135**	**0.9477**	**2.8586**	**5.5000e-003**	**0.3540**	**0.0154**	**0.3695**	**0.0953**	**0.0142**	**0.1095**		**467.5092**	**467.5092**	**0.0139**		**467.8015**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3508	29.8797	24.3952	0.0382		1.8307	1.8307		1.7213	1.7213		3,678.4321	3,678.4321	0.8950		3,697.2280
Total	**3.3508**	**29.8797**	**24.3952**	**0.0382**		**1.8307**	**1.8307**		**1.7213**	**1.7213**		**3,678.4321**	**3,678.4321**	**0.8950**		**3,697.2280**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1012	0.7269	1.4994	2.3600e-003	0.0665	0.0124	0.0789	0.0190	0.0114	0.0304		224.8414	224.8414	1.8400e-003		224.8801
Worker	0.0911	0.1318	1.1534	3.1400e-003	0.2875	1.8800e-003	0.2894	0.0763	1.7500e-003	0.0780		230.2269	230.2269	0.0112		230.4612
Total	**0.1922**	**0.8587**	**2.6528**	**5.5000e-003**	**0.3540**	**0.0143**	**0.3683**	**0.0953**	**0.0132**	**0.1084**		**455.0683**	**455.0683**	**0.0130**		**455.3413**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.3508	29.8797	24.3952	0.0382		1.8307	1.8307		1.7213	1.7213	0.0000	3,678.4321	3,678.4321	0.8950		3,697.2280
Total	**3.3508**	**29.8797**	**24.3952**	**0.0382**		**1.8307**	**1.8307**		**1.7213**	**1.7213**	**0.0000**	**3,678.4321**	**3,678.4321**	**0.8950**		**3,697.2280**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.1012	0.7269	1.4994	2.3600e-003	0.0665	0.0124	0.0789	0.0190	0.0114	0.0304		224.8414	224.8414	1.8400e-003		224.8801
Worker	0.0911	0.1318	1.1534	3.1400e-003	0.2875	1.8800e-003	0.2894	0.0763	1.7500e-003	0.0780		230.2269	230.2269	0.0112		230.4612
Total	**0.1922**	**0.8587**	**2.6528**	**5.5000e-003**	**0.3540**	**0.0143**	**0.3683**	**0.0953**	**0.0132**	**0.1084**		**455.0683**	**455.0683**	**0.0130**		**455.3413**

3.6 Paving - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4259	14.9353	14.3652	0.0223		0.8094	0.8094		0.7447	0.7447		2,208.9731	2,208.9731	0.6989		2,223.6499
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4259**	**14.9353**	**14.3652**	**0.0223**		**0.8094**	**0.8094**		**0.7447**	**0.7447**		**2,208.9731**	**2,208.9731**	**0.6989**		**2,223.6499**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0390	0.0565	0.4943	1.3500e-003	0.1232	8.1000e-004	0.1240	0.0327	7.5000e-004	0.0334		98.6687	98.6687	4.7800e-003		98.7691
Total	**0.0390**	**0.0565**	**0.4943**	**1.3500e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.5000e-004**	**0.0334**		**98.6687**	**98.6687**	**4.7800e-003**		**98.7691**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4259	14.9353	14.3652	0.0223		0.8094	0.8094		0.7447	0.7447	0.0000	2,208.9731	2,208.9731	0.6989		2,223.6499
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.4259**	**14.9353**	**14.3652**	**0.0223**		**0.8094**	**0.8094**		**0.7447**	**0.7447**	**0.0000**	**2,208.9731**	**2,208.9731**	**0.6989**		**2,223.6499**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0390	0.0565	0.4943	1.3500e-003	0.1232	8.1000e-004	0.1240	0.0327	7.5000e-004	0.0334		98.6687	98.6687	4.7800e-003		98.7691
Total	**0.0390**	**0.0565**	**0.4943**	**1.3500e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.5000e-004**	**0.0334**		**98.6687**	**98.6687**	**4.7800e-003**		**98.7691**

3.7 Architectural Coating - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	58.9774					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288		281.4481	281.4481	0.0238		281.9473
Total	**59.2439**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**		**281.4481**	**281.4481**	**0.0238**		**281.9473**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0182	0.0264	0.2307	6.3000e-004	0.0575	3.8000e-004	0.0579	0.0153	3.5000e-004	0.0156		46.0454	46.0454	2.2300e-003		46.0922
Total	**0.0182**	**0.0264**	**0.2307**	**6.3000e-004**	**0.0575**	**3.8000e-004**	**0.0579**	**0.0153**	**3.5000e-004**	**0.0156**		**46.0454**	**46.0454**	**2.2300e-003**		**46.0922**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	58.9774					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2664	1.8354	1.8413	2.9700e-003		0.1288	0.1288		0.1288	0.1288	0.0000	281.4481	281.4481	0.0238		281.9473
Total	**59.2439**	**1.8354**	**1.8413**	**2.9700e-003**		**0.1288**	**0.1288**		**0.1288**	**0.1288**	**0.0000**	**281.4481**	**281.4481**	**0.0238**		**281.9473**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0182	0.0264	0.2307	6.3000e-004	0.0575	3.8000e-004	0.0579	0.0153	3.5000e-004	0.0156		46.0454	46.0454	2.2300e-003		46.0922
Total	**0.0182**	**0.0264**	**0.2307**	**6.3000e-004**	**0.0575**	**3.8000e-004**	**0.0579**	**0.0153**	**3.5000e-004**	**0.0156**		**46.0454**	**46.0454**	**2.2300e-003**		**46.0922**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.8779	6.0274	32.0259	0.0707	5.7792	0.0899	5.8691	1.5429	0.0830	1.6258		5,418.2249	5,418.2249	0.2291		5,423.0352
Unmitigated	2.8918	6.1309	32.4273	0.0721	5.8971	0.0916	5.9887	1.5744	0.0845	1.6588		5,525.3697	5,525.3697	0.2333		5,530.2681

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	913.92	951.36	827.52	2,656,993	2,603,853
Total	913.92	951.36	827.52	2,656,993	2,603,853

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.511700	0.213500	0.169100	0.060900	0.002100	0.001000	0.009500	0.022000	0.000000	0.003800	0.003100	0.001000	0.002300

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0709	0.6061	0.2579	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.7305	773.7305	0.0148	0.0142	778.4393
NaturalGas Unmitigated	0.0889	0.7596	0.3232	4.8500e-003		0.0614	0.0614		0.0614	0.0614		969.7015	969.7015	0.0186	0.0178	975.6029

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	8242.46	0.0889	0.7596	0.3232	4.8500e-003		0.0614	0.0614		0.0614	0.0614		969.7015	969.7015	0.0186	0.0178	975.6029
Total		**0.0889**	**0.7596**	**0.3232**	**4.8500e-003**		**0.0614**	**0.0614**		**0.0614**	**0.0614**		**969.7015**	**969.7015**	**0.0186**	**0.0178**	**975.6029**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	6.57671	0.0709	0.6061	0.2579	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.7305	773.7305	0.0148	0.0142	778.4393
Total		**0.0709**	**0.6061**	**0.2579**	**3.8700e-003**		**0.0490**	**0.0490**		**0.0490**	**0.0490**		**773.7305**	**773.7305**	**0.0148**	**0.0142**	**778.4393**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	5.0166	0.0922	7.9695	4.2000e-004		0.1724	0.1724		0.1710	0.1710	0.0000	2,047.2022	2,047.2022	0.0530	0.0373	2,059.8683
Unmitigated	26.5047	3.2756	203.1129	0.6371		32.0065	32.0065		32.0052	32.0052	4,698.7206	2,047.2022	6,745.9228	22.0185	0.0373	7,219.8657

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	3.6979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	21.6744	3.1834	195.1535	0.6367		31.9629	31.9629		31.9616	31.9616	4,698.7206	2,032.9412	6,731.6618	22.0045	0.0373	7,205.3107
Landscaping	0.2436	0.0922	7.9594	4.2000e-004		0.0436	0.0436		0.0436	0.0436		14.2610	14.2610	0.0140		14.5550
Architectural Coating	0.8887					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**26.5047**	**3.2756**	**203.1129**	**0.6371**		**32.0065**	**32.0065**		**32.0052**	**32.0052**	**4,698.7206**	**2,047.2022**	**6,745.9228**	**22.0185**	**0.0373**	**7,219.8657**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	3.6979					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.1864	1.0000e-005	0.0102	0.0000		0.1288	0.1288		0.1274	0.1274	0.0000	2,032.9412	2,032.9412	0.0390	0.0373	2,045.3133
Landscaping	0.2436	0.0922	7.9594	4.2000e-004		0.0436	0.0436		0.0436	0.0436		14.2610	14.2610	0.0140		14.5550
Architectural Coating	0.8887					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**5.0166**	**0.0922**	**7.9695**	**4.2000e-004**		**0.1724**	**0.1724**		**0.1710**	**0.1710**	**0.0000**	**2,047.2022**	**2,047.2022**	**0.0530**	**0.0373**	**2,059.8683**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Woodside Homes Tract No 6154 - BAU

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	96.00	Dwelling Unit	43.23	172,800.00	275

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2005
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Based on site plan
96 single family homes on 43.23 acres

Construction Phase - BAU Operational Run Only

Off-road Equipment - BAU Operational Run Only

Trips and VMT - Operations only

Vehicle Trips - ITE Trip Generation Manual, 9th Edition
Weekday 9.52; Sat 9.91; Sunday 8.62

Vechicle Emission Factors - 2020 SJVAPCD Residential Fleet Mix

Woodstoves - Based on Rule 4901

Energy Use - Unadjusted energy intenisty

Mobile Land Use Mitigation -

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	55.00	1.00
tblFireplaces	NumberGas	52.80	96.00
tblFireplaces	NumberNoFireplace	43.20	96.00
tblLandUse	LotAcreage	31.17	43.23
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblProjectCharacteristics	OperationalYear	2014	2005
tblTripsAndVMT	WorkerTripNumber	7.00	0.00
tblVehicleEF	HHD	0.10	0.02
tblVehicleEF	LDA	0.42	0.51
tblVehicleEF	LDT1	0.10	0.21
tblVehicleEF	LDT2	0.20	0.17
tblVehicleEF	LHD1	0.02	2.1000e-003
tblVehicleEF	LHD2	7.9230e-003	1.0000e-003
tblVehicleEF	MCY	7.8260e-003	3.1000e-003
tblVehicleEF	MDV	0.12	0.06
tblVehicleEF	MH	2.3310e-003	2.3000e-003
tblVehicleEF	MHD	0.02	9.6000e-003
tblVehicleEF	OBUS	1.2470e-003	0.00
tblVehicleEF	SBUS	1.6720e-003	1.0000e-003
tblVehicleEF	UBUS	1.5030e-003	3.8000e-003
tblVehicleTrips	ST_TR	10.08	9.91
tblVehicleTrips	SU_TR	8.77	8.62
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	NumberCatalytic	4.80	43.23
tblWoodstoves	NumberNoncatalytic	4.80	43.23

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											174.7669	76.7788	251.5457	0.8203	1.3900e-003	269.2020
Energy											0.0000	396.8736	396.8736	0.0134	5.2800e-003	398.7927
Mobile											0.0000	1,273.5684	1,273.5684	0.1351	0.0000	1,276.4059
Waste											20.0961	0.0000	20.0961	1.1877	0.0000	45.0367
Water											1.9844	13.8608	15.8451	0.2044	4.9400e-003	21.6704
Total											**196.8474**	**1,761.0815**	**1,957.9289**	**2.3609**	**0.0116**	**2,011.1076**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	76.7788	76.7788	3.3100e-003	1.3900e-003	77.2781
Energy											0.0000	396.8736	396.8736	0.0134	5.2800e-003	398.7927
Mobile											0.0000	1,273.5684	1,273.5684	0.1351	0.0000	1,276.4059
Waste											20.0961	0.0000	20.0961	1.1877	0.0000	45.0367
Water											1.9844	13.8608	15.8451	0.2044	4.9300e-003	21.6672
Total											**22.0805**	**1,761.0815**	**1,783.1620**	**1.5439**	**0.0116**	**1,819.1805**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**88.78**	**0.00**	**8.93**	**34.61**	**0.09**	**9.54**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	1,273.5684	1,273.5684	0.1351	0.0000	1,276.4059
Unmitigated											0.0000	1,273.5684	1,273.5684	0.1351	0.0000	1,276.4059

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	913.92	951.36	827.52	2,656,993	2,656,993
Total	913.92	951.36	827.52	2,656,993	2,656,993

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.511200	0.213700	0.169200	0.061000	0.002100	0.001000	0.009600	0.022100	0.000000	0.003800	0.003100	0.001000	0.002300

5.0 Energy Detail

Historical Energy Use: Y

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated											0.0000	221.9086	221.9086	0.0100	2.0800e-003	222.7629
Electricity Unmitigated											0.0000	221.9086	221.9086	0.0100	2.0800e-003	222.7629
NaturalGas Mitigated											0.0000	174.9650	174.9650	3.3500e-003	3.2100e-003	176.0298
NaturalGas Unmitigated											0.0000	174.9650	174.9650	3.3500e-003	3.2100e-003	176.0298

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.27872e+006											0.0000	174.9650	174.9650	3.3500e-003	3.2100e-003	176.0298
Total												**0.0000**	**174.9650**	**174.9650**	**3.3500e-003**	**3.2100e-003**	**176.0298**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.27872e+006											0.0000	174.9650	174.9650	3.3500e-003	3.2100e-003	176.0298
Total												**0.0000**	**174.9650**	**174.9650**	**3.3500e-003**	**3.2100e-003**	**176.0298**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	762804	221.9086	0.0100	2.0800e-003	222.7629
Total		**221.9086**	**0.0100**	**2.0800e-003**	**222.7629**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	762804	221.9086	0.0100	2.0800e-003	222.7629
Total		**221.9086**	**0.0100**	**2.0800e-003**	**222.7629**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	76.7788	76.7788	3.3100e-003	1.3900e-003	77.2781
Unmitigated											174.7669	76.7788	251.5457	0.8203	1.3900e-003	269.2020

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											174.7669	75.6144	250.3813	0.8185	1.3900e-003	267.9985
Landscaping											0.0000	1.1644	1.1644	1.8600e-003	0.0000	1.2035
Total											**174.7669**	**76.7787**	**251.5457**	**0.8203**	**1.3900e-003**	**269.2020**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	75.6144	75.6144	1.4500e-003	1.3900e-003	76.0746
Landscaping											0.0000	1.1644	1.1644	1.8600e-003	0.0000	1.2035
Total											**0.0000**	**76.7787**	**76.7787**	**3.3100e-003**	**1.3900e-003**	**77.2781**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	15.8451	0.2044	4.9300e-003	21.6672
Unmitigated	15.8451	0.2044	4.9400e-003	21.6704

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	6.25479 / 3.94323	15.8451	0.2044	4.9400e-003	21.6704
Total		**15.8451**	**0.2044**	**4.9400e-003**	**21.6704**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	6.25479 / 3.94323	15.8451	0.2044	4.9300e-003	21.6672
Total		**15.8451**	**0.2044**	**4.9300e-003**	**21.6672**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	20.0961	1.1877	0.0000	45.0367
Mitigated	20.0961	1.1877	0.0000	45.0367

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	99	20.0961	1.1877	0.0000	45.0367
Total		**20.0961**	**1.1877**	**0.0000**	**45.0367**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	99	20.0961	1.1877	0.0000	45.0367
Total		**20.0961**	**1.1877**	**0.0000**	**45.0367**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Wilson Premier Homes Tract 6137 - Operations 2020

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	96.00	Dwelling Unit	43.23	172,800.00	275

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2020
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	491.65	**CH4 Intensity (lb/MWhr)**	0.022	**N2O Intensity (lb/MWhr)**	0.005

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Based on Renewable Portfolio Standard

Land Use - Based on site plan
96 single family dwelling units on 43.23 acres

Construction Phase - Operational run only

Off-road Equipment - Operational only run

Trips and VMT - Operational only run

Vehicle Trips - ITE Trip Generation Manual, 9th Edition
Weekday 9.52; Saturday 9.91; Sunday 8.62

Vechicle Emission Factors - SJVAPCD 2020 Residential Fleet Mix
Emissions of light duty autos adjusted to reflect clean car standards as determined by Pavley II (3% reduction)

Woodstoves - Based on Rule 4901

Energy Use - Based on Renewable Portfolio Standards

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation -

Water Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	1.00
tblFireplaces	NumberGas	57.20	96.00
tblFireplaces	NumberNoFireplace	46.80	96.00
tblLandUse	LotAcreage	31.17	43.23
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	UsageHours	6.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.022
tblProjectCharacteristics	CO2IntensityFactor	641.35	491.65
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.005
tblProjectCharacteristics	OperationalYear	2014	2020
tblTripsAndVMT	WorkerTripNumber	7.00	0.00
tblVehicleEF	HHD	0.08	0.02
tblVehicleEF	LDA	8.8290e-003	8.5640e-003
tblVehicleEF	LDA	6.0550e-003	5.8730e-003
tblVehicleEF	LDA	227.99	221.15
tblVehicleEF	LDA	51.80	50.25
tblVehicleEF	LDA	0.44	0.51
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	0.02	0.02
tblVehicleEF	LDT1	275.60	267.33
tblVehicleEF	LDT1	62.41	60.54
tblVehicleEF	LDT1	0.06	0.21
tblVehicleEF	LDT2	0.01	0.01
tblVehicleEF	LDT2	9.1210e-003	8.8470e-003
tblVehicleEF	LDT2	340.51	330.30
tblVehicleEF	LDT2	76.63	74.33
tblVehicleEF	LDT2	0.16	0.17
tblVehicleEF	LHD1	0.04	2.1000e-003
tblVehicleEF	LHD2	7.0780e-003	1.0000e-003

tblVehicleEF	MCY	6.6330e-003	3.1000e-003
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	0.02	0.02
tblVehicleEF	MDV	454.23	440.60
tblVehicleEF	MDV	101.61	98.56
tblVehicleEF	MDV	0.17	0.06
tblVehicleEF	MH	1.8650e-003	2.3000e-003
tblVehicleEF	MHD	0.02	9.6000e-003
tblVehicleEF	OBUS	2.0660e-003	0.00
tblVehicleEF	SBUS	7.5600e-004	1.0000e-003
tblVehicleEF	UBUS	1.7620e-003	3.8000e-003
tblVehicleTrips	ST_TR	10.08	9.91
tblVehicleTrips	SU_TR	8.77	8.62
tblVehicleTrips	WD_TR	9.57	9.52
tblWoodstoves	NumberCatalytic	8.28	43.23
tblWoodstoves	NumberNoncatalytic	8.28	43.23

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											174.7669	76.7788	251.5457	0.8196	1.3900e-003	269.1867
Energy											0.0000	324.6161	324.6161	0.0104	4.6100e-003	326.2645
Mobile											0.0000	844.3880	844.3880	0.0335	0.0000	845.0915
Waste											21.7038	0.0000	21.7038	1.2827	0.0000	48.6396
Water											2.1497	11.5109	13.6606	0.2213	5.3300e-003	19.9607
Total											**198.6204**	**1,257.2937**	**1,455.9141**	**2.3675**	**0.0113**	**1,509.1430**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area											0.0000	76.7788	76.7788	2.5800e-003	1.3900e-003	77.2628
Energy											0.0000	287.0280	287.0280	9.5700e-003	3.9600e-003	288.4580
Mobile											0.0000	828.0082	828.0082	0.0329	0.0000	828.6991
Waste											16.2779	0.0000	16.2779	0.9620	0.0000	36.4797
Water											1.7198	8.6624	10.3822	0.1770	4.2600e-003	15.4200
Total											**17.9976**	**1,200.4774**	**1,218.4750**	**1.1841**	**9.6100e-003**	**1,246.3195**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**90.94**	**4.52**	**16.31**	**49.99**	**15.18**	**17.42**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	828.0082	828.0082	0.0329	0.0000	828.6991
Unmitigated											0.0000	844.3880	844.3880	0.0335	0.0000	845.0915

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	913.92	951.36	827.52	2,656,993	2,603,853
Total	913.92	951.36	827.52	2,656,993	2,603,853

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	7.30	7.50	48.40	15.90	35.70	86	11	3

4.4 Fleet Mix

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.511200	0.213700	0.169200	0.061000	0.002100	0.001000	0.009600	0.022100	0.000000	0.003800	0.003100	0.001000	0.002300

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated											0.0000	158.9282	158.9282	7.1100e-003	1.6200e-003	159.5786
Electricity Unmitigated											0.0000	164.0711	164.0711	7.3400e-003	1.6700e-003	164.7425
NaturalGas Mitigated											0.0000	128.0998	128.0998	2.4600e-003	2.3500e-003	128.8794
NaturalGas Unmitigated											0.0000	160.5450	160.5450	3.0800e-003	2.9400e-003	161.5220

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	3.0085e+006											0.0000	160.5450	160.5450	3.0800e-003	2.9400e-003	161.5220
Total												**0.0000**	**160.5450**	**160.5450**	**3.0800e-003**	**2.9400e-003**	**161.5220**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	2.4005e+006											0.0000	128.0998	128.0998	2.4600e-003	2.3500e-003	128.8794
Total												**0.0000**	**128.0998**	**128.0998**	**2.4600e-003**	**2.3500e-003**	**128.8794**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	735716	164.0711	7.3400e-003	1.6700e-003	164.7425
Total		**164.0711**	**7.3400e-003**	**1.6700e-003**	**164.7425**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	712655	158.9282	7.1100e-003	1.6200e-003	159.5786
Total		**158.9282**	**7.1100e-003**	**1.6200e-003**	**159.5786**

6.0 Area Detail

6.1 Mitigation Measures Area

Use only Natural Gas Hearths

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated											0.0000	76.7788	76.7788	2.5800e-003	1.3900e-003	77.2628
Unmitigated											174.7669	76.7788	251.5457	0.8196	1.3900e-003	269.1867

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											174.7669	75.6144	250.3813	0.8185	1.3900e-003	267.9985
Landscaping											0.0000	1.1644	1.1644	1.1400e-003	0.0000	1.1882
Total											**174.7669**	**76.7787**	**251.5457**	**0.8196**	**1.3900e-003**	**269.1867**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products											0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth											0.0000	75.6144	75.6144	1.4500e-003	1.3900e-003	76.0746
Landscaping											0.0000	1.1644	1.1644	1.1400e-003	0.0000	1.1882
Total											**0.0000**	**76.7787**	**76.7787**	**2.5900e-003**	**1.3900e-003**	**77.2628**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	10.3822	0.1770	4.2600e-003	15.4200
Unmitigated	13.6606	0.2213	5.3300e-003	19.9607

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	6.77602 / 4.27184	13.6606	0.2213	5.3300e-003	19.9607
Total		**13.6606**	**0.2213**	**5.3300e-003**	**19.9607**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	5.42081 / 3.41747	10.3822	0.1770	4.2600e-003	15.4200
Total		**10.3822**	**0.1770**	**4.2600e-003**	**15.4200**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Institute Recycling and Composting Services

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	21.7038	1.2827	0.0000	48.6396
Mitigated	16.2779	0.9620	0.0000	36.4797

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	106.92	21.7038	1.2827	0.0000	48.6396
Total		**21.7038**	**1.2827**	**0.0000**	**48.6396**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	80.19	16.2779	0.9620	0.0000	36.4797
Total		**16.2779**	**0.9620**	**0.0000**	**36.4797**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Traffic Analysis

Proposed Dry Creek Preserve Master Plan

Clovis, California

Prepared For:

Woodside 06N, LP
9 River Park Place East, Suite 430
Fresno, California 93720

Date:

February 13, 2018

Job No.:

17-057.01

PETERS ENGINEERING GROUP
A CALIFORNIA CORPORATION

EXECUTIVE SUMMARY (Continued)

The study time periods include the weekday a.m. and p.m. peak hours determined between 7:00 and 9:00 a.m. and between 4:00 and 6:00 p.m. The peak hours were analyzed for the following conditions:

- Existing Conditions;
- Year 2038 No Dry Creek Preserve Development Conditions.
- Year 2038 Dry Creek Preserve Master Plan Conditions.

Standard traffic engineering principles and methods were employed to establish the existing conditions, to estimate the number of trips expected to be generated by future development projects, and to analyze the traffic conditions that may occur in the future. The conclusions of the study are summarized in the following sections.

Existing Conditions

The study intersections are currently operating at acceptable levels of service with calculated 95th-percentile queues contained within the available storage capacity. Long queues have been observed, primarily at the Shepherd Avenue / Sunnyside Avenues intersection and the Nees Avenue / Sunnyside Avenue intersection, and are often on a single approach during school peaks. The study road segments are operating at acceptable levels of service.

Year 2038 No Dry Creek Preserve Development Conditions

The year 2038 No Dry Creek Preserve Development conditions analyses are based on the assumption that no new residential development occurs in the DCP area through the year 2038, but 20 years of growth has occurred in the Clovis, Fresno, and Fresno County region as incorporated into the adopted Fresno County travel model. The analyses indicate that all of the study intersections, with the exception of the Teague Avenue / Sunnyside Avenue intersection, are expected to operate below (i.e., worse than) the target LOS with excessive queues if no additional intersection improvements are constructed. In addition, the two-lane Fowler Avenue road segments between Nees Avenue and Shepherd Avenue are expected to operate at LOS F. Sunnyside Avenue between Shepherd and Nees Avenues is expected to operate at LOS D, which is considered acceptable by both the City of Clovis and County of Fresno General Plans. Teague Avenue between Sunnyside and Fowler Avenues is expected to operate at LOS C or better.

The analyses generally confirm the roadway designations and planned lane configurations as set forth in the City of Clovis General Plan. The General Plan does not specify intersection configurations; the configurations suggested in this report should be used as a guide and should be updated as necessary when traffic studies are performed for specific development projects.

Year 2038 Master Plan Conditions

The study found that the anticipated year 2038 conditions at the study locations will be nearly identical to the No Dry Creek Preserve Development conditions if likely development projects occur within the DCP. The ultimate planned roadway configurations included in the City of Clovis General Plan include sufficient reserve capacity to accommodate residential developments within the DCP area. The analyses suggest that a vast majority of the

PETERS ENGINEERING GROUP
A CALIFORNIA CORPORATION

Mr. Matt Smith
Woodside 06N, LP
9 River Park Place East, Suite 430
Fresno, California 93720

February 13, 2018

Subject: Traffic Analysis
Proposed Dry Creek Preserve Master Plan
Clovis, California

Dear Mr. Smith:

Introduction

This report presents the results of traffic analyses performed for the proposed Dry Creek Preserve Master Plan (hereinafter referred to as "Project") in Fresno County, California. This analysis focuses on the required ultimate roadway configurations at selected locations within, or adjacent to, the Dry Creek Preserve within the City of Clovis Sphere of Influence. This study was performed in conformance with the *City of Clovis Traffic Impact Study Guidelines* approved August 25, 2014 to the extent possible. This report incorporates comments received from the County of Fresno dated February 2, 2018 and supersedes a previous version of this report dated January 16, 2018.

Project Description

The Dry Creek Preserve (DCP) is essentially a Fresno County island within the City of Clovis sphere of influence. The proposed Master Plan boundaries are generally Nees Avenue on the south, and the Enterprise and Dry Creek Canals on the north, east, and west. Relative to existing streets the DCP is generally south of Shepherd Avenue, west of Armstrong Avenue, and east of Clovis Avenue. Woodside Homes is currently proposing a 95-unit single-family residential development to be located on approximately 43.34 acres northwest of the intersection of Fowler and Teague Avenues (Tract 6154). A project-specific traffic impact study was previously performed for Tract 6154 and presented in a report dated October 2016 by Yamabe & Horn (hereinafter referred to as the "Tract 6154 Report"). The City of Clovis and County of Fresno have requested that a traffic analysis be prepared to consider the cumulative effects of other developments likely to occur within the DCP. Two other areas have been identified as likely for development as follows:

- Approximately 149 single-family residences on approximately 65.43 acres located south of Teague Avenue and east of Sunnyside Avenue;
- Approximately 88 single-family residences on approximately 38.45 acres located on the east side of Fowler Avenue south of Teague Avenue.

- Shepherd Avenue: Expressway with four lanes in the 2035 condition and six lanes in the ultimate condition.
- Teague Avenue: Collector street between Sunnyside and Armstrong Avenues with two lanes in both the 2035 condition and the ultimate condition. City staff has indicated that the maximum ultimate lane configuration may include a TWLTL along the center of the roadway. Teague Avenue is designated as a local street with two lanes west of Sunnyside Avenue in all scenarios.
- Nees Avenue: Arterial street with four lanes in both the 2035 condition and the ultimate condition.

Existing Traffic Volumes

Existing traffic volumes were determined by performing manual turning movement counts at the study intersections between 7:00 and 9:00 a.m. and between 4:00 and 6:00 p.m. on a weekday while school was in session. The traffic count data sheets are presented in Appendix A and include the dates the counts were performed. The existing peak-hour turning movement volumes are presented in Figure 3, Existing Peak-Hour Traffic Volumes.

Anticipated Residential Developments Trip Generation

Data provided in the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 9th Edition*, were used to estimate the number of trips anticipated to be generated by the anticipated likely single-family residential developments within the DCP. Table 1 presents the trip generation information.

Table 1
Trip Generation

Project	Units	Daily		A.M. Peak Hour					P.M. Peak Hour				
		Rate	Total	Rate	In:Out	In	Out	Total	Rate	In:Out	In	Out	Total
Tract 6154	95	9.52	906	0.75	25:75	18	54	72	1.00	63:37	60	35	95
Teague / Sunnyside Site	149	9.52	1,420	0.75	25:75	28	84	112	1.00	63:37	94	55	149
Fowler Site	88	9.52	838	0.75	25:75	16	50	66	1.00	63:37	56	32	88

Reference: *Trip Generation Manual, 9th Edition,* Institute of Transportation Engineers 2012
Rates are reported in trips per dwelling unit. In:Out are percentages of the total.

Traffic Modeling and Cumulative Year 2038 Traffic Volumes

The Fresno Council of Governments (COG) maintains the Fresno County travel model. The travel model can be utilized to project future traffic volumes based on planned land uses and can also be used to estimate the regional distribution of trips generated at a given location.

The regional distributions of the trips presented in Table 1 were estimated by performing select zone analyses. The trip generation information and other relevant data were provided to COG to perform the select zone analyses using the year 2035 Fresno County travel model. The select zone analysis request submitted to COG and the results of the traffic modeling

Table 3
Level of Service Characteristics for Signalized Intersections

Level of Service	Description	Average Vehicle Delay (seconds)
A	Volume-to-capacity ratio is low. Progression is exceptionally favorable or the cycle length is very short.	<10
B	Volume-to-capacity ratio is low. Progression is highly favorable or the cycle length is very short.	>10-20
C	Volume-to-capacity ratio is no greater than 1.0. Progression is favorable or cycle length is moderate.	>20-35
D	Volume-to-capacity ratio is high but no greater than 1.0. Progression is ineffective or cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	>35-55
E	Volume-to-capacity ratio is high but no greater than 1.0. Progression is unfavorable and cycle length is long. Individual cycle failures are frequent.	>55-80
F	Volume-to-capacity ratio is greater than 1.0. Progression is very poor and cycle length is long. Most cycles fail to clear the queue.	>80

Reference: *Highway Capacity Manual,* Transportation Research Board, 2010

Table 4
Level of Service Criteria For Roadway Segments

Classification	Median Type	Number of Lanes	Peak Hour LOS Volume Thresholds		
			LOS C	LOS D	LOS E
Expressway	Raised Median	6	3,290	6,120	6,400
		4	2,080	4,060	4,260
Arterial	Raised Median	6	3,060	5,390	5,680
		4	1,950	3,580	3,780
		2	860	1,770	1,880
	TWLTL	4	1,840	3,400	3,590
		2	810	1,680	1,790
	Undivided	4	1,320	2,500	2,640
		2	570	1,230	1,310
Collector	TWLTL	4	1,840	3,400	3,590
		2	810	1,680	1,790
	Undivided	4	1,320	2,500	2,640
		2	570	1,230	1,310
Rural Arterial	Divided	4	1,950	3,580	3,780
	Undivided	2	570	1,230	1,310
Rural Collector/Local	Undivided	2	570	930	1,000

Reference: *General Plan Development Code Update Draft PEIR*, City of Clovis

Table 5
Intersection LOS Summary – Existing Conditions

Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Shepherd / Sunnyside	All-way stop	29.3	D	19.4	C
Teague / Sunnyside	Two-way stop	11.0	B	9.9	A
Teague / Fowler	Two-way stop	15.6	C	18.1	C
Nees / Sunnyside	All-way stop	29.9	D	16.2	C
Nees / Fowler	Traffic Signals	22.1	C	21.6	C

Table 6
Intersection LOS Summary – 2038 No Dry Creek Preserve Development Conditions

Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Shepherd / Sunnyside	All-way stop	**>300**	**F**	**>300**	**F**
Teague / Sunnyside	Two-way stop	18.8	C	19.1	C
Teague / Fowler	Two-way stop	**81.9**	**F**	**89.0**	**F**
Nees / Sunnyside	All-way stop	**300.0**	**F**	**>300**	**F**
Nees / Fowler	Traffic Signals	**56.2**	**E**	50.9	D

Table 7
Intersection LOS Summary – 2038 Dry Creek Preserve Master Plan Conditions

Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Shepherd / Sunnyside	All-way stop	**>300**	**F**	**>300**	**F**
Teague / Sunnyside	Two-way stop	19.5	C	20.8	C
Teague / Fowler	Two-way stop	**129.2**	**F**	**156.7**	**F**
Nees / Sunnyside	All-way stop	**>300**	**F**	**>300**	**F**
Nees / Fowler	Traffic Signals	**64.5**	**E**	**60.2**	**E**

The results of the intersection operational analyses include an estimate of the 95th-percentile queue lengths. The existing storage capacity (where applicable) and the calculated 95th-percentile queue lengths are presented in Table 8. The storage capacities reported in Table 8 are based on measurements from available aerial photographs. Calculated 95th-percentile queue lengths that exceed the storage capacity by at least 25 feet (the average storage space for one vehicle) or that are considered to be excessive are indicated in bold type.

Road Segment Analyses

The road segment analyses were performed using the thresholds presented in Table 4. Tables 9 and 10 present the two-way peak-hour road segment volumes and the corresponding LOS based on the existing lane configurations. Levels of service below (i.e., worse than) the target LOS are presented in bold type.

Table 9
Level of Service Criteria For Roadway Segments - A.M. Peak Hour

Roadway	Classification	Existing Median Type	Existing Number of Lanes	Volume and LOS		
				Existing	2038 No DCP Development	2038 Master Plan
Fowler Avenue (North of Teague)	Arterial	None	2	645 D	1,206 D	**1,279 E**
Fowler Avenue (Between Teague and Nees)	Arterial	None	2	666 D	1,164 D	**1,254 E**
Sunnyside Avenue (Between Shepherd and Teague)	Collector	None	2	265 C	753 D	770 D
Sunnyside Avenue (Between Teague and Nees)	Collector	None	2	252 C	756 D	830 D
Teague Avenue (Between Sunnyside and Fowler)	Collector	None	2	43 C	84 C	119 C

Table 10
Level of Service Criteria For Roadway Segments - P.M. Peak Hour

Roadway	Classification	Existing Median Type	Existing Number of Lanes	Volume and LOS		
				Existing	2038 No DCP Development	2038 Master Plan
Fowler Avenue (North of Teague)	Arterial	None	2	825 D	**1,545 F**	**1,640 F**
Fowler Avenue (Between Teague and Nees)	Arterial	None	2	832 D	**1,526 F**	**1,645 F**
Sunnyside Avenue (Between Shepherd and Teague)	Collector	None	2	207 C	827 D	851 D
Sunnyside Avenue (Between Teague and Nees)	Collector	None	2	211 C	829 D	926 D
Teague Avenue (Between Sunnyside and Fowler)	Collector	None	2	35 C	87 C	118 C

The intersection of Teague and Fowler Avenues is expected to operate at LOS F during the a.m. and p.m. peak hours with the current two-way stop control and would require signalization to operate at acceptable levels of service. With signalization and the following lane configurations the intersection would operate at LOS B during the a.m. and p.m. peak hours:

Eastbound: one left-turn lane and one through lane with a shared right turn;
Westbound: one left-turn lane and one through lane with a shared right turn;
Northbound: one left-turn lane and two through lanes with a shared right turn;
Southbound: one left-turn lane and two through lanes with a shared right turn.

The intersection of Nees and Sunnyside Avenues is expected to operate at LOS F during the a.m. and p.m. peak hours with the current all-way stop control and would require signalization to operate at acceptable levels of service. With signalization and the following lane configurations the intersection would operate at LOS C during the a.m. peak hour and LOS D during the p.m. peak hour:

Eastbound: one left-turn lane and two through lanes with a shared right turn;
Westbound: one left-turn lane and two through lanes with a shared right turn;
Northbound: one left-turn lane and one through lane with a shared right turn;
Southbound: one left-turn lane and one through lane with a shared right turn.

The intersection of Nees and Fowler Avenues is expected to operate at LOS E during the a.m. peak hour with the current signalization and lane configurations. The intersection would require additional lanes to operate at acceptable levels of service. With the following lane configurations the intersection would operate at LOS D during the a.m. peak hour and LOS C during the p.m. peak hour:

Eastbound: one left-turn lane and two through lanes with a shared right turn;
Westbound: one left-turn lane, one through lane, and one right-turn lane;
Northbound: one left-turn lane and two through lanes with a shared right turn;
Southbound: one left-turn lane and two through lanes with a shared right turn.

The existing two-lane Fowler Avenue road segments between Shepherd and Nees Avenues are expected to operate at LOS D if widened to two lanes with a TWLTL, but should be planned for four lanes in the ultimate condition in accordance with the City of Clovis General Plan.

Turn lanes should be designed to accommodate the calculated 95th-percentile queues presented in Table 13 as applicable.

Year 2038 Master Plan Conditions

The year 2038 Master Plan conditions analyses are based on the assumption that the residential developments considered to be likely within the DCP have been constructed and that 20 years of growth has occurred in the Clovis, Fresno, and Fresno County region as incorporated into the adopted Fresno County travel model. The analyses indicate that all of the study intersections, with the exception of the Teague Avenue / Sunnyside Avenue intersection, are expected to below (i.e., worse than) the target LOS. Excessive queues would

The intersection of Nees and Fowler Avenues is expected to operate at LOS F with the current signalization and lane configurations. The intersection would require additional lanes to operate at acceptable levels of service. With following lane configurations the intersection would operate at LOS D during the a.m. and p.m. peak hours:

Eastbound: one left-turn lane and two through lanes with a shared right turn;
Westbound: one left-turn lane, one through lane, and one right-turn lane;
Northbound: one left-turn lane and two through lanes with a shared right turn;
Southbound: one left-turn lane and two through lanes with a shared right turn.

The existing two-lane Fowler Avenue road segments between Shepherd and Nees Avenues are expected to operate at LOS D if widened to two lanes with a TWLTL, but should be planned for four lanes in the ultimate condition in accordance with the City of Clovis General Plan.

Turn lanes should be designed to accommodate the calculated 95th-percentile queues presented in Table 13 as applicable.

Summary of 2038 Mitigated Conditions

Mitigated conditions are summarized in Tables 11 through 13. Mitigated intersection analysis sheets are presented in Appendix D.

Table 11
Mitigated Intersection LOS – 2038 No Dry Creek Preserve Development Conditions

Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Shepherd / Sunnyside	Traffic Signals	19.6	B	20.1	C
Teague / Fowler	Traffic Signals	12.2	B	11.0	B
Nees / Sunnyside	Traffic Signals	25.3	C	42.8	D
Nees / Fowler	Traffic Signals	38.2	D	33.8	C

Table 12
Mitigated Intersection LOS – 2038 Creek Preserve Master Plan Conditions

Intersection	Control	A.M. Peak Hour		P.M. Peak Hour	
		Delay (sec)	LOS	Delay (sec)	LOS
Shepherd / Sunnyside	Traffic Signals	20.0	B	20.6	C
Teague / Fowler	Traffic Signals	12.5	B	11.5	B
	Roundabout	7.2	A	8.2	A
Nees / Sunnyside	Traffic Signals	27.7	C	46.2	D
Nees / Fowler	Traffic Signals	42.1	D	37.5	D

Conclusions and Recommendations

Standard traffic engineering principles and methods were employed to establish the existing conditions, to estimate the number of trips expected to be generated by future development projects, and to analyze the traffic conditions that may occur in the future. The conclusions of the study are summarized in the following sections.

Existing Conditions

The study intersections are currently operating at acceptable levels of service with calculated 95th-percentile queues contained within the available storage capacity. Long queues have been observed, primarily at the Shepherd Avenue / Sunnyside Avenues intersection and the Nees Avenue / Sunnyside Avenue intersection, and are often on a single approach during school peaks. The study road segments are operating at acceptable levels of service.

Year 2038 No Dry Creek Preserve Development Conditions

The year 2038 No Dry Creek Preserve Development conditions analyses are based on the assumption that no new residential development occurs in the DCP area through the year 2038, but 20 years of growth has occurred in the Clovis, Fresno, and Fresno County region as incorporated into the adopted Fresno County travel model. The analyses indicate that all of the study intersections, with the exception of the Teague Avenue / Sunnyside Avenue intersection, are expected to operate below (i.e., worse than) the target LOS with excessive queues if no additional intersection improvements are constructed. In addition, the two-lane Fowler Avenue road segments between Nees Avenue and Shepherd Avenue are expected to operate at LOS F. Sunnyside Avenue between Shepherd and Nees Avenues is expected to operate at LOS D, which is considered acceptable by both the City of Clovis and County of Fresno General Plans. Teague Avenue between Sunnyside and Fowler Avenues is expected to operate at LOS C or better.

The analyses generally confirm the roadway designations and planned lane configurations as set forth in the City of Clovis General Plan. The General Plan does not specify intersection configurations; the configurations suggested previously in this report should be used as a guide and should be updated as necessary when traffic studies are performed for specific development projects.

Year 2038 Master Plan Conditions

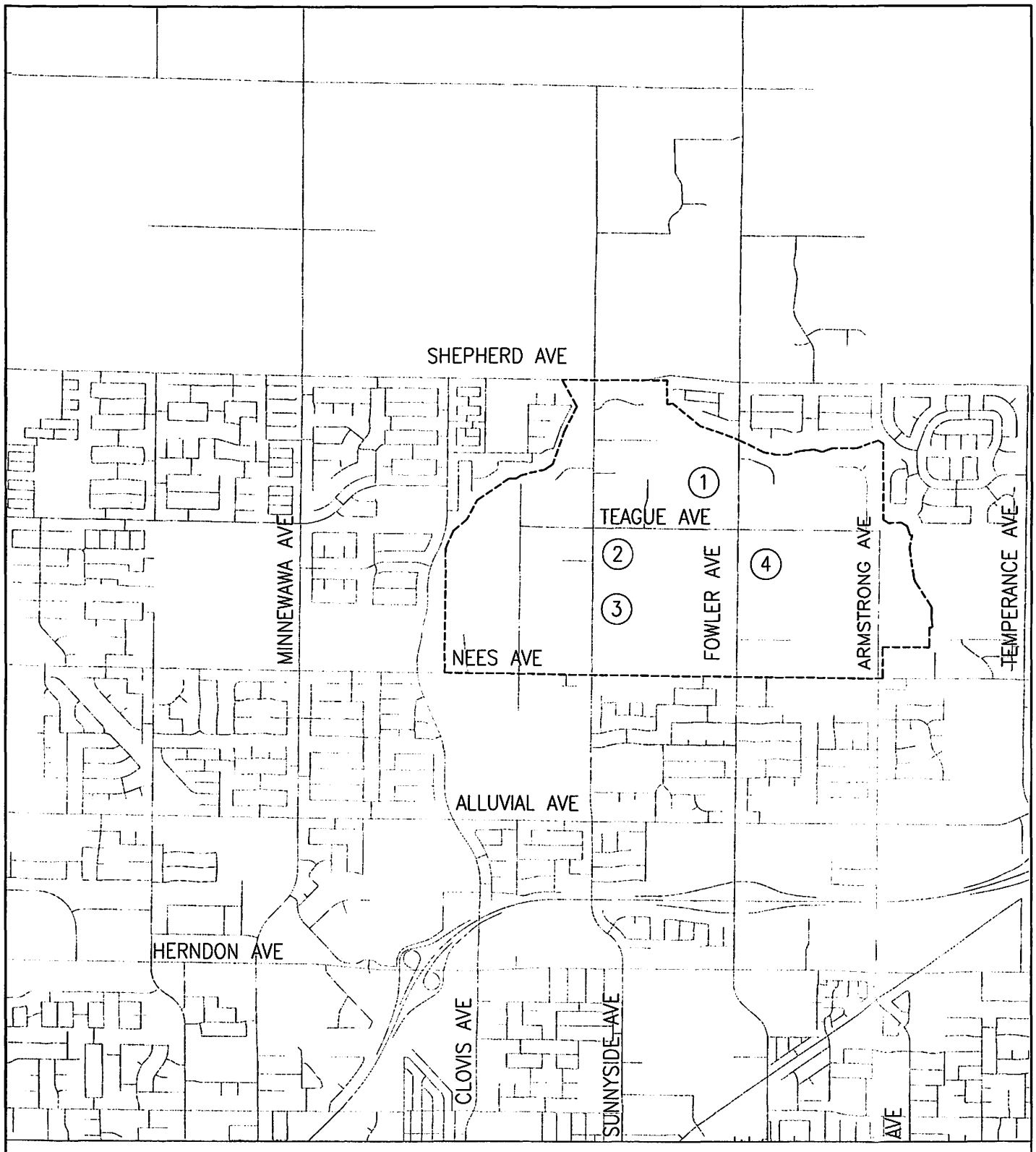
The study found that the anticipated year 2038 conditions at the study locations will be nearly identical to the No Dry Creek Preserve Development conditions if likely development projects occur within the DCP. The ultimate planned roadway configurations included in the City of Clovis General Plan include sufficient reserve capacity to accommodate residential developments within the DCP area. The analyses suggest that a vast majority of the additional trips expected to occur on Fowler Avenue and on Sunnyside Avenue will be the result of regional growth primarily expected to occur north of Shepherd Avenue.

Thank you for the opportunity to perform this Traffic Analysis. Please feel free to contact me if you have any questions.

PETERS ENGINEERING GROUP

David Peters, PE, TE, PTOE
President

Attachments: Figures 1 through 5
Appendix A - Traffic Count Data Sheets
Appendix B - Fresno County Travel Model
Appendix C - Intersection Analyses
Appendix D - Mitigated Intersection Analyses



Dry Creek Preserve Master Plan
Clovis, California

LEGEND

(X) PROJECT SITES

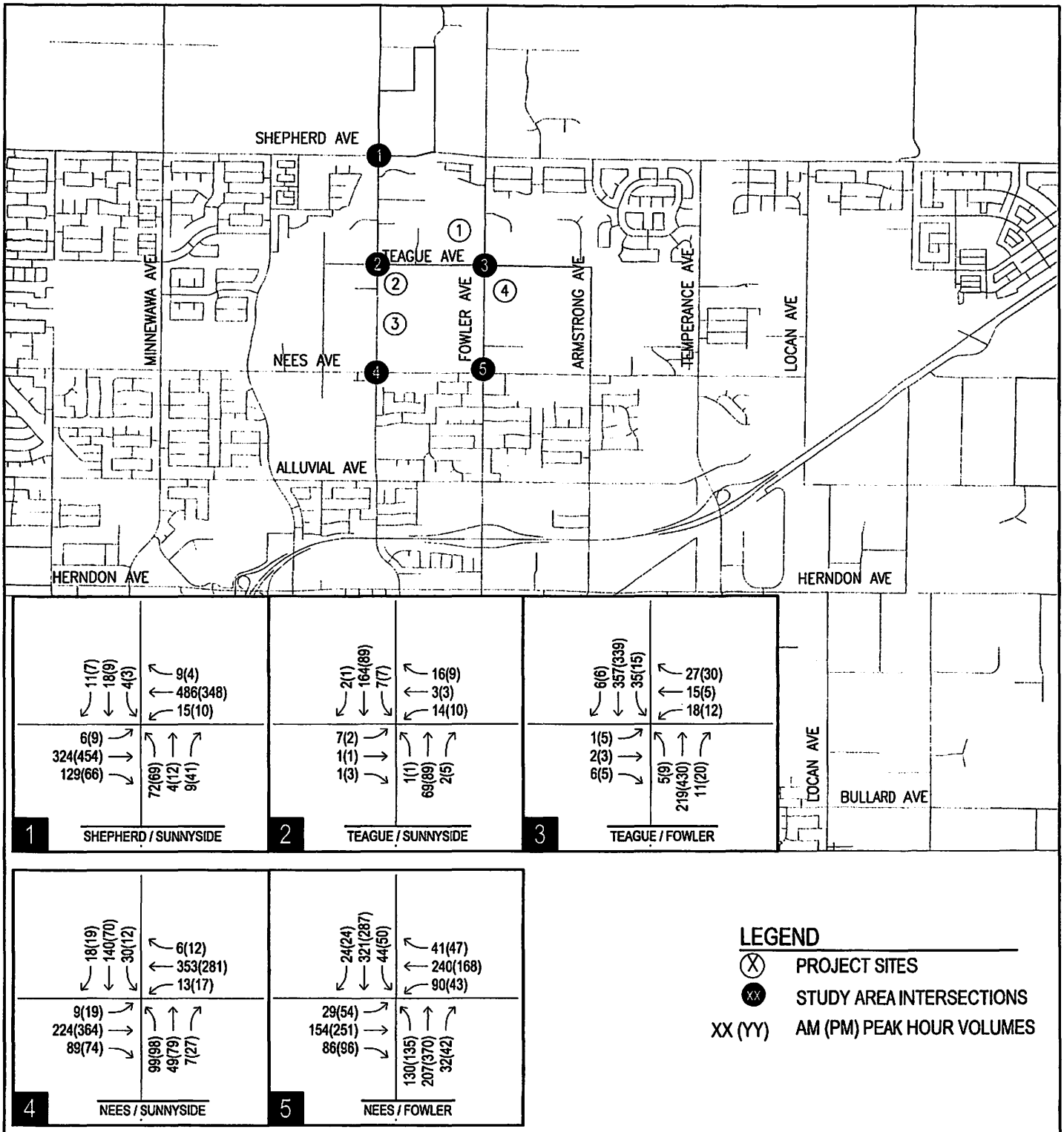
----- APPROXIMATE DCP MASTER PLAN AREA BOUNDARY

VICINITY MAP

Not to Scale

PETERS ENGINEERING GROUP

Figure 1



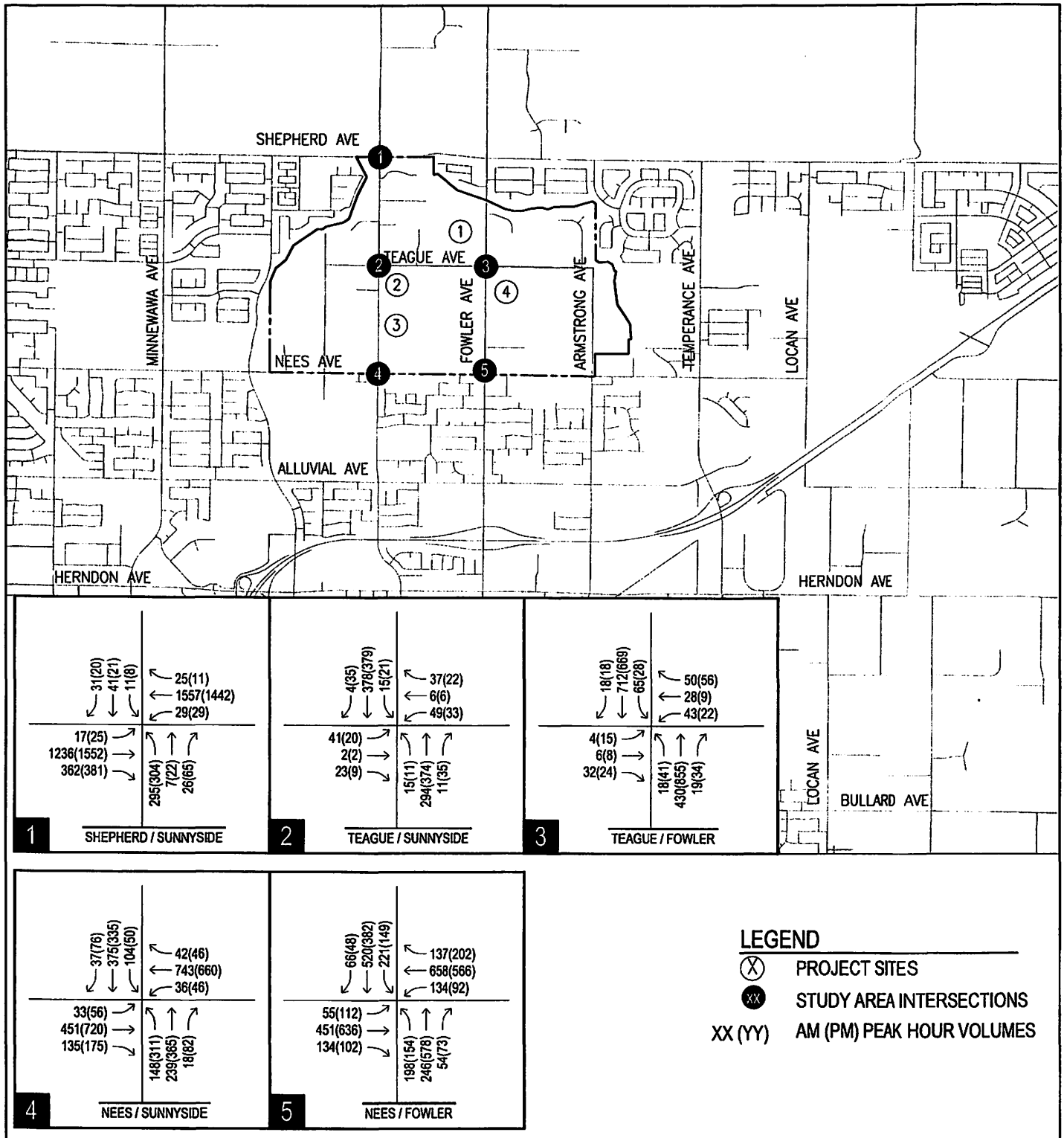
Dry Creek Preserve Master Plan
Clovis, California

EXISTING PEAK HOUR TRAFFIC VOLUMES

Not to Scale

PETERS ENGINEERING GROUP

Figure 3



Dry Creek Preserve Master Plan
Clovis, California

YEAR 2038 DRY CREEK PRESERVE PEAK HOUR TRAFFIC VOLUMES

Not to Scale

PETERS ENGINEERING GROUP

Figure 5

Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

LOCATION Shepherd Ave @ Sunnyside Ave

LATITUDE 36.8665448

COUNTY Fresno

LONGITUDE -119.6930

COLLECTION DATE Tuesday, November 28, 2017

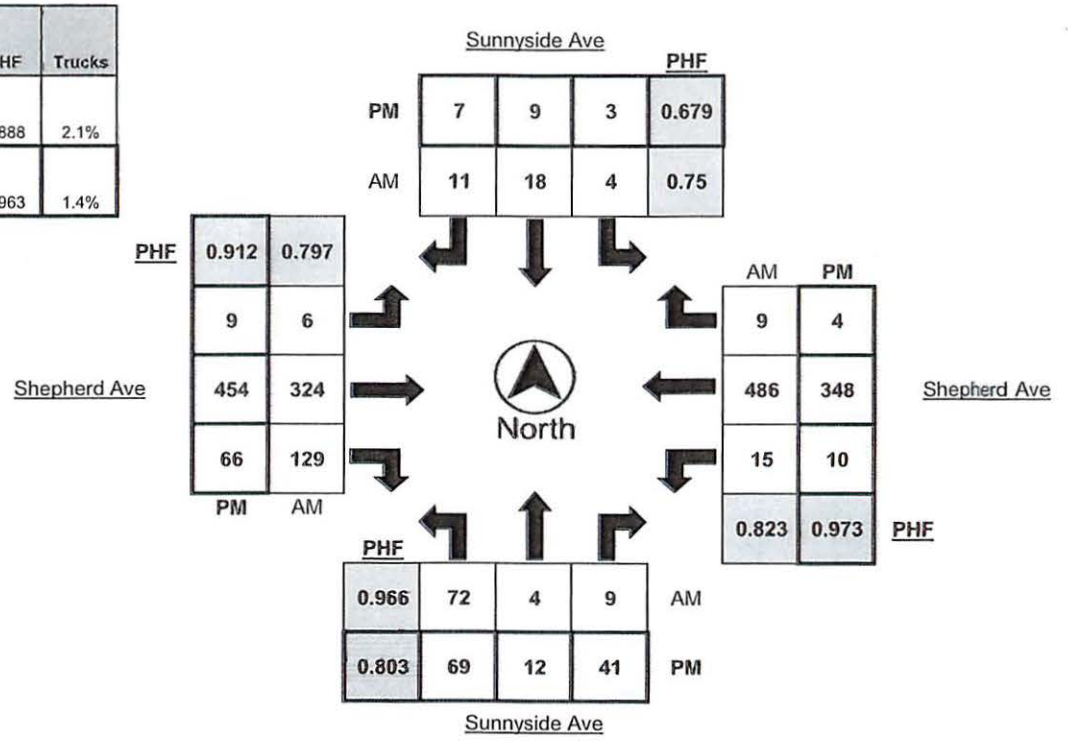
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	12	3	1	2	0	0	2	0	3	41	14	4	2	76	1	3
7:15 AM - 7:30 AM	20	1	0	0	1	7	1	1	1	57	33	2	3	115	4	1
7:30 AM - 7:45 AM	17	2	2	1	2	6	3	0	1	79	22	2	1	153	1	2
7:45 AM - 8:00 AM	19	0	3	3	1	4	3	0	1	106	37	0	4	127	1	5
8:00 AM - 8:15 AM	16	1	4	1	0	1	4	0	3	82	37	3	7	91	3	2
8:15 AM - 8:30 AM	14	1	7	0	0	4	1	0	2	61	23	3	3	95	1	1
8:30 AM - 8:45 AM	14	3	3	2	0	1	3	0	1	57	18	8	3	87	1	4
8:45 AM - 9:00 AM	11	1	2	3	2	2	2	0	1	32	18	0	1	63	1	0
TOTAL	123	12	22	12	6	25	19	1	13	515	202	22	24	807	13	18

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	19	4	4	0	0	1	1	0	4	94	20	3	4	70	3	2
4:15 PM - 4:30 PM	22	2	6	0	0	1	1	0	3	85	27	2	3	76	0	1
4:30 PM - 4:45 PM	24	5	9	0	0	4	3	0	5	106	24	6	0	85	3	2
4:45 PM - 5:00 PM	15	3	7	0	2	0	2	0	2	114	17	1	2	89	0	0
5:00 PM - 5:15 PM	17	2	14	0	0	1	1	0	0	106	10	3	3	89	1	1
5:15 PM - 5:30 PM	13	2	11	0	1	4	1	1	2	128	15	0	5	85	0	0
5:30 PM - 5:45 PM	22	2	2	0	1	1	1	0	4	117	12	1	0	79	2	2
5:45 PM - 6:00 PM	21	1	2	0	1	0	3	0	3	120	16	2	2	75	0	0
TOTAL	153	21	55	0	5	12	13	1	23	870	141	18	19	648	9	8

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	72	4	9	5	4	18	11	1	6	324	129	7	15	486	9	10
4:30 PM - 5:30 PM	69	12	41	0	3	9	7	1	9	454	66	10	10	348	4	3

	PHF	Trucks
AM	0.888	2.1%
PM	0.963	1.4%



Metro Traffic Data Inc.
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800-975-6938 Phone/Fax
www.metrotrafficdata.com

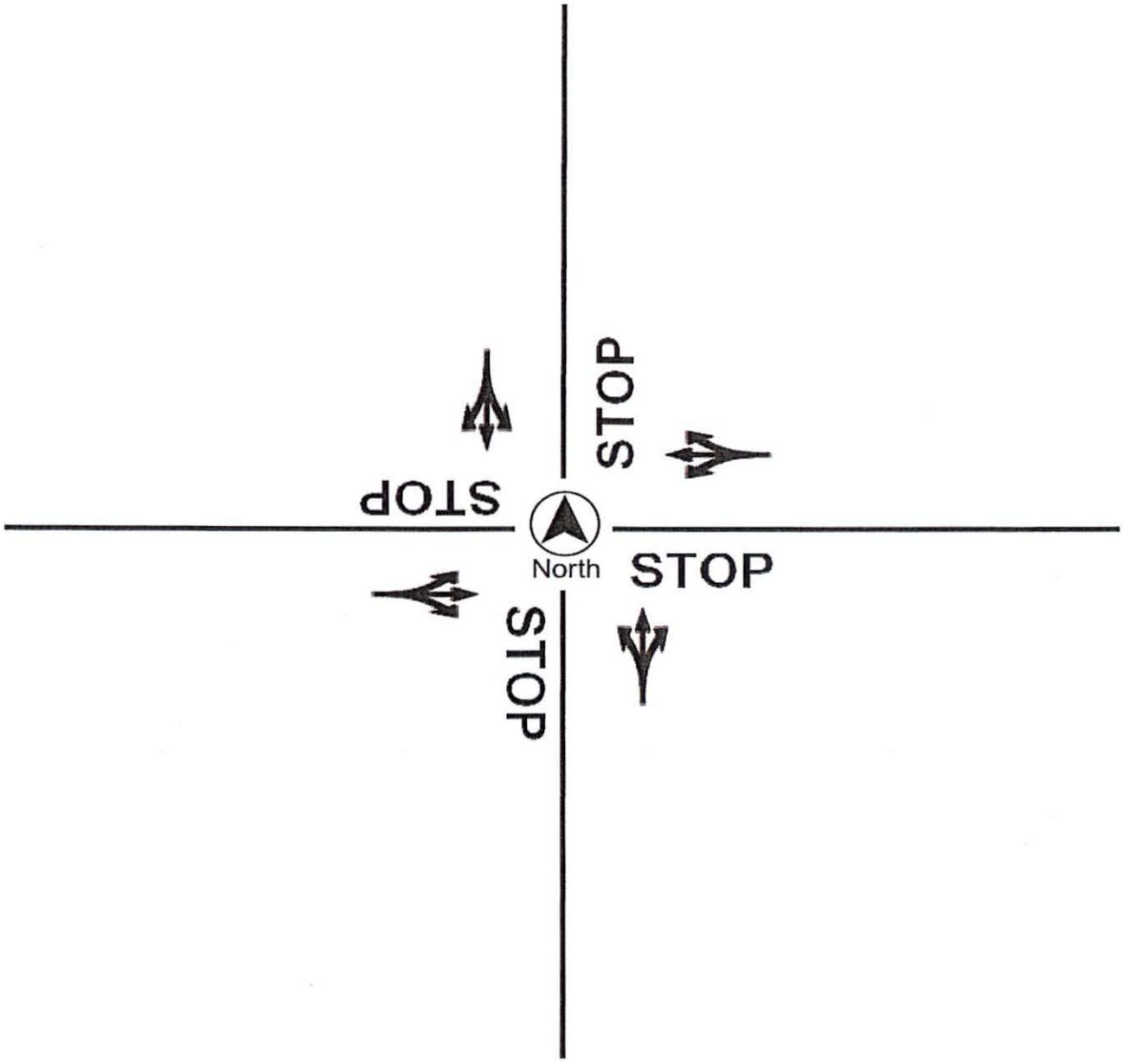
Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

LOCATION	Shepherd Ave @ Sunnyside Ave	**N/S STREET**	Sunnyside Ave
COUNTY	Fresno	**E/W STREET**	Shepherd Ave
COLLECTION DATE	Tuesday, November 28, 2017	**WEATHER**	Clear
CYCLE TIME	N/A	**CONTROL TYPE**	All-Way Stop

COMMENTS



Metro Traffic Data Inc.
310 N. Irwin Street - Suite 20
Hanford, CA 93230

800-975-6938 Phone/Fax
www.metrotrafficdata.com

Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

LOCATION Sunnyside Ave @ Teague Ave

LATITUDE 36.8593

COUNTY Fresno

LONGITUDE -119.6931

COLLECTION DATE Wednesday, November 29, 2017

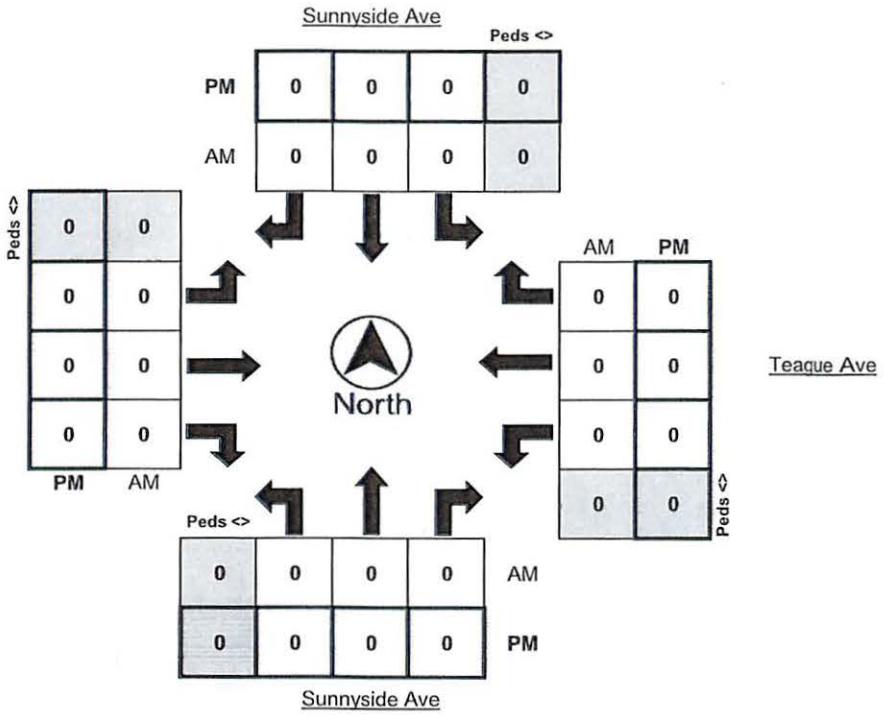
WEATHER Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:15 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:00 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	0	0



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Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

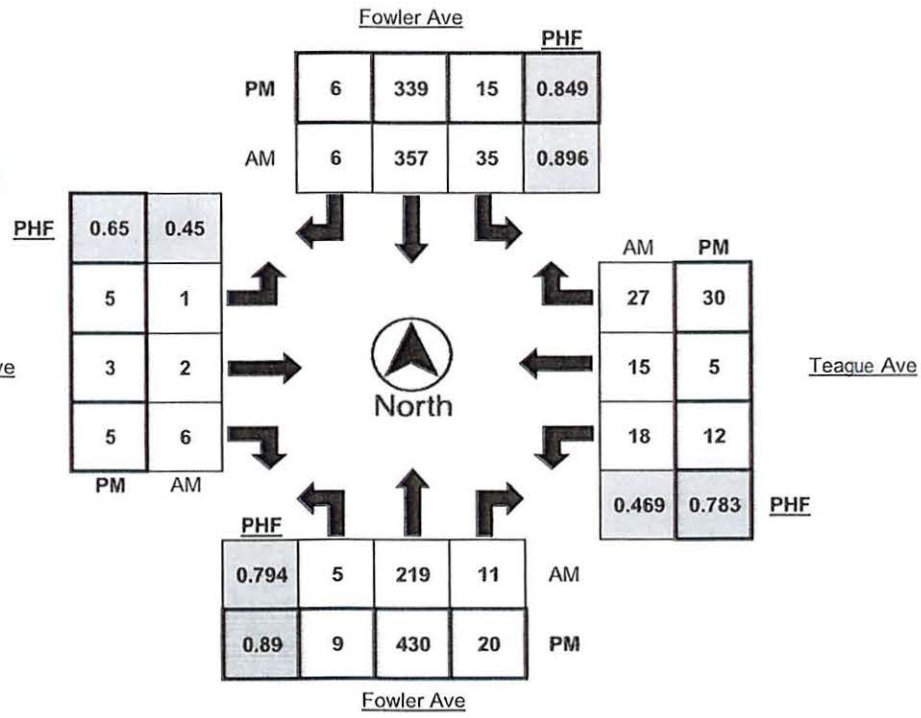
LOCATION Fowler Ave @ Teague Ave
LATITUDE 36.8592572
COUNTY Fresno
LONGITUDE -119.6840501
COLLECTION DATE Wednesday, November 29, 2017
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	3	37	3	1	5	65	0	3	0	1	3	1	3	1	2	0
7:15 AM - 7:30 AM	2	56	0	2	3	81	1	3	0	0	0	0	0	4	3	1
7:30 AM - 7:45 AM	1	44	2	1	7	98	2	5	1	1	0	0	4	6	4	0
7:45 AM - 8:00 AM	1	69	4	2	9	100	2	1	0	0	5	0	3	1	3	1
8:00 AM - 8:15 AM	1	50	5	2	16	78	1	0	0	1	1	0	11	4	17	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	1	62	3	3	3	66	0	0	0	0	1	0	1	0	8	1
8:45 AM - 9:00 AM	0	69	2	4	0	80	0	2	0	0	0	0	4	0	8	0
TOTAL	9	387	19	15	43	568	6	14	1	3	10	1	26	16	45	3

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	3	89	3	2	0	81	1	1	0	1	2	0	3	0	8	0
4:15 PM - 4:30 PM	3	95	4	1	2	73	1	1	1	1	3	0	0	1	6	0
4:30 PM - 4:45 PM	2	78	6	1	1	76	2	1	0	0	2	0	5	1	3	1
4:45 PM - 5:00 PM	2	104	6	2	1	57	1	3	0	1	0	0	1	0	7	0
5:00 PM - 5:15 PM	3	120	6	1	5	89	2	2	3	0	1	0	1	0	6	0
5:15 PM - 5:30 PM	3	103	4	0	3	103	0	2	0	0	2	0	3	3	7	0
5:30 PM - 5:45 PM	2	101	4	0	4	76	2	2	1	0	1	0	4	2	6	0
5:45 PM - 6:00 PM	1	106	6	1	3	71	2	2	1	3	1	0	4	0	11	0
TOTAL	19	796	39	8	19	626	11	14	6	6	12	0	21	7	54	1

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	5	219	11	7	35	357	6	9	1	2	6	0	18	15	27	2
5:00 PM - 6:00 PM	9	430	20	2	15	339	6	8	5	3	5	0	12	5	30	0

	PHF	Trucks
AM	0.891	2.6%
PM	0.931	1.1%



Metro Traffic Data Inc.
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www.metrotrafficdata.com

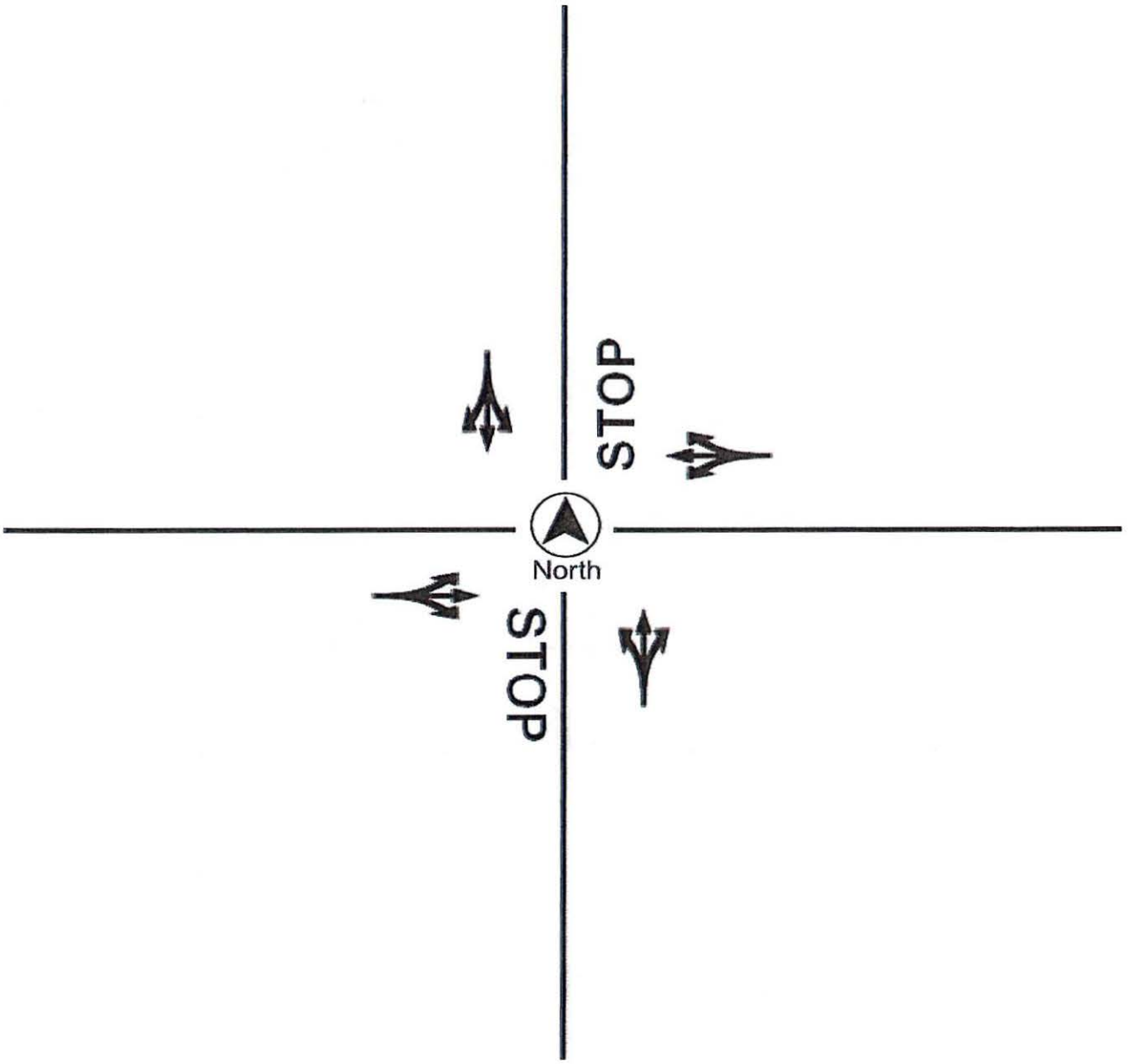
Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

LOCATION	Fowler Ave @ Teague Ave	**N/S STREET**	Fowler Ave
COUNTY	Fresno	**E/W STREET**	Teague Ave
COLLECTION DATE	Wednesday, November 29, 2017	**WEATHER**	Clear
CYCLE TIME	N/A	**CONTROL TYPE**	Two-Way Stop

COMMENTS



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Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

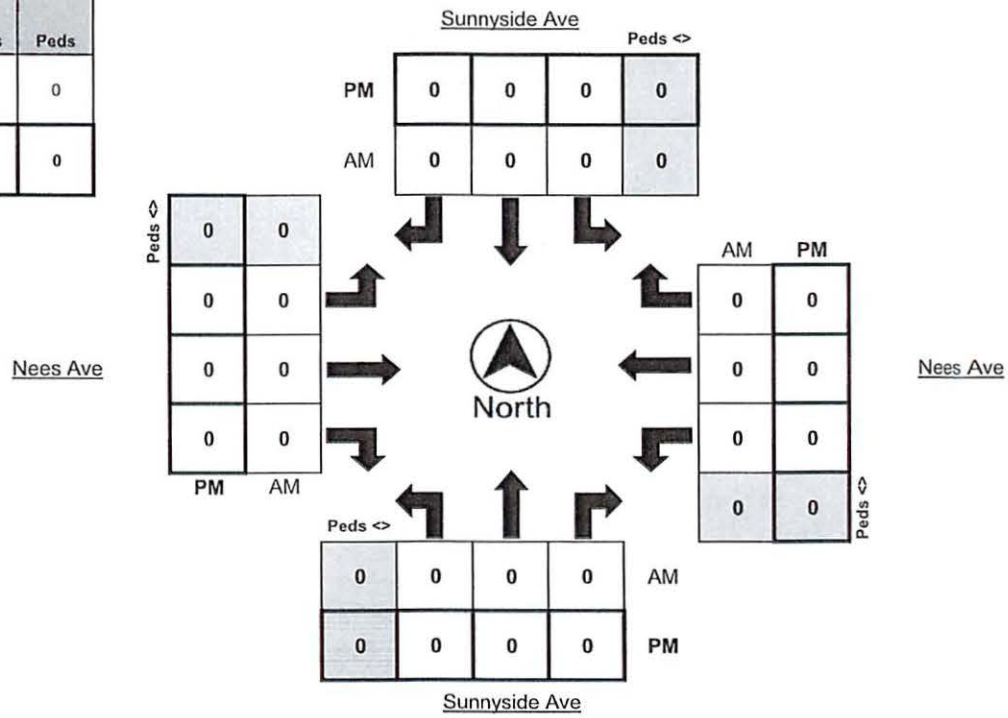
LOCATION	Sunnyside Ave @ Nees Ave	**LATITUDE**	36.8520
COUNTY	Fresno	**LONGITUDE**	-119.6931
COLLECTION DATE	Thursday, November 30, 2017	**WEATHER**	Clear

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:00 AM - 7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM - 7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM - 7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM - 8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM - 8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM - 8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM - 9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
4:00 PM - 4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM - 4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM - 5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM - 5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM - 5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM - 6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

	Northbound Bikes			N.Leg	Southbound Bikes			S.Leg	Eastbound Bikes			E.Leg	Westbound Bikes			W.Leg
PEAK HOUR	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
7:15 AM - 8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM - 5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Bikes	Peds
AM Peak Total	0	0
PM Peak Total	0	0



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Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

LOCATION Fowler Ave @ Nees Ave

LATITUDE 36.8519795

COUNTY Fresno

LONGITUDE -119.6840769

COLLECTION DATE Thursday, November 30, 2017

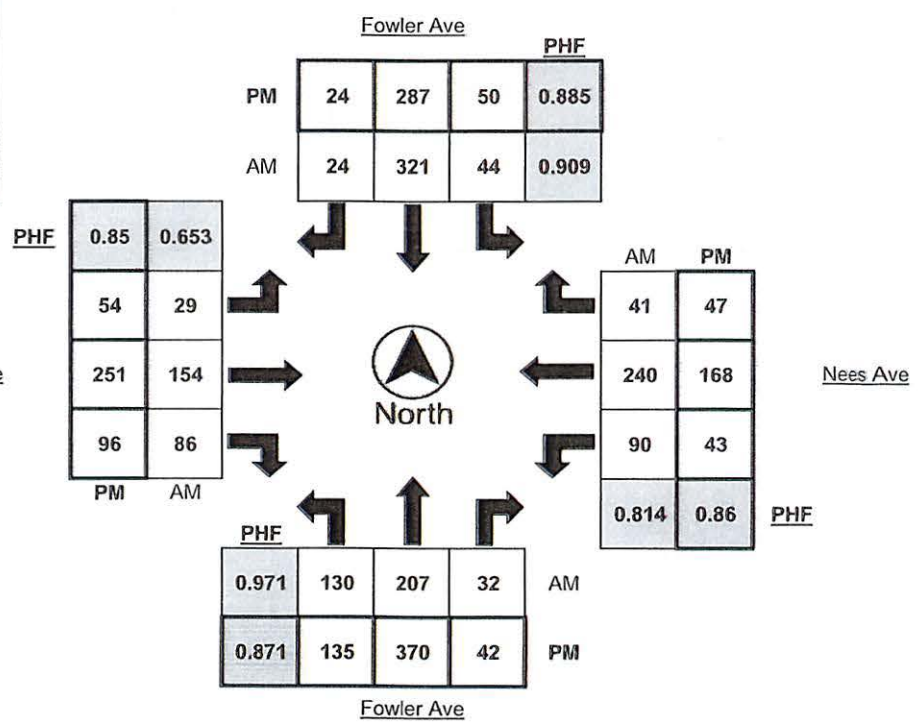
WEATHER Clear

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:00 AM - 7:15 AM	33	35	3	1	9	51	4	3	3	22	9	1	17	44	6	1
7:15 AM - 7:30 AM	40	51	4	3	7	68	6	3	9	25	10	3	18	87	9	0
7:30 AM - 7:45 AM	34	49	8	2	8	83	9	4	5	47	21	1	22	78	13	1
7:45 AM - 8:00 AM	21	62	8	2	14	90	3	1	5	58	40	0	17	38	9	2
8:00 AM - 8:15 AM	35	45	12	1	15	80	6	2	10	24	15	1	33	37	10	2
8:15 AM - 8:30 AM	29	45	6	0	14	70	13	2	5	26	13	2	40	54	15	4
8:30 AM - 8:45 AM	33	36	7	2	9	68	3	3	4	19	12	1	17	39	8	0
8:45 AM - 9:00 AM	22	47	6	4	9	53	1	3	3	26	12	1	13	30	7	3
TOTAL	247	370	54	15	85	563	45	21	44	247	132	10	177	407	77	13

	Northbound				Southbound				Eastbound				Westbound			
Time	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
4:00 PM - 4:15 PM	28	68	16	4	15	72	4	5	6	49	17	1	16	30	6	0
4:15 PM - 4:30 PM	31	78	14	1	13	65	5	1	13	65	23	0	16	48	13	0
4:30 PM - 4:45 PM	32	96	15	1	7	66	6	2	10	55	21	0	14	36	15	0
4:45 PM - 5:00 PM	29	78	7	2	10	69	7	3	16	68	27	0	15	51	9	0
5:00 PM - 5:15 PM	41	103	13	2	18	71	5	3	11	57	18	0	10	36	11	1
5:15 PM - 5:30 PM	33	93	7	1	15	81	6	3	17	71	30	0	4	45	12	0
5:30 PM - 5:45 PM	42	78	9	0	7	62	12	1	12	42	20	1	9	36	11	0
5:45 PM - 6:00 PM	20	117	8	0	9	66	4	1	6	52	22	1	8	35	15	0
TOTAL	256	711	89	11	94	552	49	19	91	459	178	3	92	317	92	1

	Northbound				Southbound				Eastbound				Westbound			
PEAK HOUR	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks	Left	Thru	Right	Trucks
7:15 AM - 8:15 AM	130	207	32	8	44	321	24	10	29	154	86	5	90	240	41	5
4:30 PM - 5:30 PM	135	370	42	6	50	287	24	11	54	251	96	0	43	168	47	1

	PHF	Trucks
AM	0.927	2.0%
PM	0.946	1.1%



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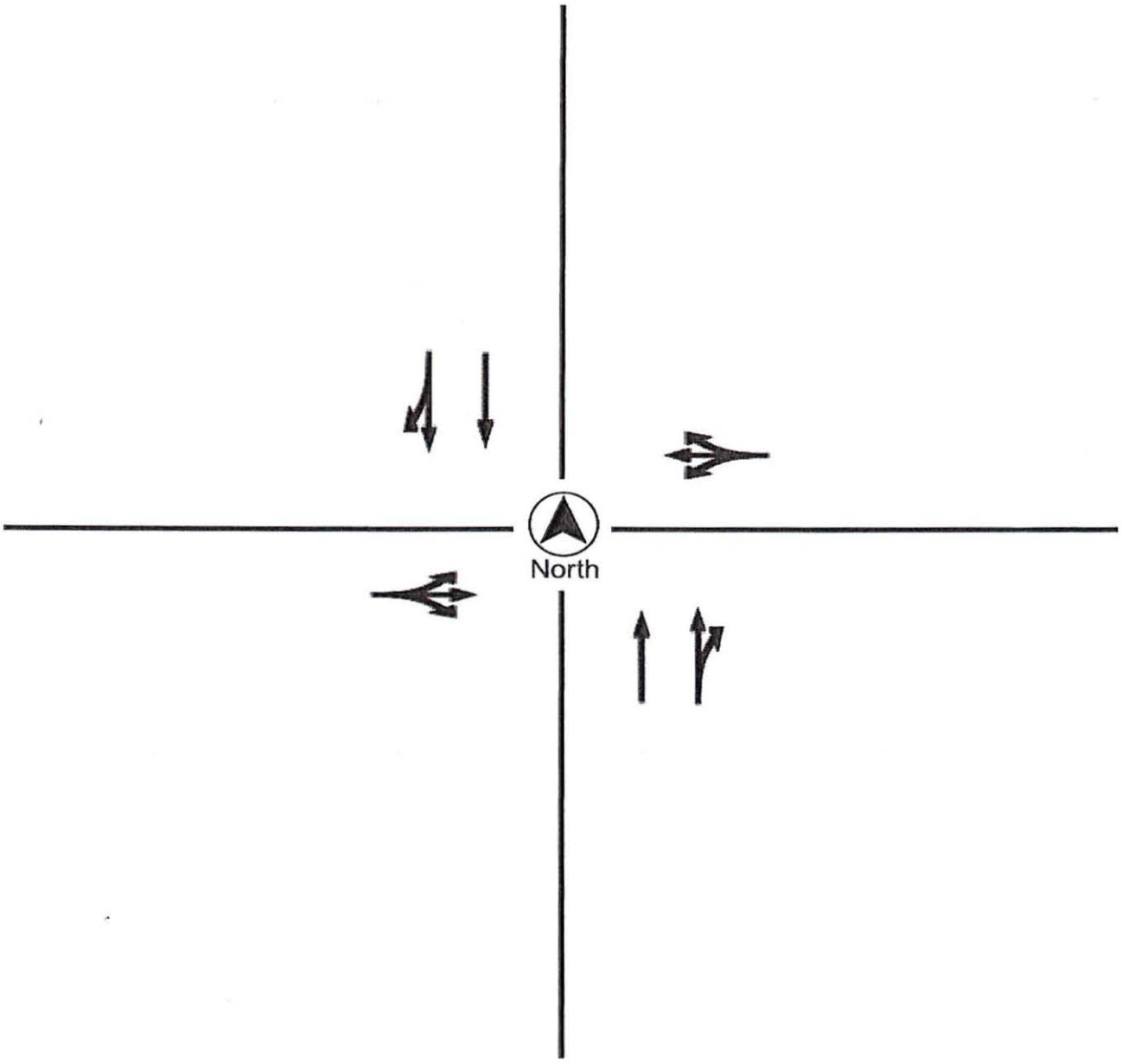
Turning Movement Report

Prepared For:

Peters Engineering Group
952 Pollasky Avenue
Clovis, CA 93612

LOCATION	Fowler Ave @ Nees Ave	**N/S STREET**	Fowler Ave
COUNTY	Fresno	**E/W STREET**	Nees Ave
COLLECTION DATE	Thursday, November 30, 2017	**WEATHER**	Clear
CYCLE TIME	83 Seconds	**CONTROL TYPE**	Signal

COMMENTS All approaches have protected left turns.



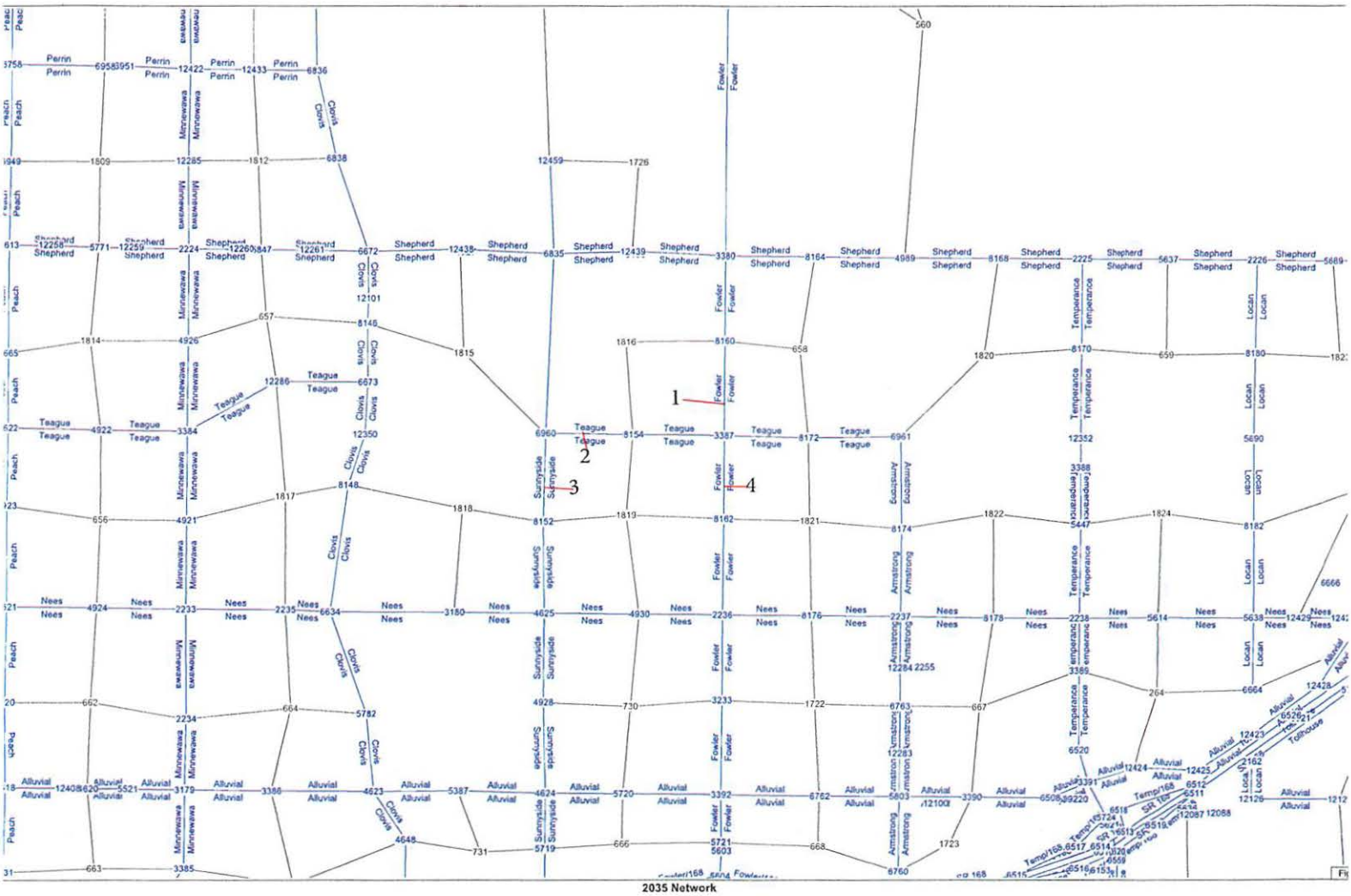
Select Zone Analysis Request

MODELING REQUEST: We are requesting four different year 2035 select zone analyses with ITE volumes (see next sheet), one for each project listed above. We would also like a Zero-Project 2035 model run.

ITE PROJECT TRIP GENERATION:

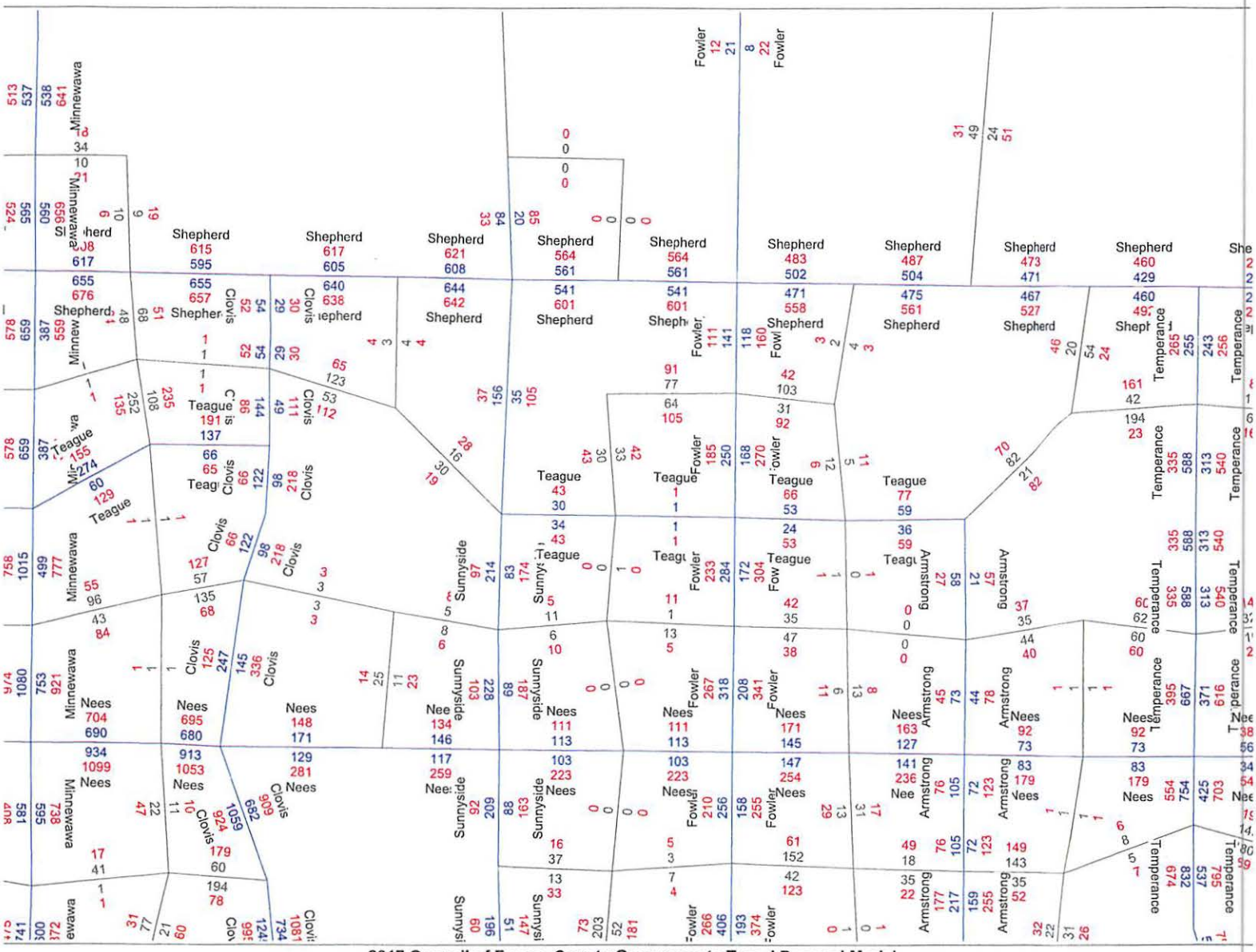
Single-Family Project Trip Generation

Project	Units	Daily		A.M. Peak Hour					P.M. Peak Hour				
		Rate	Total	Rate	In:Out	In	Out	Total	Rate	In:Out	In	Out	Total
Tract 6154 New TAZ 1	95	9.52	906	0.75	25:75	18	54	72	1.00	63:37	60	35	95
Teague Site New TAZ 2	81	9.52	772	0.75	25:75	15	46	61	1.00	63:37	51	30	81
Sunnyside Site New TAZ 3	68	9.52	648	0.75	25:75	13	38	51	1.00	63:37	43	25	68
Fowler Site New TAZ 4	88	9.52	838	0.75	25:75	16	50	66	1.00	63:37	56	32	88



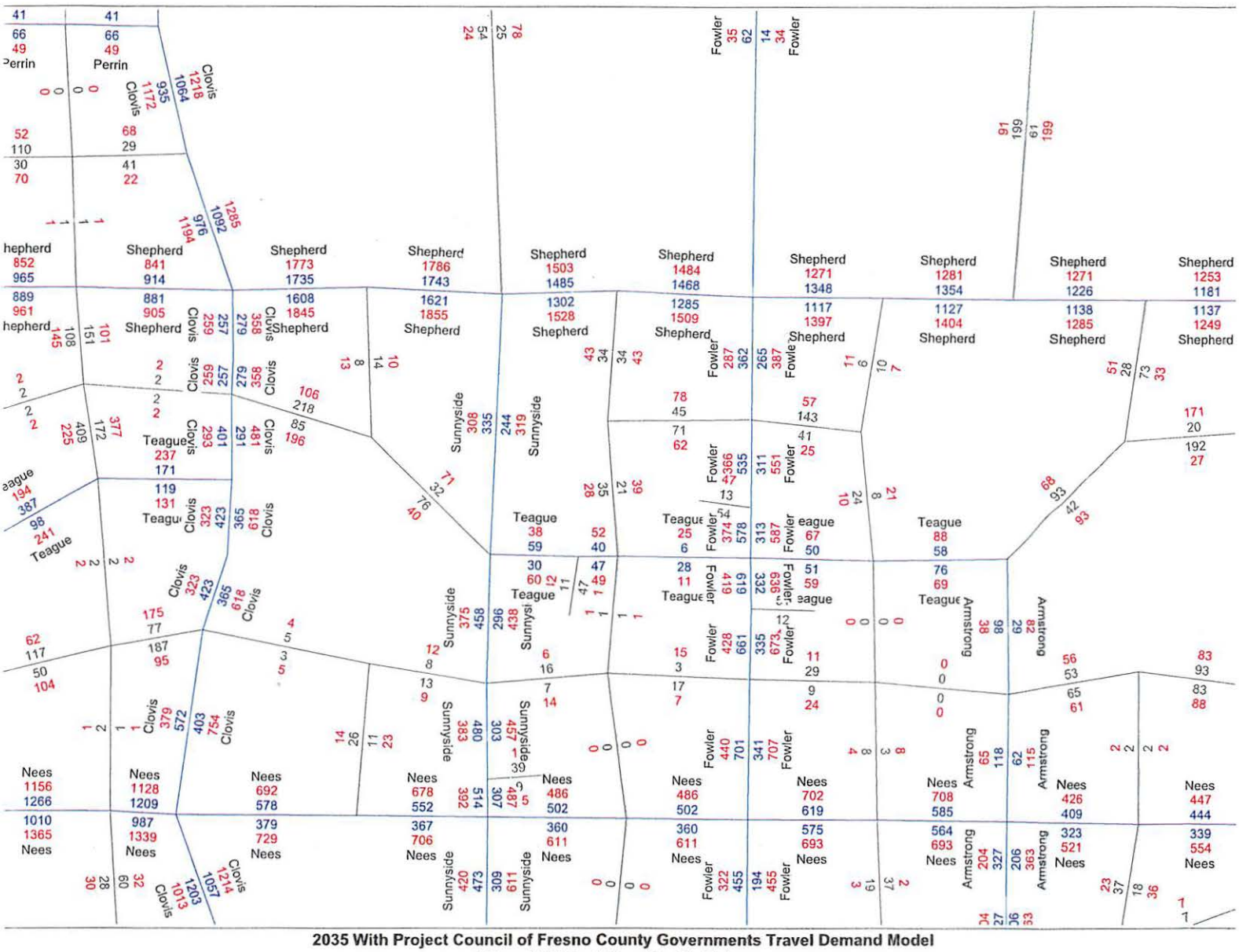
2035 Network

Licensed to Peters Engineer



2017 Council of Fresno County Governments Travel Demand Model
AM and PM Peak Hour Traffic Volumes

Licensed to Peters Engineerir



2035 With Project Council of Fresno County Governments Travel Demand Model
AM and PM Peak Hour Traffic Volumes

Intersection	
Intersection Delay, s/veh	29.3
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	324	129	15	486	9	72	4	9	4	18	11
Future Vol, veh/h	6	324	129	15	486	9	72	4	9	4	18	11
Peak Hour Factor	0.80	0.80	0.80	0.82	0.82	0.82	0.97	0.97	0.97	0.68	0.68	0.68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	405	161	18	593	11	74	4	9	6	26	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	26.3	36	11.6	10.7
HCM LOS	D	E	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	85%	1%	3%	12%
Vol Thru, %	5%	71%	95%	55%
Vol Right, %	11%	28%	2%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	85	459	510	33
LT Vol	72	6	15	4
Through Vol	4	324	486	18
RT Vol	9	129	9	11
Lane Flow Rate	88	574	622	49
Geometry Grp	1	1	1	1
Degree of Util (X)	0.171	0.811	0.894	0.093
Departure Headway (Hd)	7.019	5.087	5.173	6.897
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	508	711	697	516
Service Time	5.097	3.134	3.217	4.984
HCM Lane V/C Ratio	0.173	0.807	0.892	0.095
HCM Control Delay	11.6	26.3	36	10.7
HCM Lane LOS	B	D	E	B
HCM 95th-tile Q	0.6	8.5	11.3	0.3

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	2	6	18	15	27	5	219	11	35	357	6
Future Vol, veh/h	1	2	6	18	15	27	5	219	11	35	357	6
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	79	79	79	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	2	7	20	17	31	6	277	14	39	397	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	809	792	410	789	788	294	408	0	0	296	0	0
Stage 1	483	483	-	302	302	-	-	-	-	-	-	-
Stage 2	326	309	-	487	486	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	299	322	642	308	323	745	1151	-	-	1265	-	-
Stage 1	565	553	-	707	664	-	-	-	-	-	-	-
Stage 2	687	660	-	562	551	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	262	304	636	290	305	738	1146	-	-	1259	-	-
Mov Cap-2 Maneuver	262	304	-	290	305	-	-	-	-	-	-	-
Stage 1	559	528	-	699	657	-	-	-	-	-	-	-
Stage 2	634	653	-	529	526	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.1	15.6	0.2	0.7
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1146	-	-	454	406	1259	-	-
HCM Lane V/C Ratio	0.006	-	-	0.023	0.168	0.031	-	-
HCM Control Delay (s)	8.2	0	-	13.1	15.6	8	0	-
HCM Lane LOS	A	A	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.6	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	154	86	90	240	41	130	207	32	44	321	24
Future Volume (veh/h)	29	154	86	90	240	41	130	207	32	44	321	24
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		1.00	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	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	45	237	132	111	296	51	134	213	33	48	353	26
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.65	0.65	0.65	0.81	0.81	0.81	0.97	0.97	0.97	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	81	449	241	143	442	372	171	563	476	85	472	399
Arrive On Green	0.05	0.20	0.20	0.08	0.24	0.24	0.10	0.30	0.30	0.05	0.25	0.25
Sat Flow, veh/h	1774	2217	1188	1774	1863	1567	1774	1863	1575	1774	1863	1574
Grp Volume(v), veh/h	45	187	182	111	296	51	134	213	33	48	353	26
Grp Sat Flow(s),veh/h/ln	1774	1770	1636	1774	1863	1567	1774	1863	1575	1774	1863	1574
Q Serve(g_s), s	1.3	5.0	5.3	3.3	7.7	1.4	3.9	4.8	0.8	1.4	9.3	0.7
Cycle Q Clear(g_c), s	1.3	5.0	5.3	3.3	7.7	1.4	3.9	4.8	0.8	1.4	9.3	0.7
Prop In Lane	1.00		0.73	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	81	359	332	143	442	372	171	563	476	85	472	399
V/C Ratio(X)	0.56	0.52	0.55	0.78	0.67	0.14	0.78	0.38	0.07	0.57	0.75	0.07
Avail Cap(c_a), veh/h	236	596	551	236	628	528	236	635	537	236	635	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	25.0	19.0	19.1	24.1	18.5	16.1	23.6	14.7	13.3	24.9	18.4	15.1
Incr Delay (d2), s/veh	5.9	1.2	1.4	8.8	1.8	0.2	11.0	0.4	0.1	5.9	3.3	0.1
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 BackOfQ(50%),veh/ln	0.8	2.6	2.5	2.0	4.2	0.6	2.5	2.5	0.3	0.8	5.1	0.3
LnGrp Delay(d),s/veh	30.8	20.2	20.5	32.9	20.2	16.2	34.5	15.1	13.3	30.7	21.7	15.2
LnGrp LOS	C	C	C	C	C	B	C	B	B	C	C	B
Approach Vol, veh/h		414			458			380			427	
Approach Delay, s/veh		21.5			22.8			21.8			22.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	21.0	9.2	15.7	10.1	18.4	7.3	17.6
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	7.1	18.2	7.1	18.0	7.1	18.2	7.1	18.0
Max Q Clear Time (g_c+I1), s	3.4	6.8	5.3	7.3	5.9	11.3	3.3	9.7
Green Ext Time (p_c), s	0.0	2.5	0.0	2.9	0.0	1.9	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	22.1
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	19.4
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	454	66	10	348	4	69	12	41	3	9	7
Future Vol, veh/h	9	454	66	10	348	4	69	12	41	3	9	7
Peak Hour Factor	0.91	0.91	0.91	0.97	0.97	0.97	0.80	0.80	0.80	0.68	0.68	0.68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	499	73	10	359	4	86	15	51	4	13	10
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	25.1	14.6	11.5	9.9
HCM LOS	D	B	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	57%	2%	3%	16%
Vol Thru, %	10%	86%	96%	47%
Vol Right, %	34%	12%	1%	37%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	122	529	362	19
LT Vol	69	9	10	3
Through Vol	12	454	348	9
RT Vol	41	66	4	7
Lane Flow Rate	152	581	373	28
Geometry Grp	1	1	1	1
Degree of Util (X)	0.264	0.803	0.548	0.05
Departure Headway (Hd)	6.227	4.973	5.289	6.498
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	575	727	683	548
Service Time	4.281	3.007	3.329	4.571
HCM Lane V/C Ratio	0.264	0.799	0.546	0.051
HCM Control Delay	11.5	25.1	14.6	9.9
HCM Lane LOS	B	D	B	A
HCM 95th-tile Q	1.1	8.3	3.3	0.2

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	3	5	12	5	30	9	430	20	15	339	6
Future Vol, veh/h	5	3	5	12	5	30	9	430	20	15	339	6
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	89	89	89	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	6	3	6	14	6	34	10	483	22	18	399	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	982	974	412	967	966	504	411	0	0	511	0	0
Stage 1	443	443	-	520	520	-	-	-	-	-	-	-
Stage 2	539	531	-	447	446	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	228	252	640	234	255	568	1148	-	-	1054	-	-
Stage 1	594	576	-	539	532	-	-	-	-	-	-	-
Stage 2	527	526	-	591	574	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	203	241	634	221	244	563	1143	-	-	1049	-	-
Mov Cap-2 Maneuver	203	241	-	221	244	-	-	-	-	-	-	-
Stage 1	584	561	-	530	523	-	-	-	-	-	-	-
Stage 2	482	517	-	567	559	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18.1	16.5	0.2	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1143	-	-	289	367	1049	-	-
HCM Lane V/C Ratio	0.009	-	-	0.051	0.146	0.017	-	-
HCM Control Delay (s)	8.2	0	-	18.1	16.5	8.5	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.5	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	251	96	43	168	47	135	370	42	50	287	24
Future Volume (veh/h)	54	251	96	43	168	47	135	370	42	50	287	24
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		1.00	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	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	64	295	113	50	195	55	155	425	48	56	322	27
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.85	0.85	0.85	0.86	0.86	0.86	0.87	0.87	0.87	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	103	522	195	88	371	311	197	582	492	95	475	401
Arrive On Green	0.06	0.21	0.21	0.05	0.20	0.20	0.11	0.31	0.31	0.05	0.25	0.25
Sat Flow, veh/h	1774	2513	940	1774	1863	1563	1774	1863	1576	1774	1863	1574
Grp Volume(v), veh/h	64	206	202	50	195	55	155	425	48	56	322	27
Grp Sat Flow(s),veh/h/ln	1774	1770	1683	1774	1863	1563	1774	1863	1576	1774	1863	1574
Q Serve(g_s), s	1.8	5.4	5.6	1.4	4.9	1.5	4.4	10.6	1.1	1.6	8.1	0.7
Cycle Q Clear(g_c), s	1.8	5.4	5.6	1.4	4.9	1.5	4.4	10.6	1.1	1.6	8.1	0.7
Prop In Lane	1.00		0.56	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	103	367	349	88	371	311	197	582	492	95	475	401
V/C Ratio(X)	0.62	0.56	0.58	0.57	0.53	0.18	0.79	0.73	0.10	0.59	0.68	0.07
Avail Cap(c_a), veh/h	242	613	583	242	645	541	242	652	552	242	652	551
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	23.9	18.5	18.5	24.2	18.6	17.3	22.5	15.9	12.7	24.0	17.4	14.7
Incr Delay (d2), s/veh	6.0	1.3	1.5	5.7	1.2	0.3	13.0	3.7	0.1	5.8	1.7	0.1
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 BackOfQ(50%),veh/ln	1.1	2.8	2.7	0.8	2.6	0.7	2.9	6.0	0.5	0.9	4.3	0.3
LnGrp Delay(d),s/veh	29.9	19.8	20.1	29.9	19.8	17.5	35.5	19.6	12.8	29.8	19.1	14.7
LnGrp LOS	C	B	C	C	B	B	D	B	B	C	B	B
Approach Vol, veh/h		472			300			628			405	
Approach Delay, s/veh		21.3			21.0			23.0			20.3	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.7	21.1	7.5	15.7	10.7	18.2	7.9	15.2
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	7.1	18.2	7.1	18.0	7.1	18.2	7.1	18.0
Max Q Clear Time (g_c+I1), s	3.6	12.6	3.4	7.6	6.4	10.1	3.8	6.9
Green Ext Time (p_c), s	0.0	2.2	0.0	2.6	0.0	2.8	0.0	2.7

Intersection Summary	
HCM 2010 Ctrl Delay	21.6
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	968.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	1233	359	28	1552	25	286	7	22	11	41	31
Future Vol, veh/h	17	1233	359	28	1552	25	286	7	22	11	41	31
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	1340	390	30	1687	27	311	8	24	12	45	34
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	1071.3	1095.2	43.3	28
HCM LOS	F	F	E	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	91%	1%	2%	13%
Vol Thru, %	2%	77%	97%	49%
Vol Right, %	7%	22%	2%	37%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	315	1609	1605	83
LT Vol	286	17	28	11
Through Vol	7	1233	1552	41
RT Vol	22	359	25	31
Lane Flow Rate	342	1749	1745	90
Geometry Grp	1	1	1	1
Degree of Util (X)	0.729	3.319	3.372	0.217
Departure Headway (Hd)	12.616	10.253	10.313	19.639
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	291	385	384	185
Service Time	10.616	8.253	8.313	17.639
HCM Lane V/C Ratio	1.175	4.543	4.544	0.486
HCM Control Delay	43.3	1071.3	1095.2	28
HCM Lane LOS	E	F	F	D
HCM 95th-tile Q	5.2	105.9	107.6	0.8

Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	6	17	43	28	50	14	407	19	65	664	17
Future Vol, veh/h	3	6	17	43	28	50	14	407	19	65	664	17
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	3	7	18	47	30	54	15	442	21	71	722	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1408	1375	741	1378	1375	463	745	0	0	468	0	0
Stage 1	877	877	-	488	488	-	-	-	-	-	-	-
Stage 2	531	498	-	890	887	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	116	145	416	122	145	599	863	-	-	1094	-	-
Stage 1	343	366	-	561	550	-	-	-	-	-	-	-
Stage 2	532	544	-	337	362	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	77	125	412	100	125	593	859	-	-	1089	-	-
Mov Cap-2 Maneuver	77	125	-	100	125	-	-	-	-	-	-	-
Stage 1	333	324	-	545	534	-	-	-	-	-	-	-
Stage 2	443	528	-	279	320	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.6	81.9	0.3	0.7
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	859	-	-	203	164	1089	-	-
HCM Lane V/C Ratio	0.018	-	-	0.139	0.802	0.065	-	-
HCM Control Delay (s)	9.3	0	-	25.6	81.9	8.5	0	-
HCM Lane LOS	A	A	-	D	F	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.5	5.3	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	446	130	134	656	134	197	223	54	211	448	61
Future Volume (veh/h)	53	446	130	134	656	134	197	223	54	211	448	61
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	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	58	485	141	146	713	146	214	242	59	229	487	66
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	75	880	254	177	713	602	216	459	388	260	505	427
Arrive On Green	0.04	0.33	0.33	0.10	0.38	0.38	0.12	0.25	0.25	0.15	0.27	0.27
Sat Flow, veh/h	1774	2706	782	1774	1863	1573	1774	1863	1574	1774	1863	1575
Grp Volume(v), veh/h	58	316	310	146	713	146	214	242	59	229	487	66
Grp Sat Flow(s),veh/h/ln	1774	1770	1718	1774	1863	1573	1774	1863	1574	1774	1863	1575
Q Serve(g_s), s	3.5	15.8	16.0	8.7	41.1	6.8	12.9	12.1	3.2	13.6	27.7	3.4
Cycle Q Clear(g_c), s	3.5	15.8	16.0	8.7	41.1	6.8	12.9	12.1	3.2	13.6	27.7	3.4
Prop In Lane	1.00		0.45	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	75	575	559	177	713	602	216	459	388	260	505	427
V/C Ratio(X)	0.78	0.55	0.55	0.83	1.00	0.24	0.99	0.53	0.15	0.88	0.97	0.15
Avail Cap(c_a), veh/h	117	575	559	266	713	602	216	459	388	299	505	427
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	51.0	29.8	29.8	47.5	33.2	22.6	47.1	35.1	31.7	44.9	38.7	29.8
Incr Delay (d2), s/veh	15.7	1.1	1.2	12.3	33.8	0.2	57.9	1.1	0.2	22.9	31.2	0.2
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 BackOfQ(50%),veh/ln	2.0	7.9	7.8	4.9	27.7	3.0	9.8	6.3	1.4	8.3	18.6	1.5
LnGrp Delay(d),s/veh	66.7	30.9	31.0	59.8	67.0	22.8	105.0	36.2	31.9	67.8	69.9	30.0
LnGrp LOS	E	C	C	E	F	C	F	D	C	E	E	C
Approach Vol, veh/h		684			1005			515			782	
Approach Delay, s/veh		34.0			59.5			64.3			65.9	
Approach LOS		C			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.6	31.4	15.6	39.8	18.0	34.0	9.4	46.0
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	18.1	24.1	16.1	32.1	13.1	29.1	7.1	41.1
Max Q Clear Time (g_c+I1), s	15.6	14.1	10.7	18.0	14.9	29.7	5.5	43.1
Green Ext Time (p_c), s	0.2	3.3	0.2	7.5	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	56.2
HCM 2010 LOS	E

Intersection	
Intersection Delay, s/veh	1079.4
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	1546	381	25	1437	11	298	22	62	8	21	20
Future Vol, veh/h	25	1546	381	25	1437	11	298	22	62	8	21	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	1680	414	27	1562	12	324	24	67	9	23	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	1388.1	970.8	55.4	29
HCM LOS	F	F	F	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	78%	1%	2%	16%
Vol Thru, %	6%	79%	98%	43%
Vol Right, %	16%	20%	1%	41%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	382	1952	1473	49
LT Vol	298	25	25	8
Through Vol	22	1546	1437	21
RT Vol	62	381	11	20
Lane Flow Rate	415	2122	1601	53
Geometry Grp	1	1	1	1
Degree of Util (X)	0.852	4.027	3.089	0.133
Departure Headway (Hd)	11.472	9.904	11.312	22.543
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	320	403	336	160
Service Time	9.472	7.904	9.312	20.543
HCM Lane V/C Ratio	1.297	5.266	4.765	0.331
HCM Control Delay	55.4	1388.1	970.8	29
HCM Lane LOS	F	F	F	D
HCM 95th-tile Q	7.5	141.4	87.3	0.4

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	14	8	14	22	9	56	25	800	34	28	631	17
Future Vol, veh/h	14	8	14	22	9	56	25	800	34	28	631	17
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	15	9	15	24	10	61	27	870	37	30	686	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1744	1727	705	1720	1717	898	709	0	0	912	0	0
Stage 1	761	761	-	947	947	-	-	-	-	-	-	-
Stage 2	983	966	-	773	770	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	68	89	436	70	90	338	890	-	-	747	-	-
Stage 1	398	414	-	314	340	-	-	-	-	-	-	-
Stage 2	299	333	-	392	410	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	45	77	432	55	78	335	886	-	-	743	-	-
Mov Cap-2 Maneuver	45	77	-	55	78	-	-	-	-	-	-	-
Stage 1	372	384	-	293	317	-	-	-	-	-	-	-
Stage 2	221	311	-	343	381	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	87.1	89	0.3	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	886	-	-	80	127	743	-	-
HCM Lane V/C Ratio	0.031	-	-	0.489	0.745	0.041	-	-
HCM Control Delay (s)	9.2	0	-	87.1	89	10.1	0	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.1	-	-	2	4.3	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	106	633	99	92	561	191	149	498	73	143	336	44
Future Volume (veh/h)	106	633	99	92	561	191	149	498	73	143	336	44
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		1.00	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	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	115	688	108	100	610	208	162	541	79	155	365	48
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	126	1033	162	126	628	530	193	568	480	161	535	452
Arrive On Green	0.07	0.34	0.34	0.07	0.34	0.34	0.11	0.30	0.30	0.09	0.29	0.29
Sat Flow, veh/h	1774	3063	480	1774	1863	1572	1774	1863	1576	1774	1863	1575
Grp Volume(v), veh/h	115	397	399	100	610	208	162	541	79	155	365	48
Grp Sat Flow(s),veh/h/ln	1774	1770	1774	1774	1863	1572	1774	1863	1576	1774	1863	1575
Q Serve(g_s), s	6.4	19.2	19.2	5.5	32.3	10.1	9.0	28.4	3.7	8.7	17.4	2.2
Cycle Q Clear(g_c), s	6.4	19.2	19.2	5.5	32.3	10.1	9.0	28.4	3.7	8.7	17.4	2.2
Prop In Lane	1.00		0.27	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	126	597	598	126	628	530	193	568	480	161	535	452
V/C Ratio(X)	0.91	0.67	0.67	0.79	0.97	0.39	0.84	0.95	0.16	0.96	0.68	0.11
Avail Cap(c_a), veh/h	126	597	598	144	628	530	215	568	481	161	535	452
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	46.1	28.3	28.3	45.7	32.7	25.3	43.7	34.0	25.4	45.3	31.6	26.2
Incr Delay (d2), s/veh	54.2	2.8	2.8	23.2	28.8	0.5	22.8	26.4	0.2	58.7	3.6	0.1
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 BackOfQ(50%),veh/ln	5.1	9.8	9.9	3.5	21.6	4.4	5.6	18.7	1.6	6.9	9.4	1.0
LnGrp Delay(d),s/veh	100.3	31.1	31.1	68.9	61.4	25.8	66.5	60.5	25.6	104.0	35.2	26.3
LnGrp LOS	F	C	C	E	E	C	E	E	C	F	D	C
Approach Vol, veh/h		911			918			782			568	
Approach Delay, s/veh		39.9			54.2			58.2			53.2	
Approach LOS		D			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.0	35.4	12.0	38.6	15.8	33.6	12.0	38.6
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	9.1	30.5	8.1	32.7	12.1	27.5	7.1	33.7
Max Q Clear Time (g_c+I1), s	10.7	30.4	7.5	21.2	11.0	19.4	8.4	34.3
Green Ext Time (p_c), s	0.0	0.0	0.0	6.8	0.0	3.5	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	50.9
HCM 2010 LOS	D

Intersection	
Intersection Delay, s/veh	985.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	1236	362	29	1557	25	295	7	26	11	41	31
Future Vol, veh/h	17	1236	362	29	1557	25	295	7	26	11	41	31
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	1343	393	32	1692	27	321	8	28	12	45	34
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	1093.7	1117.6	46.7	28.9
HCM LOS	F	F	E	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	90%	1%	2%	13%
Vol Thru, %	2%	77%	97%	49%
Vol Right, %	8%	22%	2%	37%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	328	1615	1611	83
LT Vol	295	17	29	11
Through Vol	7	1236	1557	41
RT Vol	26	362	25	31
Lane Flow Rate	357	1755	1751	90
Geometry Grp	1	1	1	1
Degree of Util (X)	0.759	3.368	3.421	0.219
Departure Headway (Hd)	12.68	10.452	10.512	20.308
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	289	369	368	179
Service Time	10.68	8.452	8.512	18.308
HCM Lane V/C Ratio	1.235	4.756	4.758	0.503
HCM Control Delay	46.7	1093.7	1117.6	28.9
HCM Lane LOS	E	F	F	D
HCM 95th-tile Q	5.7	106.1	107.7	0.8

Intersection	
Int Delay, s/veh	12.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	6	32	43	28	50	18	430	19	65	712	18
Future Vol, veh/h	4	6	32	43	28	50	18	430	19	65	712	18
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	4	7	35	47	30	54	20	467	21	71	774	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1494	1462	794	1473	1462	488	798	0	0	493	0	0
Stage 1	930	930	-	522	522	-	-	-	-	-	-	-
Stage 2	564	532	-	951	940	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	101	129	388	105	129	580	824	-	-	1071	-	-
Stage 1	321	346	-	538	531	-	-	-	-	-	-	-
Stage 2	510	526	-	312	342	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	63	109	384	80	109	574	820	-	-	1066	-	-
Mov Cap-2 Maneuver	63	109	-	80	109	-	-	-	-	-	-	-
Stage 1	309	303	-	517	511	-	-	-	-	-	-	-
Stage 2	417	506	-	243	300	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.1	129.2	0.4	0.7
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	820	-	-	208	137	1066	-	-
HCM Lane V/C Ratio	0.024	-	-	0.219	0.96	0.066	-	-
HCM Control Delay (s)	9.5	0	-	27.1	129.2	8.6	0	-
HCM Lane LOS	A	A	-	D	F	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.8	6.7	0.2	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	451	134	134	658	137	198	246	54	221	520	66
Future Volume (veh/h)	55	451	134	134	658	137	198	246	54	221	520	66
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	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	60	490	146	146	715	149	215	267	59	240	565	72
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	857	254	175	696	588	212	495	418	268	554	468
Arrive On Green	0.04	0.32	0.32	0.10	0.37	0.37	0.12	0.27	0.27	0.15	0.30	0.30
Sat Flow, veh/h	1774	2688	796	1774	1863	1573	1774	1863	1574	1774	1863	1575
Grp Volume(v), veh/h	60	321	315	146	715	149	215	267	59	240	565	72
Grp Sat Flow(s),veh/h/ln	1774	1770	1715	1774	1863	1573	1774	1863	1574	1774	1863	1575
Q Serve(g_s), s	4.0	17.9	18.1	9.5	44.1	7.7	14.1	14.5	3.4	15.7	35.1	4.0
Cycle Q Clear(g_c), s	4.0	17.9	18.1	9.5	44.1	7.7	14.1	14.5	3.4	15.7	35.1	4.0
Prop In Lane	1.00		0.46	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	77	564	546	175	696	588	212	495	418	268	554	468
V/C Ratio(X)	0.78	0.57	0.58	0.84	1.03	0.25	1.01	0.54	0.14	0.90	1.02	0.15
Avail Cap(c_a), veh/h	107	564	546	272	696	588	212	495	418	302	554	468
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	55.9	33.5	33.6	52.3	37.0	25.6	52.0	37.1	33.1	49.2	41.5	30.5
Incr Delay (d2), s/veh	21.2	1.4	1.5	12.3	41.3	0.2	65.6	1.2	0.2	25.3	43.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	9.0	8.8	5.3	30.6	3.4	10.8	7.7	1.5	9.6	24.7	1.7
LnGrp Delay(d),s/veh	77.1	34.9	35.0	64.6	78.2	25.8	117.7	38.3	33.2	74.5	84.8	30.7
LnGrp LOS	E	C	D	E	F	C	F	D	C	E	F	C
Approach Vol, veh/h		696			1010			541			877	
Approach Delay, s/veh		38.6			68.5			69.3			77.6	
Approach LOS		D			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.7	36.3	16.5	42.5	19.0	40.0	10.0	49.0
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	20.1	29.1	18.1	33.1	14.1	35.1	7.1	44.1
Max Q Clear Time (g_c+I1), s	17.7	16.5	11.5	20.1	16.1	37.1	6.0	46.1
Green Ext Time (p_c), s	0.2	4.3	0.2	7.2	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	64.5
HCM 2010 LOS	E

Intersection	
Intersection Delay, s/veh	1093.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	25	1552	381	29	1442	11	304	22	65	8	21	20
Future Vol, veh/h	25	1552	381	29	1442	11	304	22	65	8	21	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	27	1687	414	32	1567	12	330	24	71	9	23	22
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	1405.9	989.1	58.7	29.6
HCM LOS	F	F	F	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	78%	1%	2%	16%
Vol Thru, %	6%	79%	97%	43%
Vol Right, %	17%	19%	1%	41%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	391	1958	1482	49
LT Vol	304	25	29	8
Through Vol	22	1552	1442	21
RT Vol	65	381	11	20
Lane Flow Rate	425	2128	1611	53
Geometry Grp	1	1	1	1
Degree of Util (X)	0.872	4.066	3.129	0.134
Departure Headway (Hd)	11.485	10.037	11.455	23.085
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	319	383	338	157
Service Time	9.485	8.037	9.455	21.085
HCM Lane V/C Ratio	1.332	5.556	4.766	0.338
HCM Control Delay	58.7	1405.9	989.1	29.6
HCM Lane LOS	F	F	F	D
HCM 95th-tile Q	7.9	141.3	87.8	0.5

Intersection	
Int Delay, s/veh	11.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	8	24	22	9	56	41	855	34	28	669	18
Future Vol, veh/h	15	8	24	22	9	56	41	855	34	28	669	18
Conflicting Peds, #/hr	5	0	5	5	0	5	5	0	5	5	0	5
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
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	16	9	26	24	10	61	45	929	37	30	727	20

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1880	1863	747	1862	1855	958	752	0	0	971	0	0
Stage 1	803	803	-	1042	1042	-	-	-	-	-	-	-
Stage 2	1077	1060	-	820	813	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	54	73	413	56	74	312	858	-	-	710	-	-
Stage 1	377	396	-	277	307	-	-	-	-	-	-	-
Stage 2	265	301	-	369	392	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	33	59	409	40	60	309	854	-	-	707	-	-
Mov Cap-2 Maneuver	33	59	-	40	60	-	-	-	-	-	-	-
Stage 1	332	365	-	244	270	-	-	-	-	-	-	-
Stage 2	181	265	-	311	362	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	131.9	156.7	0.4	0.4
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	854	-	-	72	99	707	-	-
HCM Lane V/C Ratio	0.052	-	-	0.71	0.955	0.043	-	-
HCM Control Delay (s)	9.4	0	-	131.9	156.7	10.3	0	-
HCM Lane LOS	A	A	-	F	F	B	A	-
HCM 95th %tile Q(veh)	0.2	-	-	3.3	5.7	0.1	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	112	636	102	92	566	202	154	578	73	149	382	48
Future Volume (veh/h)	112	636	102	92	566	202	154	578	73	149	382	48
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		1.00	1.00		1.00
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	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1863	1863
Adj Flow Rate, veh/h	122	691	111	100	615	220	167	628	79	162	415	52
Adj No. of Lanes	1	2	0	1	1	1	1	1	1	1	1	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	131	995	160	125	601	507	196	621	526	163	586	496
Arrive On Green	0.07	0.33	0.33	0.07	0.32	0.32	0.11	0.33	0.33	0.09	0.31	0.31
Sat Flow, veh/h	1774	3052	490	1774	1863	1571	1774	1863	1576	1774	1863	1576
Grp Volume(v), veh/h	122	400	402	100	615	220	167	628	79	162	415	52
Grp Sat Flow(s),veh/h/ln	1774	1770	1772	1774	1863	1571	1774	1863	1576	1774	1863	1576
Q Serve(g_s), s	7.5	21.7	21.7	6.1	35.5	12.1	10.2	36.7	3.9	10.0	21.6	2.6
Cycle Q Clear(g_c), s	7.5	21.7	21.7	6.1	35.5	12.1	10.2	36.7	3.9	10.0	21.6	2.6
Prop In Lane	1.00		0.28	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	131	577	578	125	601	507	196	621	526	163	586	496
V/C Ratio(X)	0.93	0.69	0.70	0.80	1.02	0.43	0.85	1.01	0.15	0.99	0.71	0.10
Avail Cap(c_a), veh/h	131	577	578	147	601	507	227	621	526	163	586	496
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	50.7	32.3	32.3	50.4	37.2	29.3	48.0	36.6	25.7	49.9	33.2	26.7
Incr Delay (d2), s/veh	58.7	3.6	3.6	23.1	42.7	0.6	22.8	38.7	0.1	68.8	3.9	0.1
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 BackOfQ(50%),veh/ln	5.8	11.1	11.2	3.8	25.3	5.3	6.2	25.5	1.7	8.0	11.7	1.1
LnGrp Delay(d),s/veh	109.4	35.9	35.9	73.4	79.9	29.9	70.8	75.4	25.8	118.7	37.1	26.8
LnGrp LOS	F	D	D	E	F	C	E	F	C	F	D	C
Approach Vol, veh/h		924			935			874			629	
Approach Delay, s/veh		45.6			67.5			70.0			57.3	
Approach LOS		D			E			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.0	41.6	12.6	40.8	17.1	39.5	13.0	40.4
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	10.1	36.7	9.1	34.5	14.1	32.7	8.1	35.5
Max Q Clear Time (g_c+I1), s	12.0	38.7	8.1	23.7	12.2	23.6	9.5	37.5
Green Ext Time (p_c), s	0.0	0.0	0.0	6.6	0.1	4.4	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	60.2
HCM 2010 LOS	E

MITIGATED INTERSECTION ANALYSES

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	18	1343	393	32	1692	27	321	36	12	79
v/c Ratio	0.13	0.69	0.39	0.22	0.83	0.03	0.86	0.09	0.09	0.41
Control Delay	40.7	17.3	2.6	42.0	20.5	0.0	61.5	15.8	40.6	30.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.7	17.3	2.6	42.0	20.5	0.0	61.5	15.8	40.6	30.4
Queue Length 50th (ft)	9	281	0	16	291	0	87	3	6	23
Queue Length 95th (ft)	32	404	44	46	#658	0	#182	32	24	67
Internal Link Dist (ft)		2556			845			2572		431
Turn Bay Length (ft)	250		250	250		250	250			
Base Capacity (vph)	171	1982	1029	171	2050	931	373	422	171	420
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.68	0.38	0.19	0.83	0.03	0.86	0.09	0.07	0.19

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	4	42	47	84	20	488	71	794
v/c Ratio	0.02	0.15	0.16	0.22	0.07	0.24	0.21	0.32
Control Delay	25.5	13.3	23.7	12.0	24.4	12.3	22.3	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	13.3	23.7	12.0	24.4	12.3	22.3	8.4
Queue Length 50th (ft)	1	1	9	6	4	44	14	37
Queue Length 95th (ft)	10	29	47	47	26	118	61	186
Internal Link Dist (ft)		2542		2955		2554		1670
Turn Bay Length (ft)								
Base Capacity (vph)	370	860	370	899	370	2703	555	2871
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.05	0.13	0.09	0.05	0.18	0.13	0.28

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	33	451	135	36	743	42	148	239	18	104	375	37
Future Volume (veh/h)	33	451	135	36	743	42	148	239	18	104	375	37
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		1.00	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	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	36	490	147	39	808	46	161	260	20	113	408	40
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	62	846	252	66	1080	61	200	564	43	145	500	49
Arrive On Green	0.04	0.32	0.32	0.04	0.32	0.32	0.11	0.33	0.33	0.08	0.30	0.30
Sat Flow, veh/h	1774	2684	800	1774	3403	194	1774	1708	131	1774	1669	164
Grp Volume(v), veh/h	36	322	315	39	420	434	161	0	280	113	0	448
Grp Sat Flow(s),veh/h/ln	1774	1770	1714	1774	1770	1827	1774	0	1839	1774	0	1833
Q Serve(g_s), s	1.5	11.5	11.7	1.6	16.1	16.1	6.7	0.0	9.1	4.7	0.0	17.1
Cycle Q Clear(g_c), s	1.5	11.5	11.7	1.6	16.1	16.1	6.7	0.0	9.1	4.7	0.0	17.1
Prop In Lane	1.00		0.47	1.00		0.11	1.00		0.07	1.00		0.09
Lane Grp Cap(c), veh/h	62	558	541	66	562	580	200	0	608	145	0	549
V/C Ratio(X)	0.58	0.58	0.58	0.59	0.75	0.75	0.80	0.00	0.46	0.78	0.00	0.82
Avail Cap(c_a), veh/h	188	657	637	188	657	679	305	0	829	281	0	802
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	35.9	21.7	21.7	35.9	23.1	23.1	32.7	0.0	20.0	34.1	0.0	24.6
Incr Delay (d2), s/veh	8.2	0.9	1.0	8.3	4.0	3.9	8.7	0.0	0.5	8.7	0.0	4.3
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 BackOfQ(50%),veh/ln	0.9	5.8	5.7	1.0	8.4	8.7	3.7	0.0	4.7	2.7	0.0	9.2
LnGrp Delay(d),s/veh	44.2	22.6	22.7	44.2	27.1	27.0	41.4	0.0	20.5	42.7	0.0	28.8
LnGrp LOS	D	C	C	D	C	C	D		C	D		C
Approach Vol, veh/h		673			893			441			561	
Approach Delay, s/veh		23.8			27.8			28.2			31.6	
Approach LOS		C			C			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.2	29.9	6.8	28.8	12.5	27.5	6.7	28.9
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	12.0	34.1	8.0	28.1	13.0	33.1	8.0	28.1
Max Q Clear Time (g_c+I1), s	6.7	11.1	3.6	13.7	8.7	19.1	3.5	18.1
Green Ext Time (p_c), s	0.1	4.2	0.0	7.6	0.1	3.5	0.0	5.9

Intersection Summary	
HCM 2010 Ctrl Delay	27.7
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	55	451	134	134	658	137	198	246	54	221	520	66
Future Volume (veh/h)	55	451	134	134	658	137	198	246	54	221	520	66
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		1.00	1.00		1.00	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	1863	1863	1900	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	60	490	146	146	715	149	215	267	59	240	565	72
Adj No. of Lanes	1	2	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	77	962	285	180	774	655	247	566	123	273	665	84
Arrive On Green	0.04	0.36	0.36	0.10	0.42	0.42	0.14	0.20	0.20	0.15	0.21	0.21
Sat Flow, veh/h	1774	2691	797	1774	1863	1578	1774	2888	627	1774	3157	401
Grp Volume(v), veh/h	60	321	315	146	715	149	215	162	164	240	316	321
Grp Sat Flow(s),veh/h/ln	1774	1770	1718	1774	1863	1578	1774	1770	1746	1774	1770	1789
Q Serve(g_s), s	3.1	13.3	13.4	7.5	33.9	5.7	11.1	7.5	7.8	12.3	16.0	16.1
Cycle Q Clear(g_c), s	3.1	13.3	13.4	7.5	33.9	5.7	11.1	7.5	7.8	12.3	16.0	16.1
Prop In Lane	1.00		0.46	1.00		1.00	1.00		0.36	1.00		0.22
Lane Grp Cap(c), veh/h	77	633	614	180	774	655	247	347	342	273	373	377
V/C Ratio(X)	0.78	0.51	0.51	0.81	0.92	0.23	0.87	0.47	0.48	0.88	0.85	0.85
Avail Cap(c_a), veh/h	152	633	614	286	801	679	247	363	358	286	401	405
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	44.1	23.5	23.5	41.0	25.8	17.6	39.3	33.2	33.2	38.6	35.4	35.4
Incr Delay (d2), s/veh	15.3	0.7	0.7	9.1	16.0	0.2	26.4	1.0	1.0	24.6	14.8	15.1
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 BackOfQ(50%),veh/ln	1.9	6.5	6.5	4.1	20.7	2.5	7.3	3.8	3.8	7.9	9.3	9.5
LnGrp Delay(d),s/veh	59.4	24.2	24.3	50.1	41.8	17.8	65.7	34.1	34.3	63.2	50.2	50.5
LnGrp LOS	E	C	C	D	D	B	E	C	C	E	D	D
Approach Vol, veh/h		696			1010			541			877	
Approach Delay, s/veh		27.2			39.5			46.7			53.9	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.4	23.2	13.4	38.2	17.0	24.5	8.1	43.6
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	15.0	19.1	15.0	33.1	13.0	21.1	8.0	40.1
Max Q Clear Time (g_c+I1), s	14.3	9.8	9.5	15.4	13.1	18.1	5.1	35.9
Green Ext Time (p_c), s	0.0	3.6	0.2	8.6	0.0	1.5	0.0	2.8

Intersection Summary	
HCM 2010 Ctrl Delay	42.1
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	1552	381	29	1442	11	304	22	65	8	21	20
Future Volume (veh/h)	25	1552	381	29	1442	11	304	22	65	8	21	20
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		1.00	1.00		1.00	1.00		0.99	1.00		0.98
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	1863	1863	1863	1863	1863	1863	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	27	1687	414	32	1567	12	330	24	71	9	23	22
Adj No. of Lanes	1	2	1	1	2	1	2	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	50	1987	885	56	1999	890	380	73	217	20	68	65
Arrive On Green	0.03	0.56	0.56	0.03	0.56	0.56	0.11	0.18	0.18	0.01	0.08	0.08
Sat Flow, veh/h	1774	3539	1576	1774	3539	1576	3442	413	1222	1774	868	830
Grp Volume(v), veh/h	27	1687	414	32	1567	12	330	0	95	9	0	45
Grp Sat Flow(s),veh/h/ln	1774	1770	1576	1774	1770	1576	1721	0	1635	1774	0	1697
Q Serve(g_s), s	1.2	32.6	12.8	1.5	28.2	0.3	7.7	0.0	4.1	0.4	0.0	2.0
Cycle Q Clear(g_c), s	1.2	32.6	12.8	1.5	28.2	0.3	7.7	0.0	4.1	0.4	0.0	2.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.75	1.00		0.49
Lane Grp Cap(c), veh/h	50	1987	885	56	1999	890	380	0	290	20	0	134
V/C Ratio(X)	0.54	0.85	0.47	0.57	0.78	0.01	0.87	0.00	0.33	0.45	0.00	0.34
Avail Cap(c_a), veh/h	174	2008	894	174	2008	894	380	0	399	174	0	393
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	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	39.1	15.0	10.6	39.0	13.9	7.8	35.7	0.0	29.3	40.1	0.0	35.6
Incr Delay (d2), s/veh	8.9	3.6	0.4	8.8	2.1	0.0	19.0	0.0	0.6	14.9	0.0	1.5
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 BackOfQ(50%),veh/ln	0.7	16.7	5.6	0.8	14.3	0.1	4.7	0.0	1.9	0.3	0.0	1.0
LnGrp Delay(d),s/veh	48.0	18.6	11.0	47.8	16.0	7.8	54.7	0.0	29.9	55.0	0.0	37.0
LnGrp LOS	D	B	B	D	B	A	D		C	D		D
Approach Vol, veh/h		2128			1611			425			54	
Approach Delay, s/veh		17.5			16.5			49.2			40.0	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	4.9	19.4	6.6	50.7	13.0	11.3	6.3	51.0
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	8.0	19.9	8.0	46.3	9.0	18.9	8.0	46.3
Max Q Clear Time (g_c+I1), s	2.4	6.1	3.5	34.6	9.7	4.0	3.2	30.2
Green Ext Time (p_c), s	0.0	0.5	0.0	11.2	0.0	0.5	0.0	15.2

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	15	8	24	22	9	56	41	855	34	28	669	18
Future Volume (veh/h)	15	8	24	22	9	56	41	855	34	28	669	18
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	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	16	9	26	24	10	61	45	929	37	30	727	20
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	35	43	123	50	25	152	83	1632	65	61	1611	44
Arrive On Green	0.02	0.10	0.10	0.03	0.11	0.11	0.05	0.47	0.47	0.03	0.46	0.46
Sat Flow, veh/h	1774	419	1209	1774	225	1373	1774	3469	138	1774	3518	97
Grp Volume(v), veh/h	16	0	35	24	0	71	45	474	492	30	366	381
Grp Sat Flow(s),veh/h/ln	1774	0	1628	1774	0	1598	1774	1770	1837	1774	1770	1845
Q Serve(g_s), s	0.4	0.0	1.0	0.6	0.0	2.0	1.2	9.4	9.4	0.8	6.9	6.9
Cycle Q Clear(g_c), s	0.4	0.0	1.0	0.6	0.0	2.0	1.2	9.4	9.4	0.8	6.9	6.9
Prop In Lane	1.00		0.74	1.00		0.86	1.00		0.08	1.00		0.05
Lane Grp Cap(c), veh/h	35	0	166	50	0	177	83	832	864	61	810	845
V/C Ratio(X)	0.45	0.00	0.21	0.48	0.00	0.40	0.54	0.57	0.57	0.49	0.45	0.45
Avail Cap(c_a), veh/h	291	0	638	291	0	626	291	1346	1398	291	1346	1403
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	23.6	0.0	20.1	23.3	0.0	20.2	22.7	9.3	9.3	23.1	9.0	9.0
Incr Delay (d2), s/veh	8.7	0.0	0.6	6.8	0.0	1.5	5.4	0.6	0.6	6.1	0.4	0.4
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 BackOfQ(50%),veh/ln	0.3	0.0	0.5	0.4	0.0	1.0	0.7	4.7	4.9	0.5	3.4	3.6
LnGrp Delay(d),s/veh	32.4	0.0	20.7	30.1	0.0	21.7	28.1	10.0	9.9	29.2	9.4	9.4
LnGrp LOS	C		C	C		C	C	A	A	C	A	A
Approach Vol, veh/h		51			95			1011			777	
Approach Delay, s/veh		24.4			23.8			10.8			10.2	
Approach LOS		C			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	5.7	27.8	5.4	9.9	6.3	27.2	5.0	10.3
Change Period (Y+Rc), s	4.0	4.9	4.0	4.9	4.0	4.9	4.0	4.9
Max Green Setting (Gmax), s	8.0	37.1	8.0	19.1	8.0	37.1	8.0	19.1
Max Q Clear Time (g_c+I1), s	2.8	11.4	2.6	3.0	3.2	8.9	2.4	4.0
Green Ext Time (p_c), s	0.0	11.5	0.0	0.4	0.0	12.0	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	11.5
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	2
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	51	95	1011	777
Demand Flow Rate, veh/h	52	96	1032	793
Vehicles Circulating, veh/h	797	1010	56	80
Vehicles Exiting, veh/h	76	78	793	1026
Follow-Up Headway, s	3.186	3.186	3.186	3.186
Ped Vol Crossing Leg, #/h	5	5	5	5
Ped Cap Adj	0.999	1.000	0.995	0.995
Approach Delay, s/veh	6.6	8.8	8.9	7.4
Approach LOS	A	A	A	A

Lane	Left	Left	Left	Right	Left	Right
Designated Moves	LTR	LTR	LT	TR	LT	TR
Assumed Moves	LTR	LTR	LT	TR	LT	TR
RT Channelized						
Lane Util	1.000	1.000	0.470	0.530	0.470	0.530
Critical Headway, s	4.113	4.113	4.293	4.113	4.293	4.113
Entry Flow, veh/h	52	96	485	547	373	420
Cap Entry Lane, veh/h	647	557	1083	1087	1064	1068
Entry HV Adj Factor	0.977	0.988	0.980	0.980	0.980	0.981
Flow Entry, veh/h	51	95	475	536	365	412
Cap Entry, veh/h	632	550	1056	1059	1037	1043
V/C Ratio	0.080	0.172	0.450	0.506	0.352	0.395
Control Delay, s/veh	6.6	8.8	8.4	9.4	7.1	7.7
LOS	A	A	A	A	A	A
95th %tile Queue, veh	0	1	2	3	2	2

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	61	973	50	767	338	486	54	447
v/c Ratio	0.46	0.94	0.38	0.73	0.93	0.65	0.41	0.94
Control Delay	55.3	49.5	52.3	35.7	72.5	29.5	53.4	66.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	55.3	49.5	52.3	35.7	72.5	29.5	53.4	66.2
Queue Length 50th (ft)	38	311	31	230	215	256	33	278
Queue Length 95th (ft)	80	#445	69	300	#387	379	73	#480
Internal Link Dist (ft)		3084		2542		1124		2564
Turn Bay Length (ft)								
Base Capacity (vph)	146	1058	146	1067	367	749	146	474
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.92	0.34	0.72	0.92	0.65	0.37	0.94

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	122	802	100	615	220	167	707	162	467
v/c Ratio	0.75	0.62	0.52	0.92	0.35	0.82	0.84	0.88	0.58
Control Delay	68.8	25.7	47.7	48.1	11.2	71.2	41.7	83.0	32.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.8	25.7	47.7	48.1	11.2	71.2	41.7	83.0	32.5
Queue Length 50th (ft)	69	197	54	325	38	95	196	93	120
Queue Length 95th (ft)	#161	265	104	#530	92	#206	#282	#211	170
Internal Link Dist (ft)		2542		4993			1407		2554
Turn Bay Length (ft)	260		170		25	285		100	
Base Capacity (vph)	164	1292	225	714	669	204	899	184	858
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.62	0.44	0.86	0.33	0.82	0.79	0.88	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

DRY CREEK PRESERVE

MASTER PLAN

CITY of CLOVIS

PLANNING & DEVELOPMENT

ATTACHMENT 3

Draft Document Updated 05/25/2018

Dry Creek Preserve Master Plan
Acknowledgements

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Special Thanks

Dry Creek Preserve Property Owners
Dry Creek Preserve Neighborhood Committee Participants

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1.0 Introduction

1.1 Foreword

This document contains the Master Plan for the area referred to as the Dry Creek Preserve (DCP). Understanding the roots of the DCP and the last half century of its history, which have produced this unique area of the Clovis Community, is essential in the planning and visioning for the area. The DCP includes approximately 795-acres which was originally part of the 50,000 acres farmed for dryland wheat by Clovis Cole. Since that time, the land has been mostly levelled, irrigated, and divided into more than 235 different private ownership parcels. However, much of the original agricultural and open space character and appearance of the land still exists today.

By the late 1960s, considerable land division was occurring. To protect the remaining area farmland, Fresno County designated the area as AE-20 (Exclusive Agriculture -20-acre minimum), in their County General Plan. In 1974, the DCP was included within the Clovis Sphere of Influence. The City then began to plan for the area, pursuant to the City-County Memorandum of Understanding (MOU). Under the Agreement, the County continued its jurisdiction over land use decisions, permitting and enforcement, but the County would confer with the City in making those decision.

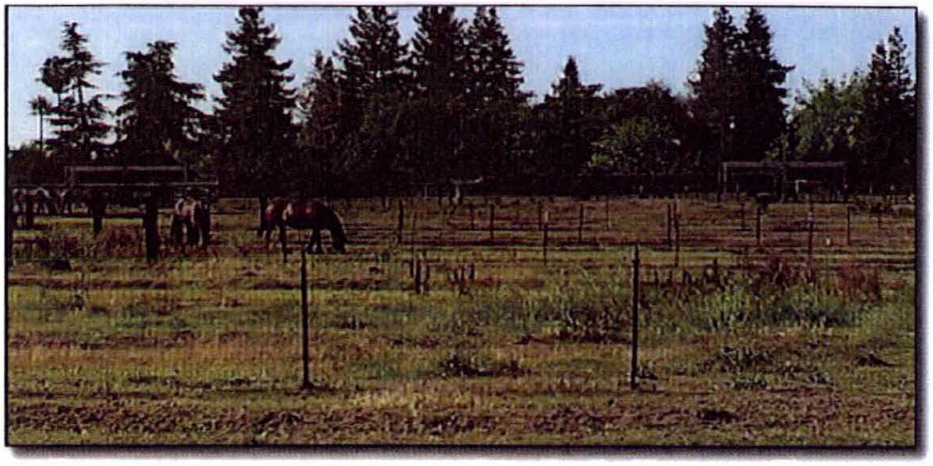
In 1988, the area was included in the City's Herndon Shepherd Specific Plan. In that planning action, the entire area was designated as R-R (Rural Residential), with a minimum parcel size of two acres. That designation reflected very strong preferences, as expressed at the time by a large majority of DCP landowners who desired to keep the area's rural lifestyle. Under the two-acre minimum parcel designation, many of the larger parcel owners submitted proposed Parcel Maps to the County, asking to divide their 20-acre properties into various configurations of two-acre or larger rural-residential parcels. The area was developing into a decidedly rural-residential community.

The R-R designation attracted buyers who desired larger land parcels for a variety of reasons. Many wanted small farming operations or just space for larger homes and yards. Many others desired to keep horses or other livestock. Still others needed larger properties for storing equipment or materials or as a larger base for their home-based businesses, then allowed under the County's designation. Varied as it is, the R-R lifestyle has become a very important part of DCP residents' lives, based on the expectations created by the two-acre provisions of the Herndon-Shepherd Specific Plan.

The residents have repeatedly defended their preference to remain under County jurisdiction (avoid being annexed into the City of Clovis) and keep their existing Rural-Residential zoning and lifestyle. There are however, some landowners who desire to further develop their DCP properties into more intensive uses. Consequently, several studies have been conducted with the intent to document the desires of DCP owners. The earliest was a Master's Degree Thesis by Deborah Morley, in 1988, which pertained to the entire Herndon-Shepherd Specific Plan area. In her mail-based survey, only 13 percent of small (2-5 acre) parcel owners desired to be annexed into Clovis. Of larger Parcel owners, 43 percent responded affirmatively. Another survey was conducted in 2009 by the DCP Neighborhood Committee. In that survey, with only about 25 percent of owners responding, over 90 percent of respondents desired for the DCP to keep its rural character. Only 8 percent expressed desire to further divide or develop their property. The most recent survey was an in-depth effort carried out by the DCP Neighborhood Committee and closely coordinated with the City of Clovis, in 2014. In that mail survey effort, 94 of the ±231 contacted landowners responded. 86 percent of respondents (79 percent of the land area) expressed desire to retain the DCP's rural open space character and existing R-R designation. 13 percent (21 percent of land area) desired more development. Of the 12 respondents who desired to develop, four owned less than three acres, and nine were absentee owners.

That is the background that was faced in trying to identify a future vision for the area. A very large fraction of owners desire no major changes. Others desired or needed to develop their property. It was the intent to consider the interests of both groups in prescribing development guidelines. In addition, the City of Clovis and Fresno County also have particular needs with regard to area infrastructure, services and associated costs that also need to be a part of the discussion. It quickly became apparent that no one would receive everything they desire or need under this Master Plan. It would have to be a compromise process, with a goal to meet as many people's needs as possible. Substantial effort and communication, as described herein, has occurred to understand the array of different needs, and to address those needs where possible. The discussions were lengthy and the compromises reached were often difficult. The process itself has created expectations that the compromises reached will be real and reliable, and will not be freely upset over time. A major goal of this Master Plan was to achieve certainty and predictability for the area residents and interested parties.

The outcomes, as detailed in this Master Plan, are: 1) most DCP land area will continue to be designated as R-R, and there will be few major changes made to properties whose owners desire to maintain that status and 2) larger properties will be able to reasonably develop, subject to General Plan Amendment applications, but there will be constraints upon that development, including limits on the types and design of allowed development, the maximum allowed density of residential tracts, and a minimum 10.0 – acre project size required for residential tract development. These standards and guidelines are intended to provide reasonable development opportunity, while assuring the maintenance of the existing quiet rural neighborhood, with less intensive traffic, and few urban features, as preferred by area residents.



The area is intended to provide a unique residential element, characterized by variety, in which families desiring to live in residential developments, but on larger land parcels to support their outdoor lifestyles, larger families, larger custom homes, or other spatial needs will be able to find what they are seeking. Likewise, families who desire to keep livestock, or practice small scale farming will also be able to do so on Rural Residential properties of 2 acres or larger, which will remain available. Owners of properties in excess of 4 acres, who desire to divide off portions of their property for sale will be able to submit Parcel Map requests to the County or City, per the City-County MOU, depending on jurisdiction. Residences will continue to be a mix of owner-residents and rental properties.

The vision also includes the eventual orderly annexation of the DCP into the Clovis City Limits. To accomplish that would likely have been a challenge, given the vast majority of owners' general aversion to being annexed, largely due to differences between City and County permissible land uses, and the City's cost considerations in contemplating annexation and provision of services to a thinly populated area. Considerable time and effort has gone into the development of an Annexation Agreement to establish landowner protections preparatory to eventual future annexations. It is expected that the Annexation Agreement will dispel most landowner concerns and enable them to comfortably support the jurisdictional changes needed by the City and County for delivering efficient services.

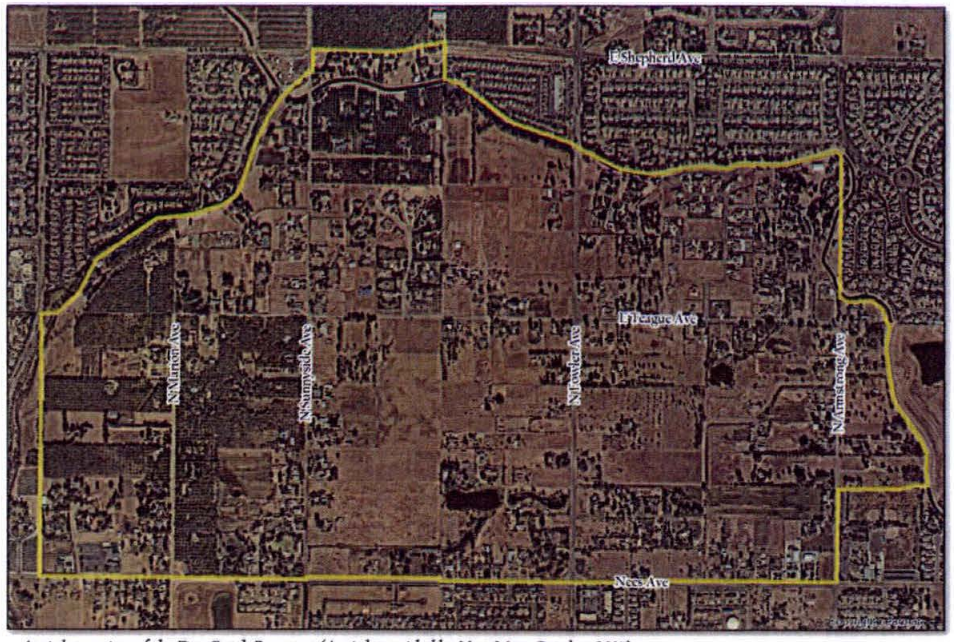
The DCP area will continue to have a wide variety of land parcel sizes and land uses. That variability and individuality is desirable. It is a part of the DCP's historical and present day character, which is so desired by area residents. Maintaining the wide diversity of uses, architectural appearances and land use intensities should therefore be fundamental principle as future DCP land use changes are contemplated.

1.2 Dry Creek Preserve Master Plan Introduction

This Master Plan defines the future direction of a unique area of Clovis, the 795-acre Dry Creek Preserve. It is intended to satisfy the major goals for the area: 1) to guide future preservation of the much desired rural character, appearance, land uses, and diverse wildlife of this neighborhood, while 2) prescribing general design parameters and standards to allow rural-compatible development to proceed.

In accord with the City of Clovis General Plan and Herndon-Shepherd Specific Plan. It seeks to provide:

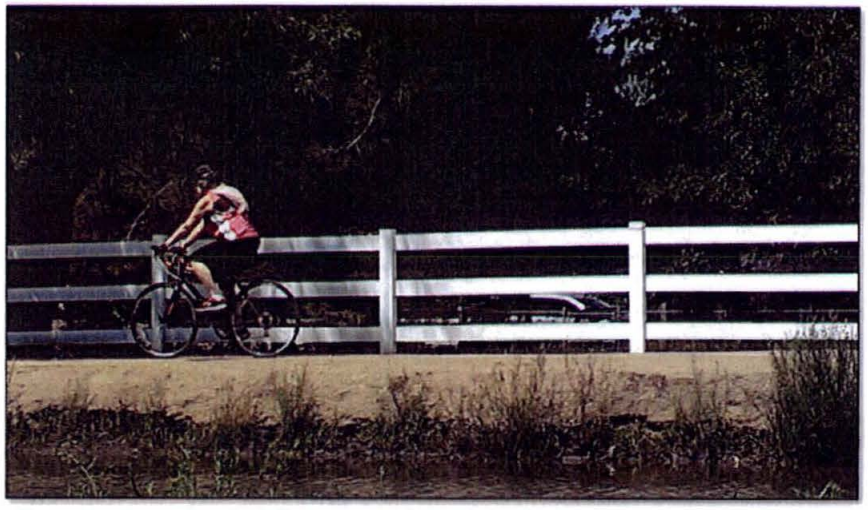
- Continued support for large residential and/or agricultural parcels and protection of the owner property rights and land uses needed to manage those larger properties.
- Development lot minimum sizes to assure compatibility and logical transitions between future developments and the area's preferred farm-like character
- A distinctly rural neighborhood character and appearance, characterized by less intense traffic, rural appearing streets, absence of urban appearing concrete sidewalks, and in areas that are not intensively developed, absence of curbs, gutters, block walls, or urban landscaping features that are replaced by individual owner designed yard fencing, and landscaping
- A clear neighborhood identity or "Brand" for the area, that helps to define and set future expectations about what the area is and is not; utilizing monuments, rural appearing materials, and features such as street furniture, stylish lighting, and landscaping -- or the absence of such features in cases where the area's rural character may be better served.



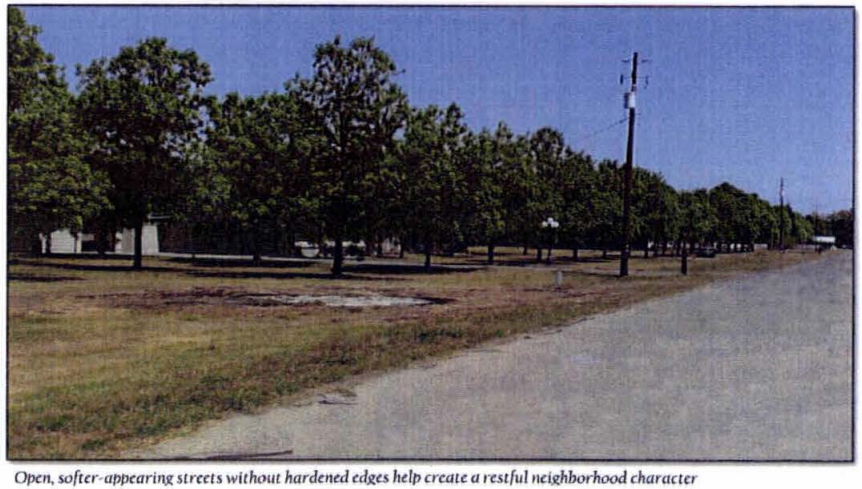
Aerial overview of the Dry Creek Preserve (Aerial provided by NearMap, October 2017)

1.3 Purpose and Intent

The purpose of this Master Plan is to acknowledge and preserve the 795-acre Dry Creek Preserve (DCP) area's desirable open space character and provide standards and design guidelines to encourage future development which is compatible with that rural neighborhood. It memorializes a set of land use and general development design guidelines which will allow for landowners within the DCP to reasonably use and develop their properties, while respecting and maintaining the area's character. It will enable efficient annexation of lands within the area into the City of Clovis. In conjunction with the City of Clovis General Plan and Herndon Shepherd Specific Plan, it is intended to provide a guide for policymakers, landowners, and developers, in maintaining a unique part of Clovis which, similarly to the Central Clovis Specific Plan, blends thoughtful future development with the City's history and agricultural heritage.



The Dry Creek Trail and Trailhead offer easy access to the DCP for bicycling or walking



Open, softer-appearing streets without hardened edges help create a restful neighborhood character

Marion Avenue

1.4 Site Description

The DCP is located in the City of Clovis' Sphere of Influence; bounded by Nees Avenue on the South, and the Enterprise and Dry Creek Canals on the North, East, and West. The area lies atop a broad alluvium and has fertile loamy soils suitable for agriculture. About one half of the DCP area is managed as orchards, pastureland or other agricultural uses. A wide variety of livestock are also kept on various size parcels throughout the area. The remaining area is principally developed into single family residences on Rural Residential sized lots.

Area housing and demographics are widely varied, with many different values and styles of homes situated on parcels which range from one acre to about 20 acres in size. (There is a scattering of older, legally non-conforming parcels of less than two acres, which were formed prior to the Rural Residential designation by Fresno County.) There are 251 separate privately owned parcels, totaling 747 acres, with more than 235 permanent residences throughout the area. Most residences are owner occupied; however, a number of rental properties are also present. The area currently has a high degree of individuality in home architecture and lot appearance. That variety is a key part of the area's bucolic character which the majority of DCP residents indicate that they prefer.

The existing parcels are designated Rural Residential, in accordance with the Herndon-Shepherd Specific Plan's Land Use Designations. One 31-acre area, the Whisper Creek Development, is annexed to the City of Clovis and has been subdivided into approximate three-quarter acre home sites, pursuant to a 2010 General Plan Amendment.

2.0 Background

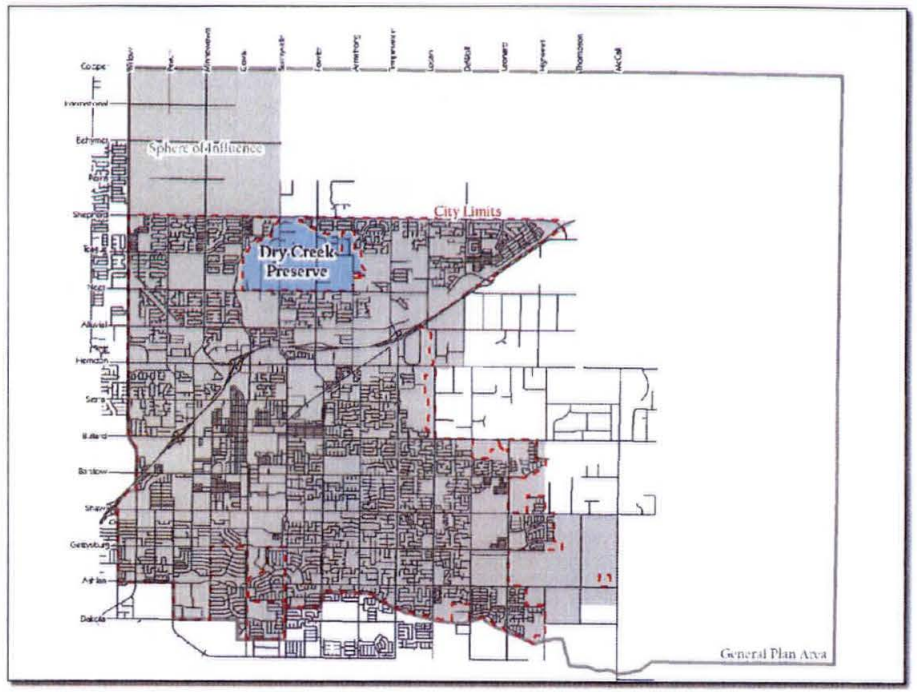
2.1 Clovis City Sphere of Influence

In 1972, Local Agency Formation Commissions (LAFCOs) throughout the State of California were granted authority to determine spheres of influence for cities. A Sphere of Influence (SOI) is a planning boundary outside of the City limit that designates the City's probable future boundary and service area. It is updated on a regular basis as the City grows and future growth plans become better defined. Projects proposed within the SOI are usually referred to the City for planning and consideration.

In May 1974, the first version of the City of Clovis' SOI was adopted. In addition to the many other areas of future growth, the DCP was included. To date, the area has not been annexed to the City of Clovis, except for the 31-acre Whisper Creek Development, located north of Teague Avenue, which was annexed in 2010. This Master Plan attempts to plan for the annexation of the area, while carefully considering and balancing the needs, operations and desires of the current landowners.

2.2 Planning Background

The Herndon-Shepherd Specific Plan was adopted in 1988. It designated the entire DCP area as Rural Residential, with a 2-acre minimum parcel size. That designation persists today. The City's 2014 General Plan Update reiterated the R-R designation, and identified the area as Focus Area #7, for which the General Plan requires completion of a Master Plan, prior to approvals of General Plan Amendments (GPAs) seeking denser development. By requiring a Master Plan for development to proceed, the City has acknowledged the complexity of the area and the need for a holistic approach in moving forward. This Master Plan is designed to meet that General Plan requirement.



Relationship between Dry Creek Preserve and the Clovis Sphere of Influence

2.3 Growth North of Herndon Avenue

Since the adoption of the Herndon Shepherd Specific plan in 1988, the City of Clovis has experienced significant development north of Herndon. The DCP, however, has remained outside of the City boundaries largely because: 1) most of the landowners in the Plan area have expressed a preference to keep the area's current R-R land use designation, and 2) the two-acre minimum designation has made it unprofitable for builders to pursue development projects, and to annex the area into the City. As such, this area remains undeveloped. Only one area of the DCP is within the current City boundary, the 31-acre Whisper Creek Development. This subdivision was annexed prior to adoption of the Master Plan requirement within the 2014 General Plan. The Whisper Creek development has 31 approximate three-quarter-acre lots.

In recent years, County Peninsulas and Islands have been under significant scrutiny for the inefficiencies they create. The State of California, recognizing the inherent problems with County Islands, has passed legislation (Government Code 56375.3) streamlining the annexation of lands. This Master Plan will assist the eventual annexation of the DCP area by inclusion of a Master Annexation Agreement which will enable owners to protect their preexisting property rights and uses after annexation of their properties. LAFCO, the City of Clovis, and the County of Fresno will play pivotal roles in determining the annexation boundaries as development proceeds.

2.4 Dry Creek Preserve Neighborhood Self-Planning Initiatives

A decade ago, a group of residents within the DCP began meeting regularly to discuss land use planning for the area. The group was open to any owner within the DCP who wished to participate in the planning effort, and periodic outreach efforts were made to include new participants. This group recognized the importance of proactively planning for the area, rather than reacting to sequential General Plan Amendment applications that inevitably would be considered for approval by the City. Accordingly, the group has regularly coordinated with City Staff with the goal of developing a Specific Plan for the DCP area. The group named itself the Dry Creek Preserve Neighborhood Committee, and as the area's name suggests, one of their main goals was preservation of the DCP's less intensive land use plan and lifestyle. Most residents within the DCP have expressed a desire for the area to remain rural. In fact, it was largely in response to requests by many of these landowners that the General Plan designation of this area remained Rural Residential in the 2014 General Plan Update and in previous planning efforts, dating back to 1988.

Significant time and energy was invested into these early planning efforts, including more than a hundred Committee meetings and production of sequential drafts of a Specific Plan, which were forwarded to the City Staff, requesting feedback. When the 2014 General Plan Update was adopted, it included a requirement that a Master Plan, rather than a Specific Plan, be developed for the DCP area, prior to any further development within the area. That provision presented the opportunity for a neighborhood goal-focused land use planning endeavor to advance. Considerable cooperation and compromise occurred between participating developers and the neighborhood during development of this Plan, which incorporates the input and many of the previous products from the Neighborhood Committee. The concepts expressed in this Master Plan thus represent give and take by all parties. They advance a workable compromise between area residents and property owners (with varied opinions and interests), the City of Clovis and Fresno County.

One of many Dry Creek Preserve Neighborhood Committee meetings

Neighborhood Committee

2.5 Relationship to the General Plan

One of the goals of this Master Plan is to remain consistent with the goals and policies of the City's General Plan. The 2014 Clovis General Plan referred to the Dry Creek Preserve Area as Focus Area No. 7. The General Plan provided direction for this are, which included the requirement for a Master Plan to be prepared for the entire area prior to any further development, with the over-arching intent to preserve the rural residential character of the area. The purpose and intent of this Master Plan is to fulfill the area-wide policy requirement.

Below are the pertinent goals and policies from the 2014 General Plan update and summaries of how this Master Plan fulfills these goals and policies.

Goal 5: A city with housing, employment, and lifestyle opportunities for all ages and incomes of residents.

While we don't normally think of above average income housing as a place of need, the movement toward higher density over the years had led to smaller lot sizes and fewer options for higher income or larger families, or families who prefer an outdoor lifestyle. By allowing for larger lots, this Plan will allow builders to offer unique house plans and designs which will address the needs of Clovis families and residents that are currently being ignored. Our initial research has shown many Clovis families want more home and yard than they currently have but they want to stay within the City of Clovis so that they can enjoy City services and Clovis Unified Schools. This Master Plan targets an underserved population in Clovis; buyers with larger families and, in some cases, higher incomes that are not being met by other parts of the new home market in Clovis.

Policy 5.1: Housing variety in developments. *The Clovis General Plan has been planned to provide a variety of housing product types suitable to each stage of a person's life. Each development should contribute to a diversity of housing sizes and types within the standards appropriate to the land use designation. This policy does not apply to projects smaller than five acres.*

This Master Plan puts a ceiling on residential development densities at .5 units per acre unless the proposed development parcel is 10.0 net acres in size or greater, in which case, the density of development applications may reach as high as 2.3 units per acre. These large lot sizes are relatively unique for the City of Clovis and approximately three times the median lot size currently being developed in the City. These larger lots also achieve the New Housing Goal of the Fresno Multi-Jurisdictional Housing Element recently adopted in April 2016 to "facilitate and encourage the provision of a range of housing types to meet the diverse needs of residents."

Policy 5.3: Innovative housing. *Encourage innovative housing product types, including multigenerational, cooperative, and variations on live-work housing.*

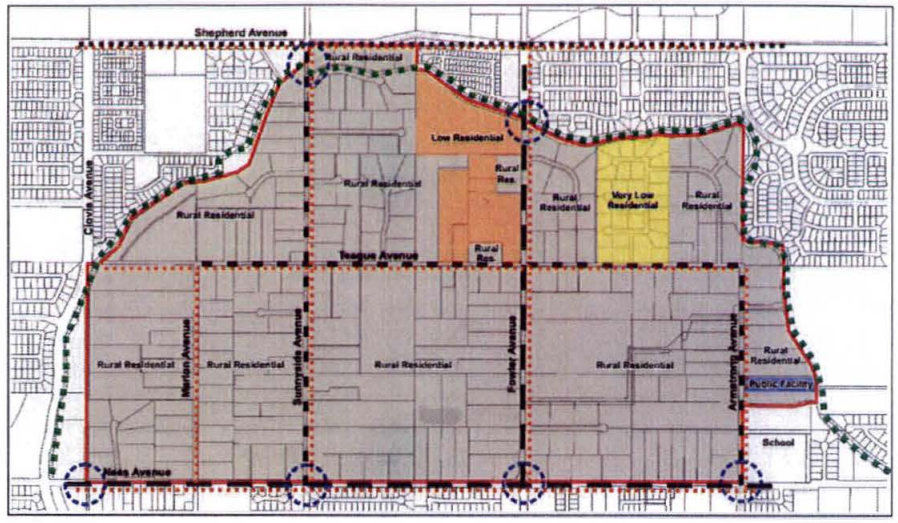
By allowing lot sizes not typically found in the City of Clovis, the Master Plan will offer housing product types that are not easily found elsewhere in Clovis. For example, the plan will allow the construction of large single-story homes that could provide a large usable backyard. With the recent move to density, many residents have expressed both a desire to build wider single story homes with three-bay garages. There is a large group of home buyers who are concerned about the almost entirely indoor lifestyle of their children, and who are seeking space to learn and enjoy outdoor activities. In other cases, aging individuals are seeking single-story housing for safety reasons, but they still are in need of larger size homes to house belongings or visiting relatives, or to provide living space for live-in caretakers or relatives, as need arises. Second homes within a parcel are also allowed, up to 640 square feet for family members or care givers subject to City requirements.

Policy 5.5: Jobs for residents. *Encourage development that provides job opportunities in industries and occupations currently underserved in Clovis.*

By addressing an underserved but higher income market, the Plan aims at creating larger lots and custom home capability, with the aim of attracting professionals and executive level individuals who may be looking at Clovis as a place to site new businesses or locate professional practices.

Policy 5.6: Workforce housing. *Encourage the development of workforce housing that serves the needs of those working in Clovis.*

The movement in recent years towards higher density has left a void at the upper-end of the market. There are fewer and fewer opportunities for families who desire more than an urban style home on an urban size lot in a typical subdivision in Clovis. Many of them live in homes that worked when their children were younger or their families were smaller, but now they need more house and more yard. Rather than have them leave for the County or other cities, this Master Plan provides a unique offering which will help keep Clovis workers in Clovis and may also serve to attract workers from neighboring cities as well.



General Plan Focus Area 7

3.0 Community Outreach and Feedback

The Plan area encompasses over 795 acres and more than 235 parcels. Parcel owners have a wide variety of opinions about development in the area; particularly concerning future annexations. It is difficult to find middle-ground between those different interests. In spite of the differences, several common themes have emerged from the various meetings held to discuss this Master Plan and future development in the area. Listed below are the most common themes raised in the Community Meeting.

Common Theme 1: Maintaining and Protecting the Rural Lifestyle. The DCP has long been associated with a slower pace of life inherent in rural residential living. Street lights don't exist in the area allowing the stars to be seen at night. The two-acre minimum lot size, rights to have domestic and farm animals, and less restrictive regulations and standards, helped provide, for many, a very desirable lifestyle. All of the Rural Residential properties rely upon individual wells for domestic water supply and upon individual in-ground septic disposal facilities. Some residents also have small agriculture operations on their properties which are dependent upon surface water rights and deliveries from Fresno Irrigation District. For this broad array of uses, lower housing densities, and the area's uniqueness, to be preserved, the City recognizes that some area-specific changes and variances to existing City Ordinances and Regulations may be needed and forthcoming, in the event properties within the area becomes annexed to the City. As an over-arching principle, the City intends to continue to allow all Rural Residential property uses that were legally conforming to the County requirements at the time when the property is annexed to Clovis.

Common Theme 2: Concerns Regarding Annexation to the City of Clovis.
Given their strong desire to maintain their current lifestyle, many owners have expressed concerns about the possibility of losing their existing Rural Residential land uses and associated rights if or when their property becomes annexed into the City Limits. At one of the neighborhood meetings this topic, landowner rights, was the main topic of conversation. Following this meeting in late 2016, certain neighbors took these concerns to the City Council. The Council then encouraged City Staff to work on an Annexation Agreement for the area. The resultant Annexation Agreement is incorporated into this Master Plan, as Appendix A.

Common Theme 3: Desire to Sell or Develop Property. There are also a dozen or more owners of larger parcels who desire to either sell their property to developers or to develop themselves. These owners have been frustrated by the General Plan Land Use Designation of Rural Residential, as it has limited their ability to sell or develop their land. Developers have expressed concerns regarding the profitably of building at the 0.5 unit per acre density. Some landowners believe the current General Plan Designation has put a ceiling on their property values and restricted their ability to liquidate their property.

Common Theme 4: Importance of Surface Water Rights to the Continuation of Agriculture.
A significant number of residents in the area currently have small agricultural operations which are completely dependent upon surface water assignments from Fresno Irrigation District (FID). A major purpose of this Master Plan is to preserve the historical small-scale agriculture to the extent the owners desire it to continue. Water assignments associated with these parcels are extremely important to the owners. The purchase prices of the parcels were originally much higher because of the inclusion of the FID water assignments and facility access. In most cases the water entitlement and facilities access is a recorded feature of the property deeds, and the owners have intended to recover that extra cost if and when the property is ever sold. Normally, at the time an owner requests to be connected to City residential water supply, the FID water allocation to the property would be transferred to the City and it thus offsets City costs in acquiring additional water sources to supply the requested domestic water. In the case of the Dry Creek Preserve, the City has agreed to allow property owners who sign Annexation Agreements to keep their individual water allocations, subject to a one-time "water acquisition fee" intended to enable the City to otherwise acquire the water needed to supply the requested domestic water. This process is detailed in the Annexation Agreement (Appendix A). It will facilitate the continued agricultural use of properties in the area. Area-specific exceptions to existing City ordinances and regulations may need to be made to accommodate the terms of the Annexation Agreements.

Common Theme 5: Need for Predictability. Many area residents have expressed a desire to have a Master Plan in place so that the neighborhood will not be surprised by future development applications with higher levels of density or development being proposed in unexpected areas of the Plan area. This Plan is intended to provide predictability to area development (or lack of development).

Common Theme 6: Desire for a Unique Area Visual Signature. It is intended that the Dry Creek Preserve should have its own unique visual appearance and "signature" which defines the area as a unique "softer" appearing area of Clovis, reflecting the area's valuable open space attributes and its agricultural roots in history.

Landowner Issue Resolution Each of the above Common themes is addressed in the various sections of this Master Plan. In most, but not all cases, issues have been successfully negotiated with resulting landowner consensus.

4.0 Master Plan Goals

- Maintain the DCP's Rural Character and Appearance. Establish area-unique design standards to maintain the preferred semi-rural look and feel of the area.

- Protect the Ability of Current Landowners to Maintain Their Current Lifestyle. This is accomplished through thoughtful standards for future development, provision for owners to execute individual Annexation Agreements with the City of Clovis, required recordation of "Right to Farm" covenants on developing lands, and the grandfathering of all preexisting permissible land uses which have existed within the Rural Residential zoning of Fresno County.

- Provide a Framework for Future Development. Identify desirable development guidelines which promote lower housing densities to allow compatible development, but encourage a rural look and feel for the Plan area.

- DCP Wildlife are plentiful. They are enjoyed by area residents and visitors and are an important part of preserving the area's character and identity.

Young Grey Foxes explore a DCP residential garden

A male Wood Duck rests in a DCP pecan orchard

A pair of young raccoons await their mother's return

- Build Identity. Create a "signature look" for the plan area, to set it apart as a unique and special place, which is semi-rural in character and thus preserves the Historic Clovis Western Way of Life.

- Establish Predictability in Land Use Changes. Respect the guidance and direction provided in the development guidelines that were collaboratively developed.

This Master Plan does not alter the General Plan designation for any of the Plan area. Upon adoption of this Master Plan, the RR designation will remain in effect over the Plan area, with allowances for denser development applications up to 2.3 SFR units per acre to be considered in the future on qualifying larger parcels, subject to General Plan Amendment approvals. One of the purposes of this document is to clarify understandings regarding allowable future General Plan Amendments in the Plan area. Such future GPAs will amend the land use designations for specific development areas and parcels, and must be consistent with the density and other standards advanced within this Master Plan.

5.0 Plan Application and Implementation

This Master Plan is intended to serve as guidance for community groups/individuals, the City, Fresno County, and prospective developers within the area.

1) All landowners in the Dry Creek Preserve will be able to sign an annexation agreement with the City of Clovis, protecting their rural lifestyle rights. This agreement will be available for owners to sign for a specified period of time after approval of this Master Plan or at the time an annexation is proposed for their property. This agreement protects the rights of each landowner in the case of annexation.

2) Those who wish to develop their land to the County standard of .5 residential units per acre can apply in the County, while their property remains in the County, per the terms and conditions of the City-County Memorandum of Understanding.

3) If a property is annexed into the City, the landowner can file a development application to the City per the then-current zoning code. Under the current General Plan Designation of Rural Residential, the City would allow development of up to .5 residential units per acre.

4) If a General Plan Amendment is sought from the City, this Master Plan is intended to guide landowners, applicants, and policy makers to limit approvals to 1) densities of no greater than .5 units per acre for projects smaller than 10.0 net acres, and 2) no more than 2.3 units per acre for projects of 10 net acres or greater (See Section 9.1 for specific requirements).

   New residential development will be held to maintaining a semi-rural look and feel through compliance with development standards. (See Section 9.2.1 for specific requirements).

5) Projects requiring a public hearing are subject to legal notification per the Development Code, which requires a mailed notice to all property owners within a specific radius of the project boundaries. Additionally, a mailed notice shall be sent to all property owners within the boundaries of the Dry Creek Preserve.

6) Minor modifications to the Master Plan. A minor modification requested or agreed to by the property owner shall be intended to accomplish one or more of the following:

   Any change or modification which does not change the basic intent of the Master Plan such as modifying plant materials, allowable uses as a result of Code changes, and amendments due to State or Federal regulations. A minor Modification may be approved by the Director of Planning and Development Services through a Minor Modification process.

   An appeal of the Director's determination regarding the minor modification shall be processed in compliance with Chapter 90 of the Clovis Development Code.

7) Major modifications to the Master Plan. A major modification includes any modification which does not qualify as a minor modification including but not limited to changes to circulation patterns, density, rural residential rights policies, and annexations. A major modification shall be processed and reviewed by the Commission and approved by the Council in compliance with the Development.

5.1 Plan Significance

This Master Plan will allow the City to continue to prepare for the annexation of this county peninsula, into its boundaries, which will increase efficiencies in the delivery of services to the area. At the same time it will protect the area's agricultural roots and lifestyle.

The Dry Creek Preserve will continue to be a pastoral-appearing, less intensively developed neighborhood, with evident viable agriculture, equestrian and other livestock use, long views, and other rural attributes. It will continue to have a Rural Residential designation over most of its area, which allows single-family residences to be placed on very large parcels, where desired. It will thus provide a residential housing option wherein people who desire to have larger yards or other connected land area; either for agriculture, gardening, privacy, play areas for children, workshops, livestock, other kinds of outbuildings or just open space surroundings can enjoy those lifestyles, and not be found in violation of City ordinances or regulations, following annexation.

For landowners, this plan will provide predictability when considering the future of the area. The Annexation Agreement will also protect their current allowable rights. For some landowners, this Master Plan will also allow them to consider developing their land, or selling their property for development. For all parties involved, this Master Plan further identifies how Fowler Avenue will be improved over time, as development comes to the area.

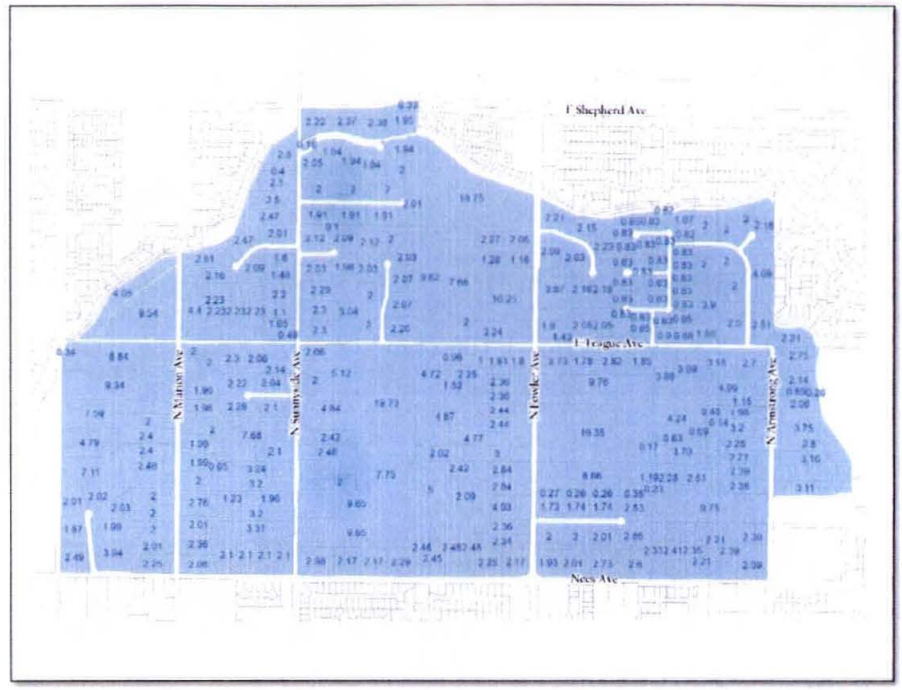
New development of large parcels is likely to occur. The 10.0 net acre minimum project size (per this Master Plan) will cause much of the Plan area to remain largely rural, as it is today. Potentially, up to 145-165 of the 747 privately owned acres of the Plan area could be built-out with new, more intensive development. Under this scenario, about 20-22% of the Master Plan area may eventually consist of new development with up to 2.3 SFR units per acre, and 78-80% would remain in its current Rural Residential status. Very importantly, the Plan will provide the community more assurance regarding the type of developments that may be coming to the Plan area, and where those developments could be located.

6.0 Land Use and Future Development

1) Future residential development greater than 0.5 SFR units per acre within the Dry Creek Preserve requires a General Plan Amendment, per the Herndon-Shepherd Specific Plan. The Large Lot Residential designation (maximum 2.3 units per acre) reinforces the "Community Brand/Identity" of the DCP, serves to reduce peak traffic loading, and reduces development impacts upon the rural character of the area.

2) Future residential development of projects smaller than 10.0 net acres (excluding required street rights of way) will be limited to a minimum Rural Residential lot size of 2 acres nominal, unless they are landlocked, or adjacent to a previously developed subdivision, pursuant to section 9.1d.

3) New residential development that is approved would conform to the DCP Master Plan with respect to density, community aesthetics, materials, and street furniture as later described in the Dry Creek Preserve Design Guidelines.



Dry Creek Preserve parcels

6.1 Annexations

Purpose. The purpose of this Policy is twofold. First, to identify an annexation program describing the probable properties that the City of Clovis, County of Fresno or the Fresno Local Agency Formation Commission ("LAFCo") will request be annexed concurrently with development project property ("Non-Development Annexed Properties"). Second, to identify protections that will be made available to the Non-Development Annexed Properties. It is the overall intent that the owners of these properties be allowed to continue with their rural residential lifestyle as permitted under the Ordinance Code of Fresno County in effect at the time of annexation.

6.1.1 Annexation Program

Development of land at a higher density than .5 units per acre within the DCP will require the Project to be annexed to the City of Clovis. Depending upon the location of the Project, the annexation boundary could encompass several surrounding properties. Currently, the City of Clovis and County of Fresno are party to a Tax Sharing Agreement which includes policies regarding annexation boundaries. Additionally, the Fresno Local Agency Formation Commission (LAFCo), has policies and Codes which further address annexation boundaries. This Master Plan includes an exhibit which illustrates scenarios which may or may not follow strict Codes and Polices for annexation boundaries. The intent of the scenarios is to illustrate the challenge of development in the DCP as it relates to annexation.

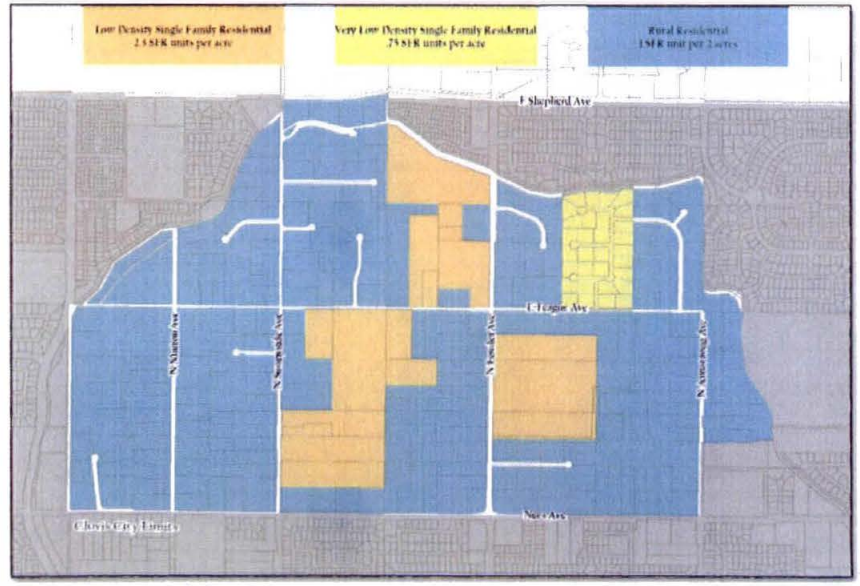
6.1.2 Annexation Agreements

Owners of Non-Development Annexed Properties will be offered an opportunity to enter into an annexation agreement ("Annexation Agreement") with the City which spells out how the owners will be allowed to continue with their rural residential lifestyle. A form of the Annexation Agreement is included in Appendix A. Owners of Non-Development Annexed Properties shall have two opportunities to enter into the Annexation Agreement as follows:

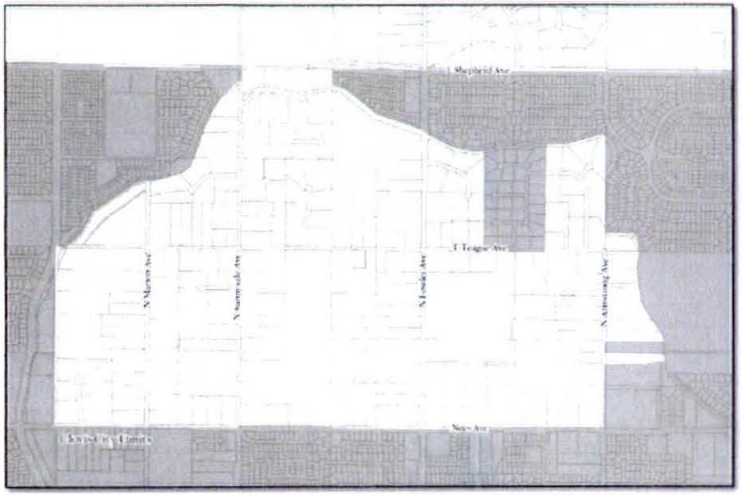
(1) For a period of one hundred twenty (120) days after approval of the Master Plan ("Initial Execution Period"); or

(2) At the time of being asked to annex their property.

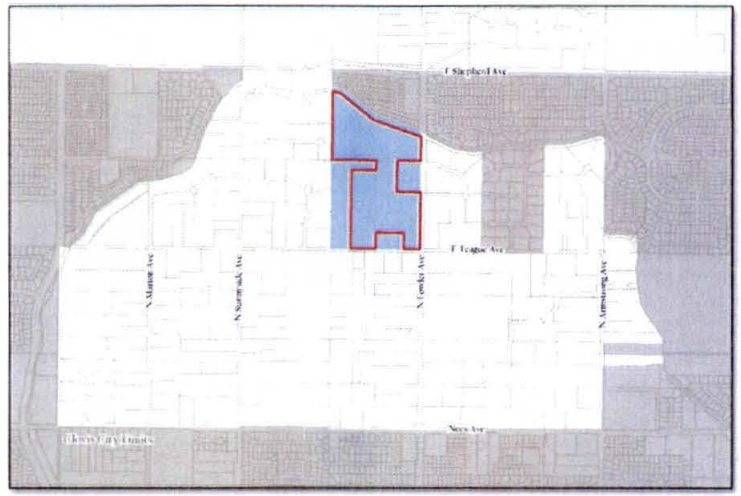
During the Initial Execution Period, the City Clerk may arrange for specified dates and times to have the agreements signed, notarized, and recorded.



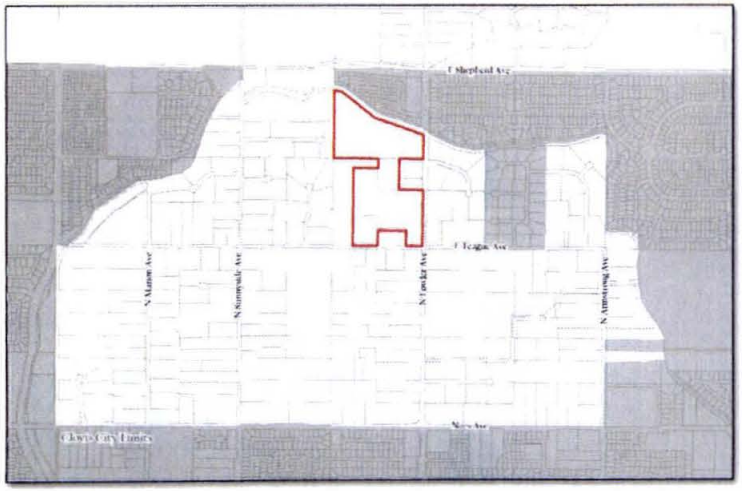
Expected 20-Year Level of Development



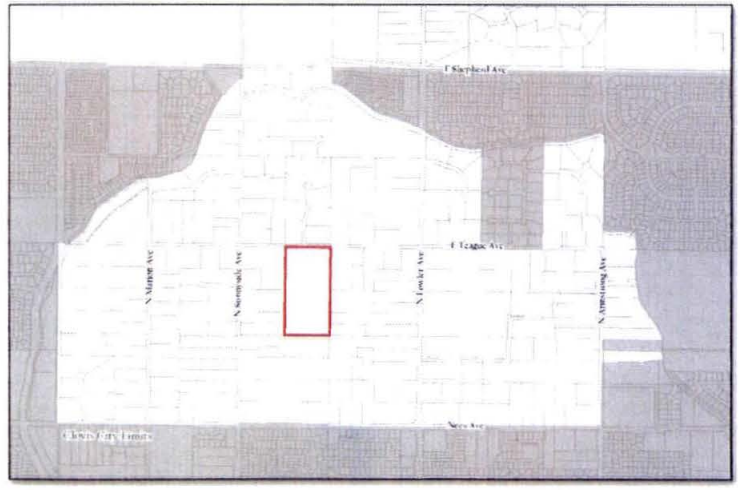
Annexation Program Scenarios



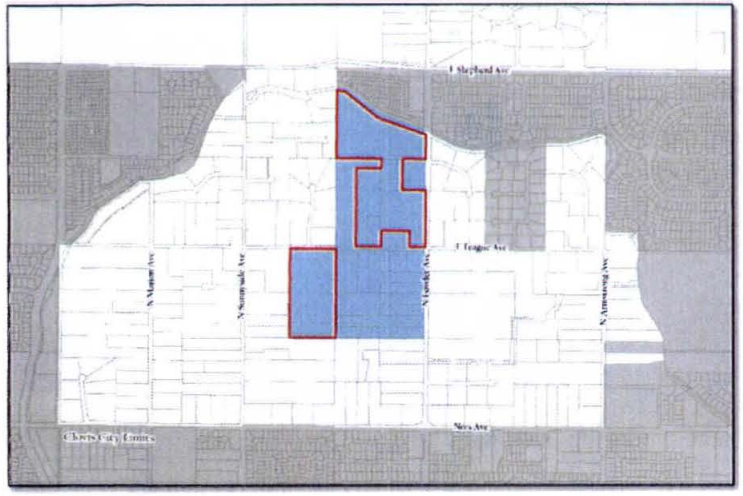
Annexation Scenario A



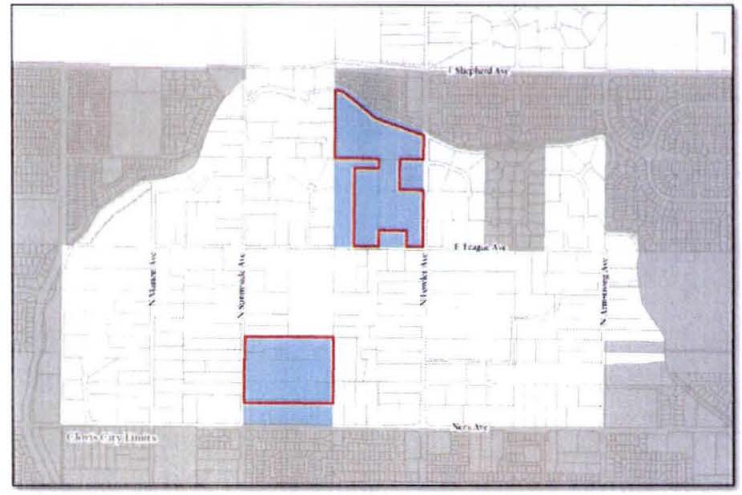
Tract 6154 Development



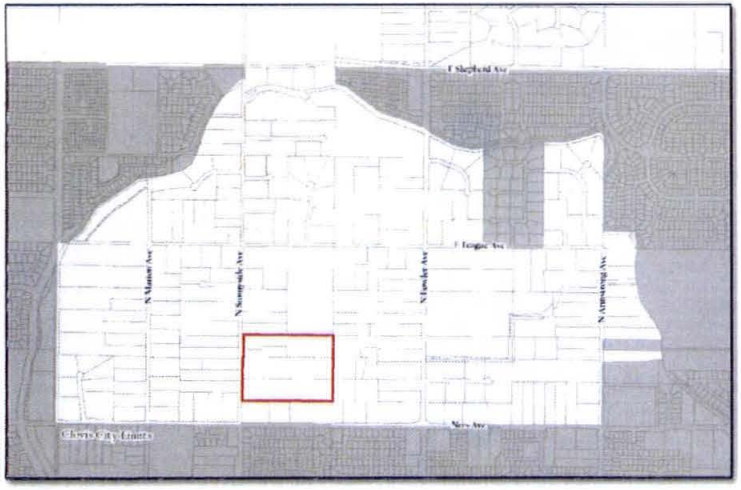
Potential Development B



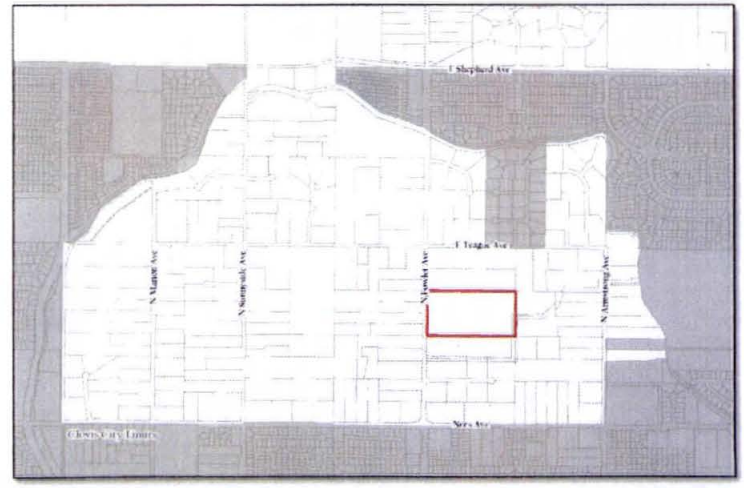
Annexation Scenario A & B



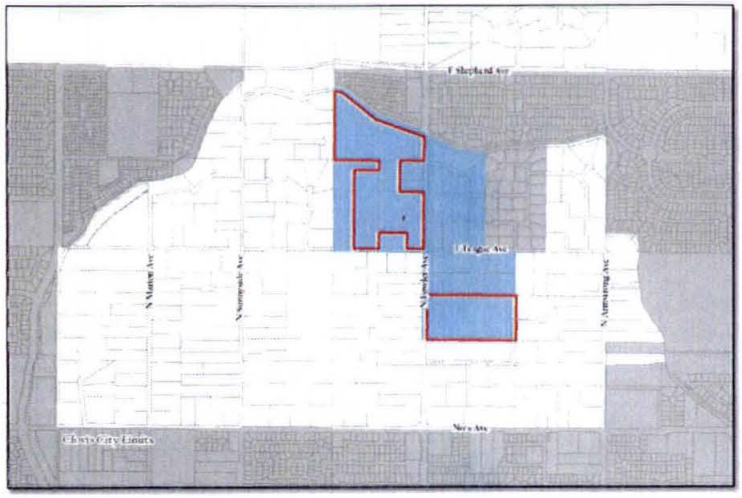
Annexation Scenario A & C



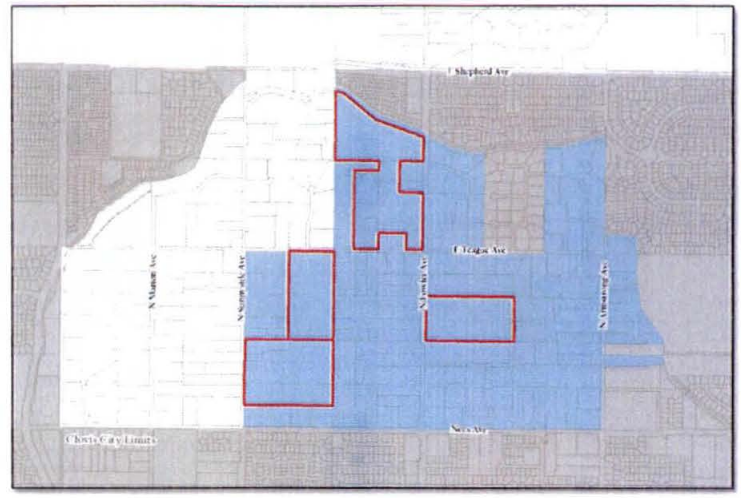
Potential Development C



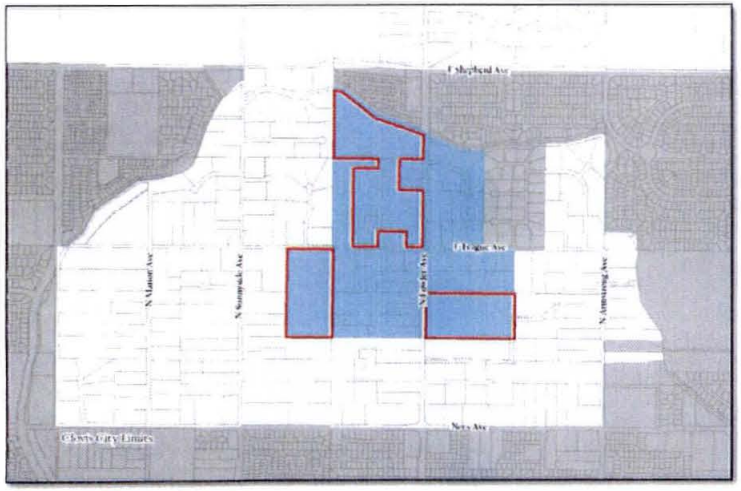
Potential Development D



Annexation Scenario A & D



Annexation Scenario A, B, C, & D



Annexation Scenario A, B, & D

7.0 Agriculture

Protecting Agricultural Operations

Protection and continuation of DCP agriculture is a key element of this Master Plan. It will be facilitated as follows:

- Agricultural uses will continue to be allowed and encouraged within the DCP, as long as owners wish to maintain them. This will help maintain the DCP's open space values and keep alive Clovis' historical agricultural heritage.
- An Annexation Agreement (Appendix A) is provided herein as the primary basis for protection of many aspects of individual parcel agricultural operations.
- Where public landscaping is utilized along roads, trails and parks, only non-toxic (to livestock) plant materials will be utilized.
- Because free-roaming or feral dogs represent a threat to livestock, wildlife, and humans, the Plan Area shall be subject to strictly enforced licensing, leash laws, and animal control laws and ordinances. The use of chain-link or other livestock protective fencing will be allowed, provided it meets structural requirements per City and County regulations.
- Agricultural irrigation using FID surface water is encouraged and will continue to be allowed. Agricultural water entitlements will remain with parcels per the Annexation Agreement.
- Agricultural operations will be protected by Right to Farm covenants, to be recorded by the developers of any property within the DCP.

7.1 Protecting Agricultural Uses

Agriculture has long been a principal use exercised by Plan Area residents. These agricultural uses have collectively helped to foster and maintain, over time, the historical rural appearance and the open space character of the Dry Creek Preserve Area. There continue to be small, profitable operations. Most are family operations, conducted by resident-owners. A relatively small variety of harvested crops is grown, including pecans, grapes, walnuts, almonds, stone fruit, and occasional small-scale row crops. Some are marketed on a commercial scale, others are marketed through "farm gate" or Famers Market sales.

Numerous DCP landowners keep large or small animals or poultry as a part of their lifestyle. The animals include horses, cows, mules, donkeys, burros, llamas, alpacas, goats, sheep, various poultry or ornamental birds, and others. Most often these animals are kept as pets, for personal riding enjoyment or for vegetation control. However; some owners do occasionally breed horses, dogs, or other animals with intent to sell the progeny. Others raise cattle or other animals for food. The diversity of large and small animals present across the Area is one of the principal attractions to recreationists, who commonly bicycle or walk with their children, pausing to view and interact with horses or other animals. This interaction is desirable, since it helps "soften" the urban lifestyle and serves to reconnect Clovis with its historical "Western Way of Life".

For Area agriculture to persist and continue to provide aesthetic and commercial value, it will be necessary to protect existing or new farming operations from conflicts with other uses, including residential uses. This Plan is intended to create an explicit right to farm policy. It contains the following standards to assure that neighbor conflicts over otherwise legal noise, dust, spraying, harvesting, permitted burning, or other activities will not eventually preclude and/or displace the agricultural uses from these fertile lands.

The following specific agricultural use protections are identified as specific policies, within the Dry Creek Master Plan area.

7.1.1 Standards for Protection of Farming Operations

1) Agricultural uses will continue to be allowed and encouraged within the DCP, as long as owners wish to maintain them. This will help maintain the DCP's open space values and keep alive Clovis' historical agricultural heritage.

2) An Annexation Agreement (Appendix A) is provided herein as the primary basis for protection of many aspects of individual parcel agricultural operations.

3) Where public landscaping is utilized along roads, trails and parks, only non-toxic (to livestock) plant materials will be utilized.

4) Agricultural operations will be protected by Right to Farm covenants, to be recorded by the developers of any property within the DCP.

5) Agricultural irrigation using FID surface water is encouraged and will continue to be allowed. For Rural Residential zoned properties, existing access to and use of surface irrigation water, through Fresno Irrigation District facilities, and/or to groundwater through private wells will continue to be allowed, subject to an Annexation Agreement, in the event lands are annexed.

6) Operators making modifications to lands or developing or maintaining public works projects will be required to provide for downstream water users to have uninterrupted use and access to preexisting conveyance capacity of irrigation water, including structures, valves, pipelines, ditches, canals and other features, to enable them to normally irrigate agricultural crops or pastures, or provide water for livestock, pursuant to the Fresno Irrigation District rules. Developers and builders will have the right to realign and/or improve existing irrigation lines, structures, valves, pipelines, etc. that traverse developer owned property.

7) Agricultural pumping will continue to be allowed throughout the Plan Area. Pumping from existing wells for agricultural uses will not be subject to local requirements for new (i.e., not required on or prior to January 1, 2014) permits, fees, testing or other regulation, except as may be required under laws of the State of California.

8) Noise traditionally associated with agricultural operations (e.g., from normal operations such as harvesting, wind machines, bird control, pruning, discing, ripping, leveling, hauling, processing or other agriculture related activities) shall not be construed as a "nuisance" or other basis for legal restriction in neighbor disputes affecting City or County permitting. All such agricultural noise shall be restricted between the hours of 7:00 A.M and 10:00 P.M.

9) Dust arising from agricultural operations shall be in compliance with State law and with regulations of the San Joaquin Valley Regional Air Pollution Control District. No other restriction of dust from agricultural operations are intended to be imposed.

9) Legally compliant agricultural chemical spraying or other pest control is a permissible activity within the Dry Creek Area and will not be restricted.

10) No other agricultural use shall be restricted or curtailed due to concerns expressed by neighbors, unless the operations are found not to be legally compliant.

11) Agricultural property owners within the Area shall continue to have authority to protect livestock from injury or harassment by free-roaming domestic dogs.

12) Livestock protective fencing up to 7 feet in height will continue to be allowed.

13) Because free-roaming or feral dogs represent a threat to livestock, wildlife, and humans, the Plan Area shall be subject to strictly enforced licensing, leash laws, and animal control laws and ordinances. The use of chain-link or other livestock protective fencing will be allowed, provided it meets structural requirements per City and County regulations.

7.2 Right to Farm Covenants

The City's existing "right to farm" covenant, as spelled out in Clovis Municipal Code § 9.40.180, will be made applicable to all development projects within the Dry Creek Preserve. The right to farm covenant contains a subdivider's and owner's disclosure statement which acknowledges the subdivider's and owner's understanding of the presence of nearby commercial agricultural use and the City's policy regarding its right to continue.

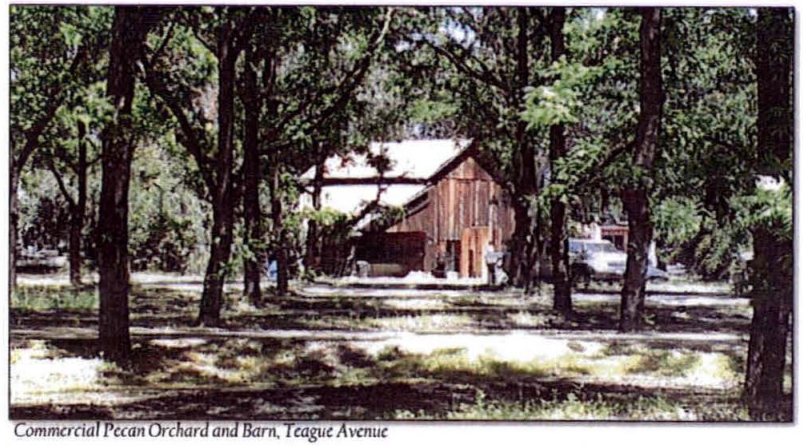
- The commercial covenant reads as follows:

  The undersigned in consideration of recordation of said subdivision by the City of Clovis, do hereby covenant and agree with the declared policy of the City of Clovis (Right-to-Farm Ordinance) to preserve, protect, and encourage development of its agricultural land consistent with the California Civil Code Section 3482.5 which provides that no agricultural activity, operation, or facility, or appurtenances thereof, as defined in the code, conducted or maintained for commercial purposes, and in a manner consistent with proper and accepted customs and standards, as established and followed by similar agricultural operations in the same locality, shall be or become a nuisance, private or public, due to any changed condition in or about the locality, after it has been in operation for more than three years if it was not a nuisance at the time it began; that the described property is in or near agricultural districts and that the residents of the property should be prepared to accept the inconveniences and discomfort associated with normal farm activities. This covenant shall run with the land and be binding upon all future owners, heirs, successors, and assigns to the property.

In addition, a further covenant will be required as a condition of approval recognizing the presence of adjacent rural residential properties that may conduct small scale non-commercial farming operations.

- The rural residential covenant reads as follows:

The undersigned in consideration of recordation of said subdivision by the City of Clovis, do hereby covenant and agree that rural residential properties, as defined under the Ordinance Code of Fresno County or the City of Clovis Municipal Code, lie adjacent and nearby to the property and that the residents of the property should be prepared to accept the inconveniences and discomfort associated with normal farm activities occurring on rural residential properties, provided those activities are conducted in a lawful manner and incompliance with the applicable Ordinance Code of Fresno County or the City of Clovis Municipal Code. This covenant shall run with the land and be binding upon all future owners, heirs, successors, and assigns to the property.



Commercial Pecan Orchard and Barn, Teague Avenue

8.0 Land Use Guidelines

These land use guidelines operate by providing standards to apply to any development which might occur at any location within the Plan area. Currently, the entire Plan Area is in County of Fresno jurisdiction, and is designated Rural Residential, Single Family, two-acre minimum.

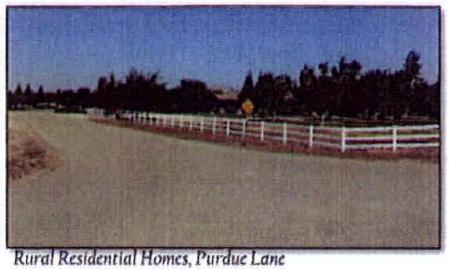
8.1 Rural Residential Use

The Herndon Shepherd Specific Plan designated the entire Plan Area for Rural Residential use. This was one of four general housing types advanced in that 1988 Plan. Today, all the other areas designated within the Herndon-Shepherd Plan are built-out, and at a much higher density than the current Rural Residential (two-acre minimum) standard in the Plan area. This Master Plan proposes to retain the RR designation throughout the Plan Area, except as proposed for development through the General Plan Amendment process on developments of at least 10.0 acres in size.

The RR lifestyle is desirable to many people who choose not to live in denser communities, or where elements of their lifestyle involve activities or uses that either require space or are not well tolerated by close neighbors. Some owners also have home-based aspects to their businesses, (e.g., nurseries, veterinary clinics, equipment overnight storage, arts, crafts, etc.) which were the reason they selected RR lands with suitable space and with County-approved permissible uses. Those preexisting conforming uses will continue to be allowed under this Master Plan.

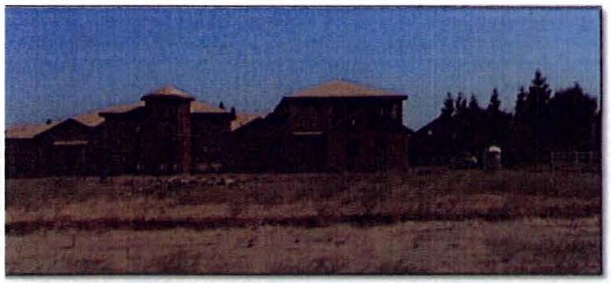
Rural residential housing within the Area occupies a wide range of home values and sizes, including rentals, small older homes, new custom homes and very large estate-size developments. These housing types are mixed across the landscape in various clusters, typically containing more than one type of home.

Rural Residential land use can be typified only by its variety and individualism. Few properties are alike, reflecting the owners' diverse lifestyles and land management practices.



Rural Residential Homes, Purdue Lane

Horse pasture, Teague Avenue



A new Rural Residential home under construction on Teague Avenue

8.1.1 Rural Residential Permissible Uses

All property uses and features that are legally allowed or permitted by Fresno County at the time when properties are annexed into the City of Clovis shall continue to be allowed after annexation occurs, without restriction, unless necessary to comply with State laws or regulations.

Subject to their conformance with Fresno County standards at the time of annexation, or with City of Clovis Rural Residential standards, the allowable uses on Rural Residential parcels shall specifically include, but not be limited to the following.

1) Large or small farming or ranching operations, including growing, harvesting, processing, shipping of produced commodities (except commercial poultry growing, confined livestock operations --i.e., feed lots, dairies, etc.-- or other operations with associated objectionable odors or potential for groundwater contamination) and disposal of agricultural waste, including by permitted burning or shredding. All above actions continue to be subject to USDA, CDFA, CARB and San Joaquin Valley Air Pollution Control District regulations.

2) Maintenance shops to construct or maintain resident-owned equipment.

3) Construction of facilities, barns, sheds, solar facilities, etc., connected to farming, livestock, or other resident-owner activities. Keeping of large animals, including livestock, horses, donkeys, llamas, alpacas, goats, sheep, or other mammals, property fencing as needed to protect those animals will also continue to be allowed.

4) Keeping of birds or poultry as pets or for personal use.

5) Drilling, maintenance and/or repair of new or existing agricultural or residential water wells upon Rural Residential parcels will be allowed pursuant to an Annexation Agreement.

6) Surface irrigation of crops, pastures or other features, as allowed by Fresno Irrigation District and if the parcel has FID water rights. (Properties which are annexed to Clovis and are supplied with City domestic water must have and be in compliance with an Annexation Agreement in order to continue to use FID-supplied agricultural irrigation water.)

7) Continued individual access to operate and maintain irrigation supply facilities, such as FID or community ditches, control structures, valves, stand-pipes or pipelines, pursuant to preexisting easements and to an Annexation Agreement.

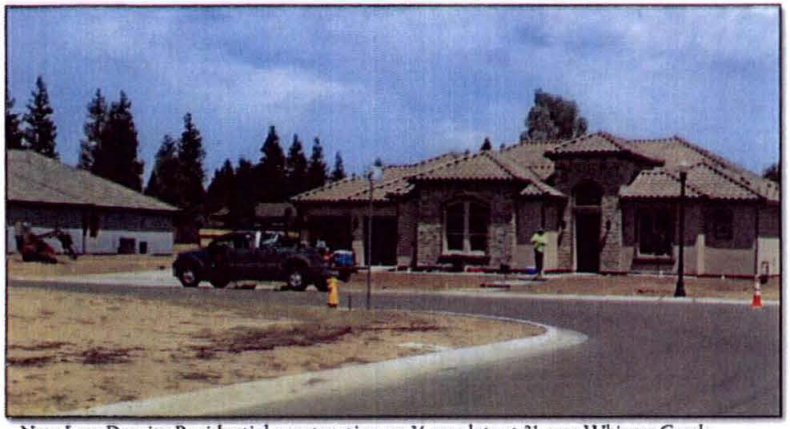
8) Gardening or landscaping associated with residential uses.

9) Cottage industries: (Artwork, crafts, etc.).

10) Individual parcel fencing of any type is permitted upon Rural Residential parcels up to a maximum height of seven (7) feet. Above 7 feet requires separate permitting by the City of Clovis or Fresno County, as applicable.

11) Visible storage and use of parcel owner's equipment and materials, including: 1) any farm implements, 2) recreational equipment, 3) yard or residential maintenance equipment, 4) up to one commercial truck and trailer, 5) up to two (2) shipping containers, or 6) other stored materials. Storage of equipment in excess of the above standards is allowed, but must be in a concealed area of parcels, not visible to the roadways or to neighboring properties.

12) Non-commercial construction/fabrication of equipment, welding, wood working, or other light industrial activities.



New Low Density Residential construction on ¾ acre lots at 31-acre Whisper Creek

9.0 New Housing Development

The following policy objectives will guide development, in order to avoid adverse impacts of development upon the core rural area values, area residents, uses and resources of the DCP. As such, the following objectives shall be implemented in all decisions regarding DCP area rezoning, permitting, or other land use decisions.

9.1 Residential Density

Maximum residential densities for the DCP area shall be 2.3 single family Units/Acre. This density is consistent with the maximum residential density standards used in the General Plan and sewer and water master plans (2.5 Units/Acre) for planning available sewer and water supply capacity to the area. In addition, 10.0 net acres or more is required for development at these densities, with limited exceptions as set forth below. The following standards shall be applied:

A. The maximum residential density shall be 2.3 Units/Acre. This density is based upon gross acreage, which is defined as follows: The total area within the lot lines of a parcel before public streets, easements, or other areas to be dedicated or reserved for public use are deducted from the parcel.

B. Densities at greater than 0.5 Units/Acre, up to the maximum density of 2.3 Units/Acre shall be limited to 10.0 net acres or more. Net acres is defined as follows: The total area within the lot lines after deducting existing public street rights-of-way.

C. Notwithstanding the foregoing, developments up to the maximum density of 2.3 Units/Acre may occur on less than 10.0 net acres under the following circumstances:

(1) On landlocked parcels. Landlocked parcels shall mean those parcels which are contiguously surrounded on all sides by either (a) preexisting City approved subdivisions, or (b) one or more major through streets (Marion, Sunnyside, Fowler, Armstrong, Nees, Teague, and Shepherd Avenues, or other major public facilities (Dry Creek Elementary, Dry Creek alignment, Enterprise Canal, or Fresno Metropolitan Flood Control District facilities).

(2) On single parcels of 9.5 net acres or larger, but less than 10.0 net acres, if the parcel is contiguous to a previously developed City residential tract within the DCP area. Contiguous shall mean: sharing a common boundary, not separated by: (a) a dedicated public road or street, (b) Dry Creek, (c) Enterprise Canal, (d) any FMFCD maintained surface drainage canal, or (e) any other public trail or right of way. Previously developed City residential tract shall mean a fully permitted subdivision project under a single subdivision map application, which is either completed or actively under construction.

D. Properties of less than 10.0 net acres may be developed as rural residential parcels at 0.5 Units/Acre, or combined with other adjacent parcels to form 10.0 plus net acres, thereby allowing densities up to 2.3 Units/Acre.

In adopting these standards, the Council finds that they are necessary to preserve the rural residential character of the DCP area and that any development inconsistent with these standards interferes with this fundamental goal.

The Council additionally finds that allowing landlocked and contiguous parcels to develop at the higher densities pursuant to the exceptions in C(1) and C(2) above, protects property owners that may otherwise not have any opportunity to utilize their property due to prior development patterns, while still preserving the essential goals of the Master Plan.

9.2 Development Standards

9.2.1 Development Design Standards

- All development shall comply with the City of Clovis' building and development codes. No architectural design template is imposed for new development within the Plan area, however variety in residence size, cost, style, and appearance/design should be provided.

- Residences located adjacent to existing homes that carry the Rural Residential City or County designation (Existing Home), may be either single or two-story homes unless the proposed home will lie within 100 feet of an Existing Home. If the proposed home is within 100 feet of an Existing Rural Residential Home, the proposed home shall be limited to one story. The Developer may request an Administrative Use Permit to consider a two-story home upon an agreement with the owner of the adjacent Existing Home, and mitigating measures (the planting of trees between the homes, etc.).

- Developers of all new housing projects shall record a "Right to Farm" covenant over each of the subdivided parcels. This covenant shall disclose that living near farming operations may cause inconveniences to new home buyers. This document gives the farming operations standing to continue their practices as they were in place before the new development was proposed.

- Construction of residential subdivisions or units, or construction of any other feature pursuant to this Plan must not obstruct, reduce, interfere with, or in any way prevent the free use of surface irrigation facilities and/or water for agricultural purposes. Developers of new projects may reroute or replace old irrigation lines, but will coordinate this with adjacent landowners and in all cases, must provide for the flow of water through their developed property to adjacent and downstream parcels. The developer will not however, be required to fix broken irrigation systems on property that is not a part of their development, unless they participated in the breakage.

- To preserve the undeveloped character of the Plan area, on Arterial and Collector Roads concrete sidewalks will not be installed adjacent to development projects. Rather, walkways made of asphalt, decomposed granite, or other more rural appearing material will be installed. For the interior tract development of new residential homes, concrete sidewalks may be replaced with either: 1) no sidewalks (upon Council approval), or 2) sidewalks made of asphalt or decomposed granite, etc.

- The development of road frontage and the requirement for dedicated right of way shall only exist on: 1) land that is actively being developed, 2) frontage from a landowner who has sold a portion of a parcel for active development, or 3) areas otherwise needed for orderly street access. Where improved streets front along land parcels that are not developed more densely than 0.5 Single Family Residence units per acre, urban appearing landscape vegetation will not be required, and owner landscaping will be allowed.

10.0 Commercial Uses

At present, few commercial uses exist within the Dry Creek Area. Existing commercial uses include commercial agriculture, a veterinary clinic, a nursery, equestrian center, a boutique winery, and several cottage industry uses. All of these uses were/are properly permitted under Fresno County, and are permissible uses under the County's Rural Residential designation. Many of these are mixed uses, wherein the business owners reside at their place of business. Most existed under existing County RR (2 acre-minimum) zoning, or were allowed pursuant to County-issued variances or permits. All such prior permitted uses shall be grandfathered here and continue to be allowed within the Plan area.

It is the intent of this Plan that particular types of commercial use that are not allowed under Fresno County's Rural Residential designation will not be allowed within the Dry Creek Preserve.

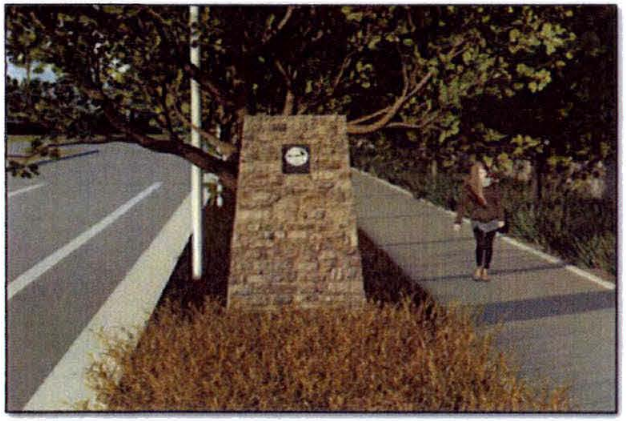
Several landowners have expressed interest in very low intensity commercial enterprises, such as bed and breakfast facilities, a winery, a commercial community gardening enterprise, along with the several existing commercial uses already noted above.

To the extent that these uses are consistent with County regulations for Rural Residential parcels at the time of annexation or City Rural Residential regulations, including any required permits under those regulations, they will be allowed.

11.0 Area Signature and Branding

One of the major goals of this Master Plan is to help set this Plan Area apart from all other areas and to celebrate its uniqueness. This plan proposes to create a "signature look" for developed portions of the area that ties the area together and is found through the project in its monuments, signage, and street signs.

The logo from the Dry Creek Trailhead was deemed to be a good choice for the area (see figure below). It will appear on Dry Creek Preserve Street Signs throughout the DCP area and on various public structures and monuments.



Fowler Avenue is the primary entry to the Dry Creek Preserve. As guests and owners heading south, cross over the Enterprise Canal into the Dry Creek Preserve, there will be a large monument on the west side of Fowler, providing a clear message that one is entering a special place, set apart from others in the City and County.

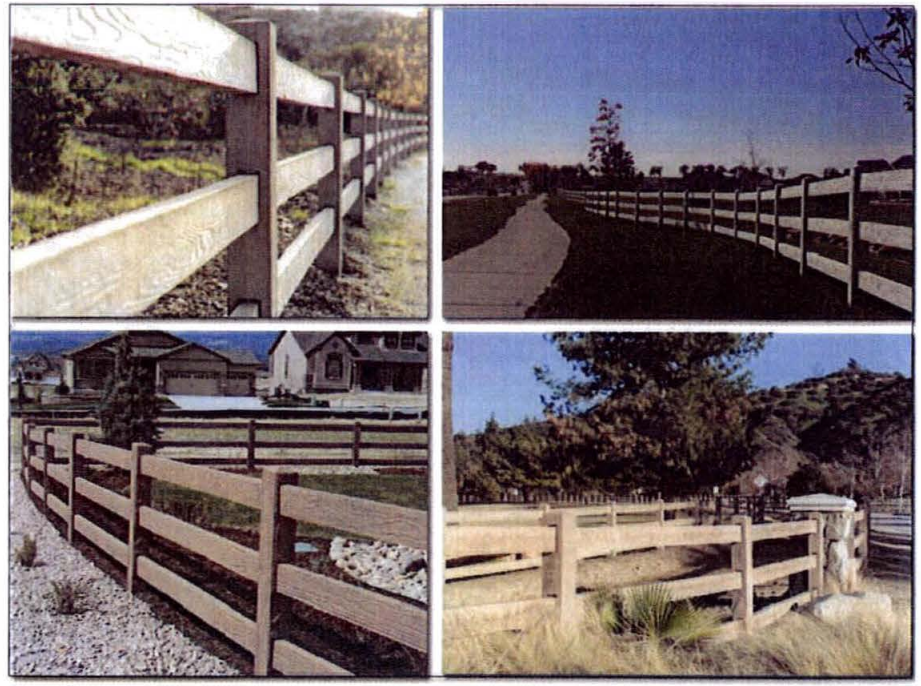
Welcome Entry Monument

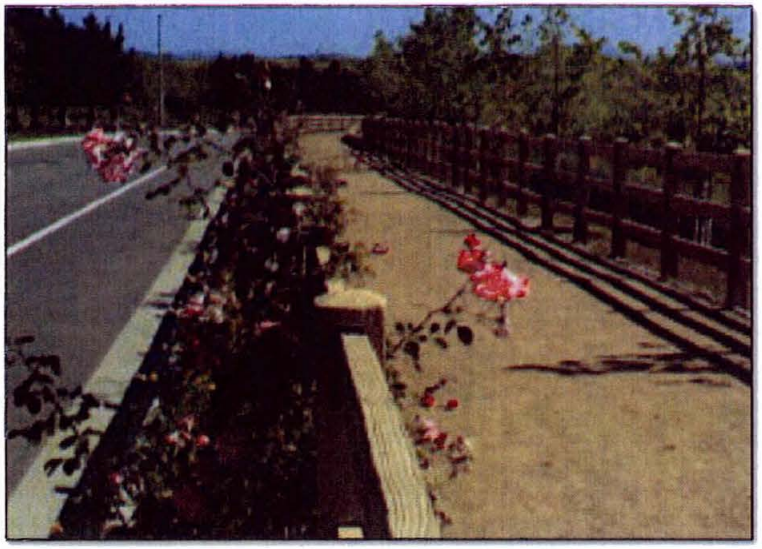
11.1 Lighting

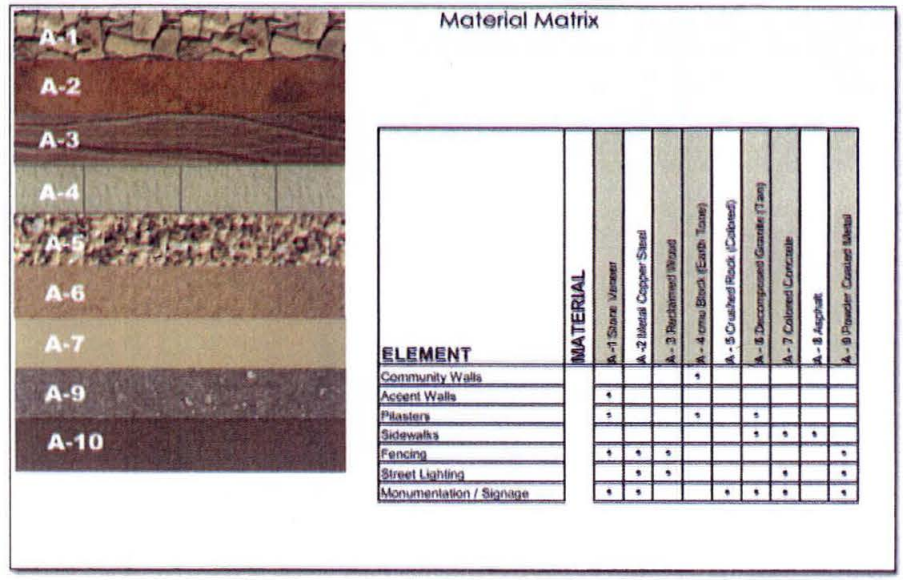
Street lights located in new residential developments shall be hooded to direct the light downward (with approvals needed by PG&E). This is an important restriction that will keep ambient light to a minimum throughout the area, thus helping to preserve the rural nature of the Dry Creek Preserve and enable area nocturnal wildlife (owls, foxes, raccoons, etc.) to continue to exist. Lighting at intersections and along developed streets will be provided by Pacific Gas and Electric Company and will be directed downward. Lamp posts and signage will be according to PG&E, and City standards, except that a Dry Creek Preserve logo will be a part of signage within the area.

11.2 Split Rail Concrete Fencing

Split rail/concrete fencing is recommended as an accent for new development projects. This will help promulgate the countryside look and feel throughout the plan area.







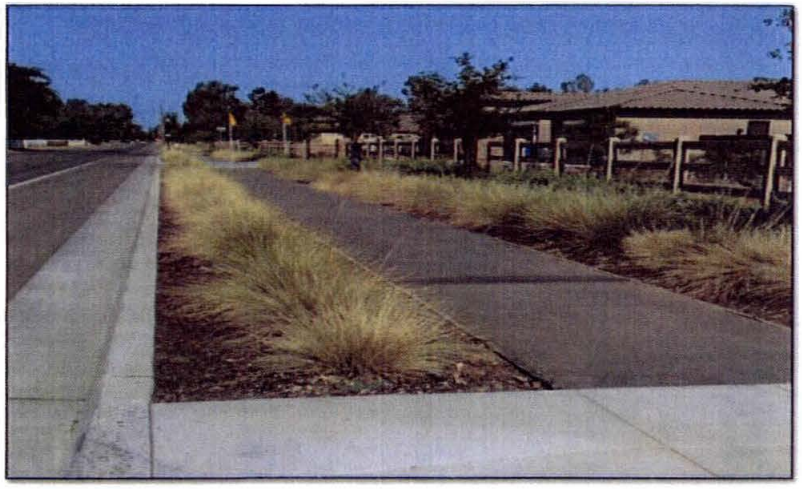
11.3 Asphalt Rather than Concrete Walkways

Developers shall utilize asphalt or other materials in place of concrete when constructing walkways on the exterior of projects, in order to maintain the rural look and feel of the area.

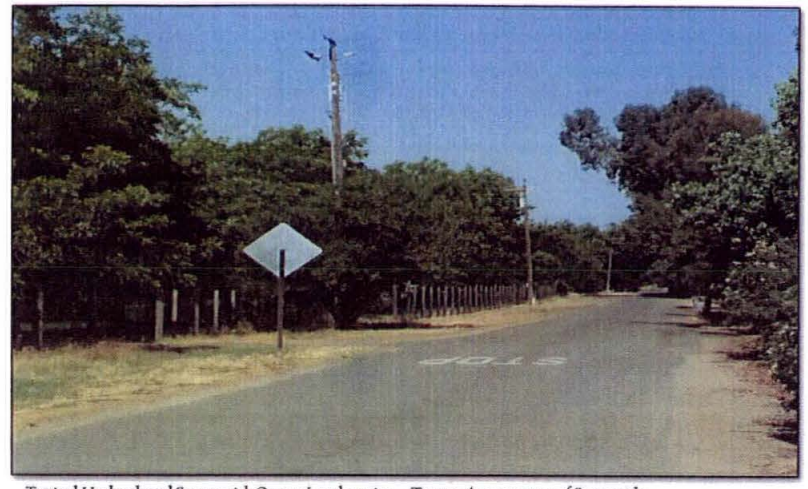
11.4 Landscaping

11.4.1 Ornamental Trees, Grasses, and Shrubs

Street vegetation and landscaping will be required along new development parcels. Remaining areas of the DCP will retain their existing rural appearance, without curbs, gutters, sidewalks, street trees or other public landscaping. Landscaping in the undeveloped areas will remain as it is today, individually placed and managed by property owners, unless and until further development occurs. The goals of the landscaping palette will be to keep a simple and rural look to the developed area, while avoiding the use of any noxious plants or plants that are toxic to livestock. On the following pages are the tree, shrub, and groundcover matrixes to be used along developed street segments:



Typical Developed Street Landscaping along east Teague Avenue, Whisper Creek Development



Typical Undeveloped Street with Owner Landscaping – Teague Avenue, west of Sunnyside

Tree palette

SYM	Common Name	Botanical Name	Water Use	Deciduous/ Evergreen
T-1	Strawberry Tree	Arbutus unedo	L	E
T-2	Lemon, orange, etc	Citrus spp.	M	E
T-3	Goldenrain Tree	Koelreuteria paniculata	M	D
T-4	Crape Myrtle (Red)	Lagerstroemia indica 'Dynamite'	L	D
T-5	Crape Myrtle (White)	Lagerstroemia indica 'Natchez'	L	D
T-6	Crape Myrtle (Pink)	Lagerstroemia indica 'Muskogee'	L	D
T-7	Bay Laurel	Laurus nobilis	L	E
T-8	Saratoga Bay	Laurus nobilis 'Saratoga'	L	E
T-9	Olive	Olea europaea	VL	E
T-10	Fruitless Olive	Olea europaea 'swan hill'	VL	E
T-11	Chinese Pistache	Pistacia chinensis 'Keith Davies'	L	D
T-12	London Plane	Platanus X acerifolia and cvs.	M	D
T-13	Holly Oak	Quercus ilex	L	E
T-14	Valley Oak	Quercus lobata	L	D
T-15	English Oak	Quercus robur	M	D
T-16	Cork Oak	Quercus suber	L	E
T-17	Southern Live Oak	Quercus virginiana	M	E
T-18	Interior Live Oak	Quercus wislizeni	VL	E
T-19	Brisbane Box	Tristaniopsis laurina	M	E
T-20	Saw Leaf Zelkova	Zelkova serrata	M	D

T-1

T-2

T-3

T-4

T-5

T-6

T-7

T-8

T-9

T-10

T-11

T-12

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T-14

T-15

T-16

T-17

T-18

T-19

T-20

Shrub matrix

SYM	Common Name	Botanical Name
S-1	Prostrate Acacia	Acacia redolens 'Desert Carpet'
S-2	Fern Leaf Yarrow	Achillea 'Moonshine'
S-3	Lily of the Nile	Agapanthus africanus 'Queen Anne'
S-4	Weber Agave	Agave weberi
S-5	Crimson Pygmy Barberry	Berberis thunbergii autropurpurea
S-6	Japanese Boxwood	Buxus m. japonica
S-7	Bottle Brush	Callistemon citrinus 'Little John'
S-8	Fortnight Lily	Dietes bicolor
S-9	Pineapple Guava	Fejoa sellowiana
S-10	Evergreen Euonymus	Euonymus japonicus
S-11	Daylily (Evergreen varieties)	Hemerocallis spp.
S-12	Red Yucca	Hesperaloe parvifolia
S-13	Red Hot Poker	Kniphofia uvaria
S-14	Bay Laurel	Laurus nobilis
S-15	Spanish Lavendar	Lavandula stoechas 'Otto quast'
S-16	Japanese Privet	Ligustrum japonicum 'texanum'
S-17	Little Ollie Dwarf Olive	Olea europaea 'Montra'
S-18	Russian Sage	Perovskia atriplicifolia
S-19	New Zealand Flax	Phormium tenax
S-20	Dwarf Pittosporum	Pittosporum tobira 'Wheelers Dwarf'
S-21	Dwarf Indian Hawthorne	Rhaphiolepis indica 'Ballerina'
S-22	Yeddo Hawthorne	Rhaphiolepis umbellata
S-23	Carpet Rose	Rosa
S-24	Floribunda Rose	Rosa floribunda
S-25	Rosemary	Rosmarinus officinalis 'Tuscan Blue'
S-26	Trailing Rosemary	Rosmarinus 'Prostratus'
S-27	Germander	Teucrium chamaedrys 'Nanum'
S-28	Society Garlic	Tulbaghia violacea
S-29	Laurustinus	Viburnum tinus
S-30	Yellow Bells	Tecoma Stans
S-31	Stacked Bulbine	Bulbine Frutescens
S-32	True Myrtle	Myrtus Communis
S-33	Lantana	Lantana
S-34	Gopher Spurge	Euphorbia rigida

S-1

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12.0 Circulation and Traffic Objectives

When traffic enters the DCP, drivers will know they are entering a less intensive neighborhood of different character, intensity and uses. Faster traffic will be encouraged to use Fowler Avenue. Speeds must be slower, and traffic patterns calmer on Sunnyside, Armstrong, and Marion Avenues.

Circulation Objectives:

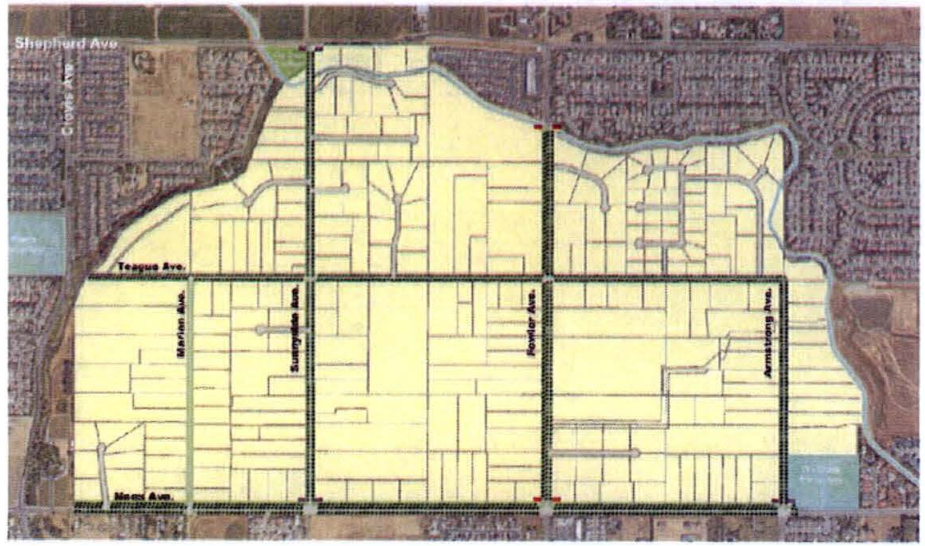
1. Provide for through traffic circulation across the Plan Area only on major roads such as Fowler and Nees Avenues, while recognizing the need for speed limits and other traffic controls to be consistent with side-entering private driveways, passive recreationists, and multi-modal transportation.

2. Discourage non-Plan Area-related traffic from utilizing the minor Area roads to avoid adverse noise and safety issues.

3. Support safety of non-motorized modes of transportation including walking, bicycling, and equestrian.

4. Provide attractive signage along through roads to promote the unique identity of the area and its recreational values, and to interpret the need, reasons for and values associated with slower speed travel within the area.

5. Require land developments to mitigate for their traffic impacts by dedicating rights-of-way for public streets and roads and upgrading roads to serve their developments, including constructing frontage improvements and left-turn channelization where appropriate, and where consistent with the neighborhood appearance.



12.1 Street Design Criteria

The following street design criteria will apply to streets within the Master Plan area. The diagrams and descriptions include street segment designs for areas that are more intensively developed (usually shown on the left side of diagrams), as well as for areas that remain in their existing rural residential use (right side on most diagrams). The different design intensities are provided because, where development does not occur, improvement of the streets will not have an available financing source.

In most cases, roads adjacent to properties that are not developed will have little change from their present condition, unless or until development occurs. This reflects the desire for slower, less intensive streets in the rural residential neighborhoods and where multiple individual driveway entries exist. In general, the DCP streets, except the Fowler Avenue Arterial, have been designed at minimum levels for their forecast traffic, with the intent to: 1) encourage heavy and faster traffic to utilize more highly developed roadways, and 2) reduce the degree of change and resultant traffic congestion impacts which will exist within the road development transitions across the area. Those objectives are consistent with the overall goal of providing a quieter, more rural environment within the DCP.

12.1.1 Service Streets

The Plan Area has eight existing local streets which serve the residents of rural residential areas. They include:

- Cole Avenue (2 reaches)
- Serena Avenue
- Linda Lane
- Powers Avenue (2 reaches)
- Richmond Avenue
- Lebanon Avenue
- Purdue Avenue
- Preuss Drive

Many of these streets end in a cul-de-sac; therefore, although they are dedicated public rights of way, they are not a part of the through traffic circulation within the Plan Area. These street reaches will remain public rights of way. They will be paved but will have no lane striping.

12.1.2 Intersection Traffic Control

Intersections can be controlled with two-way or all-way stop signs, traffic signals, or roundabouts. The appropriate type of traffic control is determined by guidance in the California Manual on Uniform Traffic Control Devices.

12.1.3 Traffic Signals

A traffic signal is currently in place at the intersection of Nees and Fowler Avenues. Additional traffic signals are planned at Nees and Sunnyside Avenues, Nees and Armstrong Avenues, and Shepherd and Sunnyside Avenues when warrants are met. Signalization at the Fowler-Teague intersection may also be required, if future traffic loads make it necessary.

12.1.4 Bicycle Facilities

Substantial walking and bicycle recreation exists today along the quiet Plan Area streets and roadways. It is intended that this non-developed recreation will continue, until more formally developed facilities are in place. Subject to funding and normal road improvement timetables, bikeways will be provided along all area roads and streets, in accordance with the design diagrams included for each area roadway segment.

12.2 Circulation Implementation and Road Design Standards

See below for the design plans for the various streets in the Plan Area adjacent to developed subdivisions or undeveloped rural residential parcels. Where new Rural Residential parcel maps or lot line adjustments are proposed, rights of way for eventual street development will be required. However, full build-out of streets will not be required of such parcel divisions as long as the resulting lots remain Rural Residential parcels.

The network of roads and bicycle and pedestrian facilities has been designed to meet the needs of the residents of the Dry Creek Preserve community, as well as the needs of other users who visit or commute through the area. Facilities will not be over-designed, in order to minimize the associated capital improvement and ongoing maintenance costs and also to maintain more of a rural appearance to area streets, consistent with the Master Plan and Clovis 2014 General Plan objectives. Additional facility improvements may be needed to meet regional transportation needs beyond the 20-year horizon of this Master Plan, and the City of Clovis Planning and Development Services Department shall ensure that sufficient rights-of-way are set aside for future improvements.

The roadbeds and rights-of-way within the DCP are described below with accompanying typical street cross-sectional diagrams.

12.2.1 Fowler Avenue

Fowler Avenue, north of Nees Avenue is designated as an Arterial Roadway in the Clovis General Plan and Regional Transportation Plan. It carries Dry Creek Preserve traffic, as well as regional traffic from the unincorporated area to the north. Because this route connects to State Highway 168, it carries substantial traffic loads at times, particularly during peak commute hours. During these commute hours, there is occasionally traffic congestion primarily at controlled intersections.

Normally, street intersections are improved at the time adjacent property is developed, but in an attempt to remediate congestion issues on Fowler more quickly, the City of Clovis and the development community (those adding trips to Fowler Avenue) will participate in completing certain Fowler Avenue improvements on an accelerated time line.

The improvement and widening of Fowler Avenue will take place as development occurs adjacent to the roadway. Improvements to intersection capacity will take place as warranted and to mitigate impacts associated with new development within the plan area. The ultimate configuration of Fowler Avenue will depend on whether the adjacent predominant development is intensified (density higher than 0.5 du/ac). On these frontages, the right-of-way width will be 60' and improvements will include 16' landscaped median, 2-twelve foot travel lanes, an eight foot bike lane, curb and gutter, and a 20' wide landscape and pedestrian strip. Along frontages that are to remain predominantly rural in character, the right-of-way width will be 53' and improvements will include 16' landscaped median, 2- twelve foot travel lanes, a 6' bike lane and 15' for drainage and pedestrian use. It is intended that as properties are divided or developed along these roadway segments, the right-of-way would be dedicated and cleared, but the improvements would not be required as a condition of development. Such improvements would be done when warranted or when there is participation from the City or other sources. The Fowler Avenue cross section showing both conditions is depicted in Figure A.

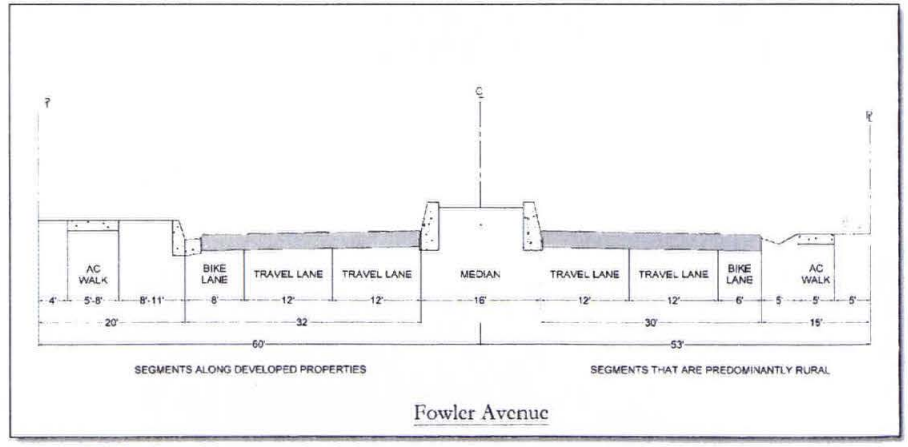


Figure A: Fowler Avenue

12.2.2 Sunnyside Avenue

Sunnyside Avenue is a designated Collector Street in the Clovis General Plan and Regional Transportation Plan. Today, it principally carries traffic between Shepherd and Nees Avenues, thus serving the areas north and east of the Dry Creek Preserve, and connecting the DCP area to the Clovis Central District. Because a major school facility, Century Elementary School, is located on Sunnyside just south of the DCP, considerable traffic utilizes Sunnyside during morning and afternoon hours. The roadway is adequate to carry this traffic at present, and because Sunnyside does not connect directly to State Highway 168, it is less likely than Fowler Avenue or Clovis Avenue to experience major future increases in traffic loads.

Sunnyside Avenue is planned to remain a rural-appearing collector street, with one 11-foot-wide travel lane in each direction. Figure B shows the street configuration and required right-of-way widths for segments of the roadway that are adjacent to both developed and undeveloped properties. The vehicular travel lanes will be separated by solid double striping and be signed to prohibit vehicles passing. This is due to the number of existing rural residential driveway entries located along both sides of the roadway. Sunnyside will be signalized at its intersections with Nees Avenue and Shepherd Avenue, and initially be maintained as a four-way stop at its intersection with Teague Avenue. If land development occurs which materially increases the traffic loads and causes delays at the Teague-Sunnyside four-way stop intersection, the City may require those developments to mitigate project impacts by signalizing the Teague intersection or by providing alternative traffic accommodations, such as a roundabout at this location. Developments along Sunnyside will also be required to provide needed signalization and left-turn channelization at Nees Avenue, Shepherd Avenue and Teague Avenue intersections, if traffic studies at the time indicate need.

Sunnyside is planned with five-foot-wide bicycle lanes on both sides (Figure B). It is understood that the bicycle and pedestrian facilities will not be constructed unless either: 1) external grant funds can be secured to construct them, or 2) sufficient properties with Sunnyside frontage become developed to enable financing of the facilities through project mitigation or other fees.

Developments fronting onto Sunnyside will be required to provide along their street frontage, an 11'-wide travel lane, a 5'-wide bicycle lane, construction of asphalt curbs and appropriate street drainage (if required based on site characteristics), and a 5'-wide decomposed granite or asphalt walkway. The needed right of way for these facilities will also be required to be dedicated.

Non-developed reaches of Sunnyside will have an 11-foot-wide travel lane, a five-foot-wide bike lane, and a four-foot unpaved shoulder.

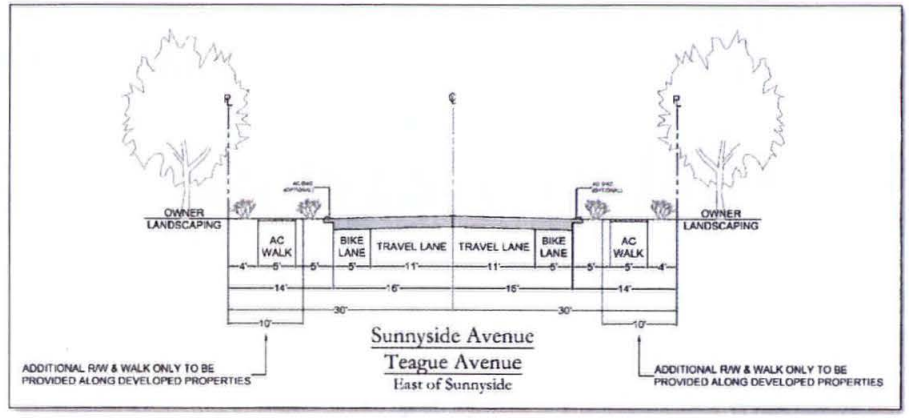


Figure B: Sunnyside Avenue and Teague Avenue East of Sunnyside

12.2.3 Teague Avenue East of Sunnyside Avenue

Teague Avenue is designated as a Collector Street in the Clovis 2014 General Plan. It carries traffic in an east-west direction across the DCP, providing a northern connection between Armstrong and Marion Avenues. Its principal traffic use occurs between Fowler and Sunnyside Avenues. The reach of Teague extending west from Sunnyside Avenue is quite different from the remainder of the street. It primarily serves a rural residential neighborhood planned to have less than 50 residences, located along Teague, west of Sunnyside, and Marion Avenues. This western reach is thus planned separately as a Residential Street. It is described together with Marion Avenue, below.

The characteristics of the eastern segment of Teague Avenue are shown in Figure B. This street reach is planned to have one eleven-foot-wide travel lane and a five-foot-wide bicycle lane in each direction. In developed reaches, a five-foot-wide walkway will also be required, separated from traffic by a four-foot-wide landscaped separator on the developed side, wherever development with street frontage occurs. The reach located east of Fowler Avenue has already been improved equivalent to those standards, with the development of the Whisper Creek Subdivision. The remaining area between Fowler and Sunnyside Avenues will be improved incrementally at the time development occurs within that street segment. It will be financed similar to the mechanisms described for Sunnyside Avenue.

12.2.4 Teague Avenue West of Sunnyside

This segment of Teague Avenue extends for less than ¼ mile, terminating at its intersection with Marion Avenue. At present, it has only a 16-foot paved width, with unpaved shoulder and no striping. It is adequate for its low volume of traffic, being one of two streets serving about 50 Rural Residential parcels, with less than 500 combined trips per day. This segment is planned to have one 11-foot-wide travel lane and a 5' bicycle lane in each direction (see Figure C, below), however in the expected absence of future subdivision activity, it is doubtful that financing will be available for the improvements in the foreseeable future, unless external grants or other funding can be arranged. Planned improvements for this street segment are shown in Figure C, in the event such financing becomes available.

Potential may exist for a trail connection extending west from Sunnyside Avenue, along Teague Avenue to Marion Avenue, then west to the Dry Creek Trail. It would require acquisition and use of a currently undedicated private dirt farm access road. Future grant acquisition could be considered to finance a bicycle and walking path through that alignment, including a pedestrian-bicycle bridge over Dry Creek to connect with the existing Dry Creek Trail. Because the west end of the trail would emerge in the immediate vicinity of Woods Elementary School, State *Safe Routes To School* grant program funding may have application for this feature.

12.2.5 Marion Avenue

Marion Avenue is planned to have 11-foot-wide travel lanes and 5-foot-wide bicycle lanes in each direction, accommodated within the existing 40' right-of-way. The design characteristics are shown in Figure C, below.

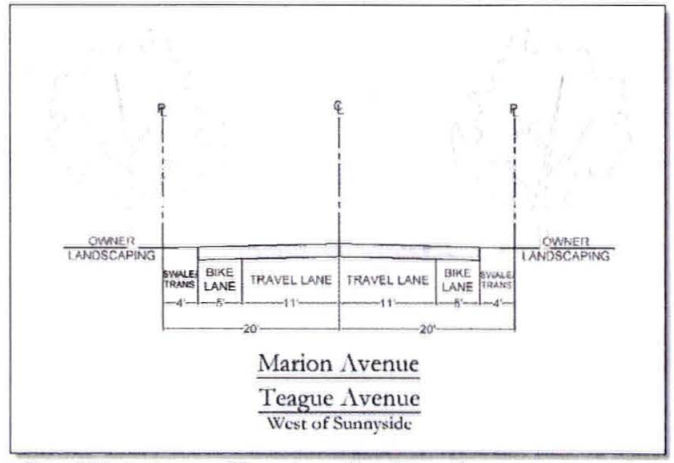


Figure C: Marion Avenue and Teague Avenue West of Sunnyside

Properties adjacent to Marion Avenue and the west segment of Teague Avenue area are already nearly fully built out into rural residential homesites, and potential exists for less than twenty additional rural residential SFR units in that area at maximum build out. Absent subdivision development, street improvement financing will not exist, unless outside funding sources can be identified, such as grants to build bike lanes.

12.2.6 Armstrong Avenue

Armstrong Avenue is designated a Collector Street in the Clovis 2014 General Plan and Regional Transportation Plan. The street terminates on the north at the intersection of Teague Avenue, therefore it does not carry significant traffic from areas outside the Dry Creek Preserve. It principally serves a rural residential neighborhood of about 40 existing homes, and the Whisper Creek subdivision, containing 31 homes. Because the Master Plan objective is to preserve the existing rural residential neighborhoods within the Dry Creek Preserve, there is little expectation of future subdivision development within the Armstrong Avenue corridor in the foreseeable future.

Armstrong Avenue has traffic congestion at times, due to the position of Dry Creek Elementary School at the intersection of Armstrong and Nees Avenues. During peak times, the school generates significant traffic. But the school size is unlikely to change significantly, and the roadway is currently able to handle the traffic loads, therefore Armstrong Avenue north of Nees Avenue is planned to remain largely a residential street, with paths intended to provide safe pedestrian passage along the roadway and safe access to and from Dry Creek School. Figure D shows the planned street configuration for Armstrong Avenue.

Armstrong is planned to have one eleven-foot-wide travel lane and a five-foot-wide bike lane in each direction, along with a five-foot-wide pedestrian and bicycle path that is separated from vehicular traffic by a four-foot-wide landscaped strip. The intersection at Nees Avenue will remain a four-way stop, unless future traffic loads increase and warrants for installation of a traffic signal are met. Left turn channelization is not currently present at this intersection, but will be considered as future traffic conditions warrant.

Absent planned development within the area, it is unlikely that the planned pedestrian path and divider strips will be constructed along Armstrong Avenue, unless external grants (e.g., State Safe Routes To School Grant Program) or other financing can be secured.

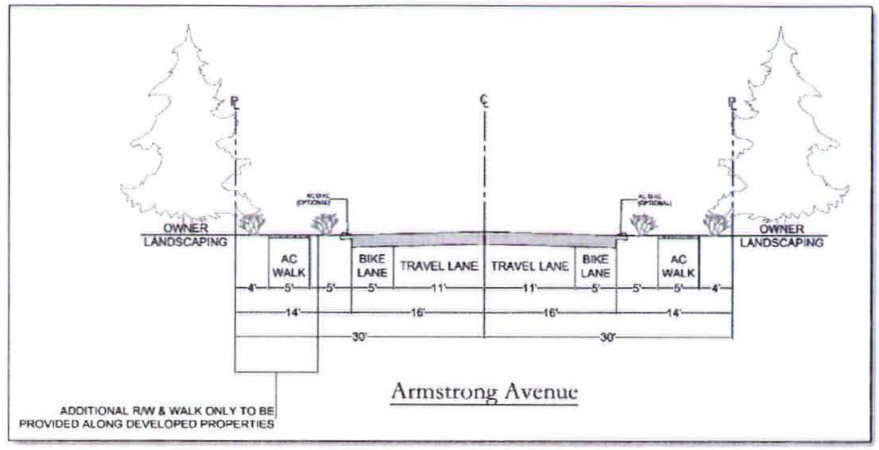


Figure D: Armstrong Avenue

13.0 Concluding Remarks and Vision for the Dry Creek Preserve

The Dry Creek Preserve is truly a unique place – a place with surprisingly sparse development, considering its location in the heart of what Clovis is to become as it gradually occupies its intended footprint. Today, we are at a crossroads in determining the DCP's future destiny and providence as a part of that surrounding urban Clovis Community. Here we have 795 acres of land, of which 747 acres are privately owned, under about 250 individual ownerships. The area is still largely undeveloped, by urban standards, so it offers a more or less blank pallet upon which to create a future landscape. On one hand, we might create yet another intensively developed urban residential area, like so many others that provide their particular array of benefits to the community. They may have architectural, location and price-point distinctions, but to the 30,000 foot view, their variation from the rest of the urban landscape is unremarkable.

We have chosen a different path for the DCP – one that allows the area to offer a reasonable amount of residential development opportunity, including housing on much larger Rural Residential, Estate Level, and/or Low Density lots and parcels, to accommodate a segment of the housing market that is currently underprovided. At the same time, the Dry Creek Preserve will live up to its name, by being "preserved" as a more bucolic place, right in the heart of Clovis, where residents' families can have space enough to enjoy outdoor activities or gatherings, and where visitors to and through the area can enjoy longer, softer landscape views, and hopefully relax and reconnect with Clovis' agricultural roots. Living quality will be the emphasis within the DCP area – both for residents and for Clovis residents who will come to appreciate and utilize the area for enjoyment, passive recreation, and relaxation.

Serious compromises took place to produce this Master Plan. It reflects the results of many discussions, negotiations and compromises. As such, neither the Plan nor its Appendix (Annexation Agreement) should be taken lightly, as future land use and public works decisions are contemplated. The Plan provides a reasonable balance between interests, while providing what we believe to be a unique "Quality of Life" asset for the benefit of Clovis. It provides aesthetic as well as economic benefits, given that new companies seeking to locate in Clovis will appreciate the added range of housing types and the community living quality which this Plan provides. The area's community aesthetic values will exist regardless of whether lands within the DCP are ever annexed into the City Limits. They have existed and been utilized by surrounding City residents for some time. Landowners have become accustomed to having families bicycle or trek through their neighborhoods, interacting with their livestock and enjoying the wildlife that is abundant throughout most of the area. Most owners view that passive recreation as desirable and a part of their land stewardship.

It is hoped that nothing in this Master Plan will materially alter the DCP's long-term cohesiveness as a Clovis community, or change its land uses and character to the extent that landowners and residents no longer appreciate its uniqueness and value. Hopefully the limited development allowed within this Plan will not materially change the character of the area, but will be sufficient to finance any infrastructure that may become critically needed by residents or by the surrounding community in the future. The Dry Creek Preserve will thus continue to be an important Clovis asset.

Appendix A

Draft Annexation Agreement to Protect Landowner Rights During Annexation

DRY CREEK PRESERVE MASTER PLAN

DRY CREEK PRESERVE
ANNEXATION AGREEMENT

ATTACHMENT 4

DRY CREEK PRESERVE MASTER PLAN

POLICY xxxxxxx
FORM ANNEXATION AGREEMENT

RECORDING REQUESTED BY, AND	)
WHEN RECORDED, MAIL TO:	)
	)
City of Clovis	)
1033 Fifth Street	)
Clovis, California 93612	)
ATTN: City Manager	)

(Space above provided for Recorder)
No recording or filing fee required; this document exempt from fee pursuant to California Government Code sections 6103 and 27383.

DRY CREEK PRESERVE ANNEXATION AGREEMENT
APN _____

This Agreement is entered into as of _____, 20__, between the City of Clovis, a California municipal corporation and general law city ("City") and _____, [*an individual, husband and wife, joint tenants*] ("Owner"), including Owner's successor, with respect to the following recitals, which are a substantive part of this Agreement.

RECITALS

A. Owner owns certain property in the County of Fresno, State of California, described as APN _____and located at _____ ("Property").

B. The Property is within an area commonly referred to as the "Dry Creek Preserve" which is within City's Sphere of Influence and identified as "Focus Area 7" in the 2014 Clovis General Plan ("General Plan").

C. Dry Creek Preserve is generally bounded by Nees Avenue on the South, Shepherd Avenue on the North, Armstrong Avenue on the East, and Sunnyside Avenue on the West.[1] The area is zoned County R-R and designated as primarily rural residential in the General Plan. Substantial rural residential development exists in the area, with a few large vacant parcels remaining.

D. The General Plan directs that a master plan be prepared for the entirety of the Dry Creek Preserve area ("Master Plan") prior to any development, and that any development respect the rural residential character of the Dry Creek Preserve.

[1] The precise boundaries are Nees Avenue, the curved alignments of Fresno Irrigation District's Enterprise Canal, and Dry Creek alignment.

E. Consistent with the General Plan, on _____ 2018, City approved a Master Plan. The Master Plan includes a land use plan of development compatible with the rural residential nature of the area ("Land Use Plan"), design guidelines to preserve the rural residential character of the area ("Design Guidelines"), and an annexation program and policy ("Annexation Program").

G. The Annexation Program is designed to address the annexation of the entire Dry Creek Preserve over a period of time as rural residential compatible developments are proposed. Part of the Annexation Program is an annexation agreement ("Annexation Agreement") for those properties that are not part of a proposed development project but are either required to be annexed concurrently with the development project, or are expected to be annexed as part of the broader Annexation Program ("Non-Development Properties").

NOW, THEREFORE, for the consideration set forth herein, the parties agree as follows:

SECTION 1
BENEFITS TO OWNER

As Owner of a Non-Development Property, the following benefits shall be provided to the Owner upon annexation:

1.1. Permitted Uses. The following uses shall be allowed on the Property:

(a) Those uses lawfully allowed to exist under the applicable Fresno County Code at the time of annexation; or

(b) Those uses permitted under the City's Municipal Code after annexation.

Legally non-conforming uses under the County Code may only be allowed to continue if Owner can demonstrate that the legally non-conforming use was grandfathered in under a pre-existing County Code and the time to remove the legal non-conformity has not expired.

1.2. Farm Animals. Owner may keep farm animals to the extent the keeping of farm animals was lawfully allowed to exist under the applicable County Code for Rural Residential ("RR") properties in the County at the time of annexation, or as otherwise lawfully allowed under City's Municipal Code for the designated zoning upon annexation.

1.3. Use of Water Wells. Owner may continue to use existing water well(s) and defer connection to the Clovis water system, even if a City water service connection is available to the property. Use and maintenance of the system will remain the responsibility of the property owner and the well must be kept in a condition consistent with Fresno County Environmental Health Department standards as if the Property were still in the unincorporated portion of Fresno County.

If a new well becomes necessary, Owner may drill a new well provided Owner abandons all wells being replaced. The drilling, deepening, and abandonment of any wells shall be in

accordance with State and County standards for wells in effect at the time. If Owner connects to the Clovis water system, Owner may continue to use the existing well(s) on the Property, including maintenance or replacement consistent with this section, for landscaping purposes so long as no cross connection is made between the well(s) and residence on the Property.

Upon any intensification of use as set forth in the Change in Use section of this Agreement, or this Agreement otherwise terminating, Owner will be required to connect to Clovis' water system if it is available.

A water service connection will be deemed available to the Property if (a) the Property is within the City limits, and (b) a water service connection has been constructed and is available for use in any public street, alley, easement, or right-of-way adjacent to a lot or within one hundred feet (100') of the Property. Owner shall be responsible for paying all costs associated with connection to the Clovis water system.

1.4. Use of Septic Tanks. Owner may continue to use and maintain their existing septic tank on the property, even if a City sewer service connection is available to the property, for a period of three (3) years after annexation. Use and maintenance of the system will remain the responsibility of the Property owner and the septic system must be kept in a condition consistent with Fresno County Environmental Health Department standards as if the Property were still in the unincorporated portion of Fresno County.

If a septic system fails and City sewer service connection is not available, or if City sewer service is available but Owner has obtained a deferral per the criteria set forth below, the onsite septic system may be replaced in accordance with State and County standards for septic systems in effect at the time.

Within three years of a sewer service connection being available to the Property, Owner shall either connect to the City sewer system or obtain a deferral under the criteria set forth below. Connection or deferment is only required upon City notification to the Owner of the need to connect to the City system.

Upon any intensification of use as set forth in the Change in Use section of this Agreement, or this Agreement otherwise terminating, Owner will be required to connect to Clovis' sewer system if it is available.

A sewer service connection will be deemed available to the Property if (a) the property is within the City limits, and (b) a sewer service connection has been constructed and is available for use in any public street, alley, easement, or right-of-way adjacent to a lot or within one hundred feet (100') of the Property. Owner shall be responsible for paying all costs associated with connection to the Clovis sewer system.

Deferral Criteria

(a) The septic system must comply with current State standards.

(b) The septic system may not have leach fields or tanks within areas that are flood irrigated.

(c) The owner must provide a diagram of the septic system's location and proof that the septic system is in good working order. The diagram and acceptable proof may be provided by having a licensed septic company inspect the septic system and provide documentation that the system is functioning properly and of a design that meets State standards.

(d) Deferments must be renewed every ten (10) years.

1.5. Solid Waste Service. Owner shall have the choice of changing to City solid waste service immediately, or staying with their existing franchised service provider through the County for up to five (5) years from the date of annexation.

City's basic residential refuse and recycling service is centered on urban waste production. Rural residential properties can generate waste material in quantities or types that require additional services above City's standard waste pickup. Therefore, when Owner is ready to change to City service it will be necessary to work directly with City's solid waste division to determine the best way City can service Owner's solid waste needs.

1.6. Irrigation Water. In the ordinary course, City requires that as a condition of connection to the City water system, a property owner agree to transfer to City all rights and privileges to the use of surface water supplies through FID. Based upon the unique nature of the Dry Creek Preserve and existing rural usage of the Property, City agrees to allow Owner the option to continue existing use of surface water supplies through FID after annexation and connection to the City water system under the following terms and conditions:

(a) Before connection to the City water system, either prior to or after annexation, Owner, in its sole and absolute discretion, shall elect one of the following options:

OPTION A: Owner shall transfer any and all access, rights and privileges to the use of surface irrigation supplies through FID on the Property, to the extent the same exists, to the City of Clovis, and shall pay to the City of Clovis the then-applicable non-refundable "Water Supply Fee" as if the Property was within the jurisdiction of FID, in addition to any other applicable fees and charges. (Based on the May 4, 2015 Master Development Fee Schedule, the Water Supply Fee within the jurisdiction of FID is $1,250 per unit, based on a density of 0.5 Units/Acre.)

OPTION B: Owner shall retain any and all access, rights and privileges to the use of surface irrigation supplies through FID on the Property, to the extent the same exists, and shall pay to the City of Clovis the then-applicable non-refundable "Water Supply Fee" as if the Property was outside the jurisdiction of FID, in addition to any other applicable fees and charges. (Based on the May 4, 2015 Master Development Fee Schedule, the Water Supply Fee outside the jurisdiction of FID is $3,875 per unit, based on a density of 0.5 Units/Acre.)

(b) If Owner elects to retain any and all access, rights and privileges to the use of surface irrigation supplies through FID on the Property, the City of Clovis shall not restrain, restrict, curtail, or divest the exercise of such access, rights and privileges provided such exercise is in accordance with applicable laws, rules, and regulations of the State of California, the County of Fresno, and FID. The City shall have the right to implement requirements imposed on the City under the Sustainable Groundwater Management Act (SGMA) and any regulations adopted by

the North Kings Ground Water Sustainability Agency, including those that arise from the Groundwater Sustainability Plan (GSP).

(c) If subsequent to connection to the City water system, use of the Property intensifies (as that term is defined in Section 1.8 of this Agreement), Owner shall transfer any and all access, rights and privileges to the use of surface irrigation supplies through FID on the Property, to the extent the same exists, to the City of Clovis.

1.7. Addressing. Owner acknowledges that as part of the annexation process, the address of each property within an annexed area will be required to change from a County address to a City address. The address change will be pursuant to City policy. Changing to a City address will allow Clovis Police and Fire to correctly dispatch calls for service to these areas without delay.

1.8. Change in Use. The provisions of this Agreement shall remain in effect and run with the land so long as use of the Property does not intensify. Intensification means:

(a) Subdivision of the land into any density greater than 0.5 Units/Acre (2 acre parcels). If after annexation Owner subdivides the Property into a density greater than 0.5 Units/Acre as allowed by the Master Plan, but retains Owner's original primary residence on a remainder rural residential parcel, the remainder parcel shall not be considered intensified and this Agreement shall run with the remainder parcel. The newly created parcels shall be subject to applicable provisions of City's Development Code.

(b) The addition of additional residential units, except that up to one second residential unit shall be allowed on the Property as permitted by City's accessory dwelling unit ordinance.

(c) The division, or development of commercial, office or industrial uses on the Property, except that rural residential compatible uses shall be allowed as provided for in Section 1.1.

Should use of the Property intensify following annexation, this Agreement shall terminate, and all Clovis ordinances and standards in effect at the time shall govern and be complied with by Owner, or Owner's successors, heirs, and assigns.

1.9. Subdivision into Rural Residential Parcels. If after annexation Owner subdivides the Property into 0.5 Units/Acre or lower density rural residential parcels, the following shall be applicable:

(a) The subdivision shall be subject to applicable provisions of Fresno County's Development Code at the time of approval of the subdivision as if the property were still in the unincorporated portion of Fresno County or Owner may elect to be apply City's Development Code.

(b) No new water wells shall be constructed if a City water connection is available, as defined in Section 1.3, at the time a building permit is pulled for any structure on the newly created parcel. Any new water well shall be in compliance with State and County standards as applicable, and the provisions of section 1.3.

Exception: Even if a City water connection is available, a well may be constructed solely for landscaping purposes. The construction of such well shall be in compliance with State and County standards as applicable. No well shall become operational unless, and until, City has had an opportunity to verify that the well is not used for potable purposes and there are no cross connections with City's water system.

(c) No new septic systems shall be constructed if a City sewer connection is available, as defined in Section 1.4, at the time a building permit is pulled for any structure on the newly created parcel. Any new septic system shall be in compliance with State and County standards as applicable, and the provisions of section 1.4.

(d) If an owner of the subdivided parcel has acquired any rights and privileges to the use of surface water supplies through FID, the new owner shall comply with the provisions of Section 1.6.

(e) Nothing in this section is intended to confer more rights to Owner than would have existed had the Property remained in the unincorporated portion of Fresno County.

1.10. Term of Agreement. This Agreement shall run with the Property, subject to the provisions of Sections 1.8 (Change in Use).

SECTION 2
BENEFITS TO CITY

In consideration of City providing the benefits to Owner in Section 1, City shall receive the following benefits:

2.1. Acceptance of Master Plan. Owner recognizes and accepts the Master Plan as establishing the framework for development in Dry Creek Preserve.

2.2. Acceptance of Annexation Program. Owner recognizes and accepts the Annexation Program as establishing the probable framework for annexation of properties within Dry Creek Preserve.

2.3. Consent to Annexation. Owner consents to annexation of Owner's Property in accordance with the Annexation Program. In that regard, Owner agrees to do the following: (1) sign any request by the City, the County, LAFCo, or a developer to consent to annexation of the Property; and (2) not oppose or protest annexation of the Property in any proceeding.

2.4. Failure to Consent to Annexation. If Owner fails to consent to annexation as set forth in Section 2.3, or if Owner, any subsequent owner of the Property, or any registered voter residing on the Property objects to or withdraws consent to City's annexation of the Property, this Agreement shall be null and void even if annexation is ultimately approved and the Property is annexed.

2.5. Effectiveness of Agreement; Termination of Agreement. This Agreement will only be effective if the Property is annexed into the City of Clovis. Termination of this Agreement after annexation of the Property shall have no effect on the annexation.

2.6. Loss of Owner Benefits. If this Agreement becomes null and void or terminates, Owner shall not be entitled to the benefits set forth in Section 1 of this Agreement.

2.7. Non-Precedent Setting. This Agreement is unique to Dry Creek Preserve and the circumstances surrounding Dry Creek Preserve and in no way shall be considered precedent setting, persuasive, or binding on City in any other circumstance.

SECTION 3
MISCELLANEOUS

3.1. Voluntary Agreement; Construction; Authority. The parties represent that they have read this Agreement in full and understand and voluntarily agree to all of its provisions. The parties each further declare that prior to signing this Agreement they apprized themselves of relevant information through sources of their own selection, including but not limited to consulting or having the opportunity to consult with legal counsel of their own choosing. In executing this Agreement, neither party has relied upon any statements of the other party or any third party concerning the meaning or import of this Agreement or any portion thereof. This Agreement was negotiated between the parties at arm's length and was prepared by and among each party and/or their duly appointed attorneys. Accordingly, the parties expressly waive the provisions of Civil Code section 1654 and acknowledge and agree that the Agreement shall not be deemed prepared or drafted by any one party, and shall be construed accordingly. The parties further represent that they have, as of the date of execution of this Agreement, the legal capacity and authority to sign this Agreement.

3.2. Severability. If any section of this Agreement is found by competent authority to be invalid, illegal or unenforceable in any respect for any reason, the validity, legality and enforceability of such section in every other respect and the remainder of this Agreement shall continue in effect so long as the Agreement still expresses the intent of the Parties. However, if the intent of the parties cannot be preserved, this Agreement shall be renegotiated.

3.3. Integration. The Recitals set forth above are hereby incorporated in and made a part of this Agreement by this reference. This Agreement contains the entire and only understanding between the Parties with respect to the subject matter hereof and supersedes any prior or collateral agreements, negotiations and communications in connection with the subject matter covered herein, whether oral or written, and any warranty, representation, promise, or condition in connection therewith not incorporated herein shall not be binding upon either party.

3.4. Recording of Agreement. Owner consents to Clovis recording this Agreement in the Office of the County Recorder of the County of Fresno.

3.5. Conflict with State or Federal law. To the extent this Agreement contains provisions in conflict with State or federal law, including judicial or administrative decisions, the State or federal law shall control.

WHEREFORE, the parties hereto, by their signatures below, enter into this Agreement.

CITY OF CLOVIS

Signed: _____
By: Luke Serpa , City Manager
Dated: _____

ATTEST:

Signed: _____
By: John Holt, City Clerk

Dated: _____

OWNER

Signed: _____
By: _____
Dated: _____

Signed: _____
By: _____
Dated: _____

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PLANNING COMMISSION MINUTES
DRY CREEK PRESERVE MASTER PLAN

ATTACHMENT 5

CLOVIS PLANNING COMMISSION MINUTES
April 26, 2018

A. Consider items associated with approximately 795 acres generally bounded by Nees Avenue on the south, Big Dry Creek on the west, Enterprise Canal on the east, and Shepherd Avenue on the north, commonly referred to as the Dry Creek Preserve. City of Clovis, applicant.

   1. Consider Approval Res. 18-__, A request to approve an environmental finding of a Mitigated Negative Declaration for the Dry Creek Preserve Master Plan, Annexation Agreement, General Plan Amendment GPA2016-06, Prezone R2016-07, and Vesting Tentative Tract Map TM6154.

   2. Consider Approval Res. 18-__, A request to approve a Master Plan and Annexation Agreement for Focus Area 7 in the General Plan.

City Planner Bryan Araki presented the staff report, and offered to answer questions.

Commissioner Cunningham sought and received confirmation that the item would require two votes.

At this point, the Chair opened the floor to those in favor.

Dale Mitchell of 8300 N. Marion Avenue, a member of the Dry Creek Preserve Neighborhood Committee, provided background on the project from the neighborhood residents' perspective, from start to finish, including the cooperation that went into it and requested that this work be taken seriously.

Chair Hinkle expressed his appreciation that all parties were able to get together and work on this project.

Mr. Mitchell reminded the Commission that his committee had had significant concerns regarding the environmental document in November, they had worked with City staff on the studies, they have a high level of confidence in the environmental document, and to his knowledge there were few comments filed by the public or agencies, which in his experience is a sign of excellence.

Matt Smith with Woodside Homes, 9 River Park Place East, Suite #130, Fresno, expressed excitement and hope, providing background and the intended general development pattern from the developer perspective to give context.

Robert Lupe Alvarez of 5200 E. Cole Avenue expressed concern about the fencing behind his property, particularly the material to be used, and he requested that construction be a minimum of 200 feet from the property line and that there be no two-story homes behind his property.

Tom Bell of 5637 E. Cole Avenue provided some background on the annexation agreement, and stated that it protects the rights and lifestyles of the residents, and that though it's not perfect he hopes the Commission will appreciate all of the hard work that's gone into it.

Marcus Dibuduo of 5137 E. Cole Avenue provided context to the concerns of Bob (Robert Lupe Alvarez) and supported them. He was also primarily supportive of the annexation agreement while looking for clarification/modification of several points in it.

Troy McKinney of 5137 E. Teague Avenue, who also owns 5777 E. Teague Avenue (both of which are within the Dry Creek Preserve area), supports the residents' wish to preserve their lifestyle while also wishing to develop his second, large lot. Therefore, he supports this plan as being good and fair.

Dustin Hamel of 8163 N. Fowler Avenue expressed support for the project and appreciation for all who had worked on it.

At this point, the Chair opened the floor to those in opposition.

Paul Peters of 8123 N. Fowler Avenue objected to the increase in traffic and accidents at Fowler and Teague Avenues, wanting Fowler improved/expanded first. He also objected to the aspects of the plan involving septic systems, irrigation systems, the right to protest development around him, and the waste system. He also stated that support isn't as high as claimed.

Marcus Dibuduo of 5137 E. Cole Avenue expressed 5% opposition for reasons he stated previously.

Russ Anderson, owner of 8309 N. Armstrong Avenue, expressed that he neither opposes nor supports the project, but rather has concerns: sewer hookup costs and timeframes, water rights, and setbacks for two-story homes. Otherwise, he thinks it's a good plan.

At this point, the Chair closed the public portion.

Commissioner Cunningham asked if the applicant wished to expound upon anything the speakers brought up.

City Attorney David Wolfe responded that they are willing to look at additional language in the annexation agreement before the City Council meeting. He provided information on the sewer deferral issue and offered to look at it some more. He also addressed the 120-day window brought up by one of the speakers.

Chair Hinkle inquired as to whether there was something that restricted developers from building two-story homes if within 100 feet of a property with a home behind the development.

City Planner Araki confirmed and explained the relevant condition.

Commissioner Terrence sought confirmation that this restriction would apply to the properties behind the gentleman who had raised this objection (Robert Lupe Alvarez).

City Planner Araki explained that this wouldn't necessarily be the case, as the condition states that it within 100 feet of the home, not the property line, and provided more explanation.

Commissioner Terrence inquired as to whether there had been discussion on restricting certain lots to single-story homes, as has happened previously on other projects.

City Planner Araki stated that it had been considered and explained the discussion that led to the decision that 100 feet from another residence is appropriate here.

Chair Hinkle expressed concern about the northern area of the project area having flooding/standing water that may affect the road set to go across that location. He also expressed concern that the Department of Fish and Wildlife has not contacted to make a final decision on whether or not this is a vernal pool or not, which would alleviate the City of Clovis from future problems or lawsuits. His concern is based on personal experience. He therefore requested a condition of approval addressing the outcome of inspection by the Department of Fish and Wildlife.

City Planner Araki responded that the Master Plan and environmental document would not include conditions, but that the environmental document would include mitigation where something could be added in based on evidence, then offered the opportunity to allow the biologist who performed the study to speak.

Kathy Kinsland, a wetlands biologist/senior scientist with Argonaut Ecological of 2377 Gold Meadow Way, Gold River, provided background information on and explanation of wetland studies, including that wetlands are regulated by the U.S. Army Corps of Engineers rather than the Department of Fish and Wildlife, as well as the results of her study on this particular project, addressing Chair Hinkle's concerns.

Chair Hinkle inquired as to when this study was performed. Kinsland responded that she was unsure in her recall, but that it may have been in the fall of 2017, or in the December-January period, but that it was fairly recent.

Chair Hinkle questioned the dominant presence of a wetland grass, to which Kinsland responded that though it is there at points, the area does not meet all of the criteria of a wetland.

Chair Hinkle inquired as to the fact that the soil that had been 'ripped.' Kinsland explained that historically there had been a wetland there years ago that someone had filled in, ripping the soil hardpan and basically draining the area, including more detail.

Chair Hinkle inquired as to whether Kinsland had excavated the area and how deep it went. Kinsland confirmed that she had, and that she went fourteen to sixteen inches. Chair Hinkle sought confirmation that the excavation had not gone down to hardpan if any existed, to which Kinsland replied that she did not encounter any hardpan. Chair Hinkle stated his belief that this would be evidence of no subsoiling/ripping, to which Kinsland responded that this is not necessarily the case, as she did not know what had been done after the ripping, such as excavating and moving the material, or filling it in with other material, such as from pool contractors. Chair Hinkle stated that if the basin was higher than previously, then there is the possibility that the hardpan is deeper than the excavation went. Kinsland confirmed that that is a possibility but that such does not make this area a wetland any longer.

Commissioner Cunningham sought and received confirmation that Kinsland was involved in the biological study for the Dry Creek Preserve area, and that the report had addressed the historical presence of a wetland.

Commissioner Cunningham remarked that, having watched this process for several years, he was impressed with the collaboration between Woodside, the homeowners, and the City staff.

Commissioner Hatcher remarked that, having seen the previous attempts to get this through, this master plan is very specific and thorough, and expressed appreciation for all of the work that has gone into it.

At this point a motion was made by Commissioner Cunningham and seconded by Commissioner Hatcher to approve a finding of Mitigated Negative Declaration for the Dry Creek Preserve Master Plan, Annexation Agreement, General Plan Amendment GPA2016-06, Prezone R2016-07, and Vesting Tentative Tract Map TM6154. The motion was approved by a vote of 3-1-1 with Chair Hinkle voting no.

Commissioner Hatcher inquired as to whether there would be the need for new verbiage if there are changes to the annexation agreement before it goes to City Council. City Attorney Wolfe assured that this would not be the case, as the bones of the agreement are already in place. City Planner Araki assured that if there were any major changes, then the agreement would likely come back before the Commission, but not if the changes are minor.

At this point a motion was made by Commissioner Cunningham and seconded by Commissioner Hatcher to approve a Master Plan and Annexation Agreement for Focus Area 7 in the General Plan. The motion was approved by a vote of 4-0-1.