Exhibit 6:
IS/MND and Response to Comments

ASCENT ENVIRONMENTAL

SEPTEMBER 2017

Initial Study/Mitigated Negative Declaration

Fresno Rendering Plant Relocation Project

City of FRESNO

PREPARED FOR:
City of Fresno

Initial Study/Mitigated Negative Declaration
Fresno Rendering Plant Relocation Project

PREPARED FOR:

City of Fresno
Contact: Mike Sanchez, AICP, MCRP, Assistant Director
559.621.8040

PREPARED BY:

Ascent Environmental
Contact: Mike Parker, AICP
916.444.7301

September 7, 2017

16010079.01

TABLE OF CONTENTS

Chapter			Page
ACRONYMS AND ABBREVIATIONS			iv
1	INTRODUCTION		1-1
	1.1	Introduction and Regulatory Guidance	1-1
	1.2	Why this Document?	1-1
	1.3	Summary of Findings	1-2
	1.4	Environmental Permits	1-2
	1.5	Document Organization	1-2
2	PROJECT DESCRIPTION		2-1
	2.1	Project Location and Setting	2-1
	2.2	Project Characteristics	2-4
3	ENVIRONMENTAL CHECKLIST		3-1
	3.1	Aesthetics	3-5
	3.2	Agriculture and Forest Resources	3-9
	3.3	Air Quality	3-13
	3.4	Biological Resources	3-18
	3.5	Cultural Resources	3-28
	3.6	Geology and Soils	3-32
	3.7	Greenhouse Gas Emissions	3-35
	3.8	Hazards and Hazardous Materials	3-39
	3.9	Hydrology and Water Quality	3-45
	3.10	Land Use and Planning	3-50
	3.11	Mineral Resources	3-51
	3.12	Noise	3-52
	3.13	Population and Housing	3-64
	3.14	Public Services	3-65
	3.15	Recreation	3-67
	3.16	Transportation/Traffic	3-68
	3.17	Tribal Cultural Resources	3-84
	3.18	Utilities and Service Systems	3-85
	3.19	Mandatory Findings of Significance	3-89
4	REFERENCES		4-1
5	LIST OF PREPARERS		5-1

<u>Appendices</u>

Appendix A Odor Control Plan
Appendix B Air Quality, Greenhouse Gas, and Noise Modeling Details
Appendix C SJVAPCD Best Performance Standards Example
Appendix D Traffic Study

<u>Exhibits</u>

Exhibit 2-1 Project Vicinity 2-2
Exhibit 2-2 Project Site 2-3
Exhibit 2-3 Preliminary Site Plan 2-4
Exhibit 2-4 Land Use 2-5
Exhibit 2-5 Zoning 2-7
Exhibit 2-6 Existing Rendering Plant Location 2-8
Exhibit 2-7 Truck Route 2-13
Exhibit 2-8 Off-Site Facilities 2-14

Exhibit 3-1 Existing Views of the Project Site 3-6
Exhibit 3-2 Views of Existing Facilities 3-7
Exhibit 3-3 Farmland Mapping and Monitoring Program (FMMP) Designations 3-11
Exhibit 3-4 CNDDB Occurrences within 5-miles of the Project Site 3-21

<u>Tables</u>

Table 2-1 Required Permits and Licenses for the Darling Facility 2-9
Table 2-2 Anticipated Flow and Loading Ranges 2-10
Table 2-3 Anticipated Darling Vehicle Types 2-11

Table 3-1 Special-Status Wildlife with Potential to Occur in the Project Vicinity 3-22
Table 3-2 Estimated GHG Emissions Associated with Project Construction Activities by Construction Year 3-37
Table 3-3 Summary of Annual GHG Emissions Associated with the Project at Full Buildout in 2020 3-38
Table 3-4 City of Fresno Transportation (Non-Aircraft) Noise Sources 3-54
Table 3-5 County of Fresno Noise Control Ordinance: Exterior Noise Standards (dB) 3-55
Table 3-6 County of Fresno Noise Control Ordinance: Interior Noise Standards (dB) 3-55
Table 3-7 County of Fresno Maximum Acceptable Noise Levels (dB) 3-55
Table 3-8 Noise Levels Generated by Typical Construction Equipment 3-57
Table 3-9 Noise Levels Generated by Typical Operational Equipment 3-58
Table 3-10 Modeled Traffic Noise Levels along Truck Access Route under Existing Conditions 3-59
Table 3-11 Modeled Traffic Noise Levels along Truck Access Route under Existing-Plus-Project Conditions 3-60

Table 3-12 Net Change Modeled Traffic Noise Levels along Truck Access Route under Existing-Plus-Project Conditions 3-61
Table 3-13 Representative Ground Vibration and Noise Levels for Construction Equipment 3-62
Table 3-14 Intersection Level of Service Criteria 3-69
Table 3-15 Roadway Functional Class and Peak Hour LOS Thresholds 3-70
Table 3-16 Peak Hour Intersection Level of Service – Existing Conditions 3-75
Table 3-17 Peak Hour Roadway Segment Level of Service – Existing Conditions 3-75
Table 3-18 Project Employee and Truck Trip Generation 3-78
Table 3-19 Project Trip Distribution 3-78
Table 3-20 Peak Hour Intersection Level of Service – Existing Plus Project Conditions 3-79
Table 3-21 Peak Hour Roadway Segment Level of Service – Existing Plus Project Conditions 3-80
Table 3-22 Peak Hour Intersection Level of Service – Cumulative Plus Project Conditions 3-80
Table 3-23 Peak Hour Roadway Segment Level of Service – Cumulative Plus Project Conditions 3-81
Table 3-24 Peak Hour Intersection Level of Service – Cumulative Plus Project Conditions (Mitigated) 3-82

ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ADT	average daily trips
ATC	Authority to Construct
BACT	best available control technology
BMPs	best management practices
BPS	best performance standards
Btu	British thermal units
CAA	Clean Air Act
CAAA	federal Clean Air Act Amendments of 1990
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CBC	California Building Code
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
City	City of Fresno
CNEL	community noise equivalent level
CO	carbon monoxide
County	County of Fresno
CUP	conditional use permit
Darling	Darling Ingredients Inc.
dB	decibels
DTSC	California Department of Toxic Substances Control
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
ESA	Phase I environmental site assessment
FAX	Fresno Area Express
FCRTA	Fresno County Rural Transit Agency
FEMA	Federal Emergency Management Agency
FID	Fresno Irrigation District
FMFCD	Fresno Metropolitan Flood Control District
FOG	fats, oils, and grease
Fresno COG	Fresno Council of Governments
Fresno GP MEIR	City of Fresno General Plan and Development Code Update Master Environmental Impact Report
FTA	Federal Transit Administration
FYI	Fresno Yosemite International Airport
GPA	general plan amendment
gpd	gallons per day
HCM	Highway Capacity Manual
HSC	Health and Safety Code
IH	Industrial-Heavy
in/sec	inches per second
IPaC	Information, Planning, and Conservation System

IS/ MND	Initial Study/ Mitigated Negative Declaration
kVA	kilovolt-ampere
lbs	pounds
L_{dn}	day-night average sound level
L_{eq}	equivalent continuous sound level
L_{max}	maximum sound level
LOS	level of service
L_v	root mean square velocity
L_x	noise level exceeded X percent of a specific period of time
MBTA	Migratory Bird Treaty Act
MEIR	Master Environmental Impact Report
mg/L	milligrams/liter
MGD	million gallons per day
$MTCO_2e$	metric ton of carbon dioxide eqivalent
MS_4s	Municipal Separate Storm Sewer Systems
NAHC	Native American Heritage Commission
NOP	notice of preparation
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NSR	New Source Review
OPR	Governor’s Office of Planning and Research
PG&E	Pacific Gas & Electric
PI	Public and Institutional
PM	particulate matter
PPV	peak particle velocity
PRC	Public Resources Code
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
RWRF	regional wastewater reclamation facility
SB	Senate Bill
SDMP	Storm Drainage Master Plan
sf	square feet
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SOI	sphere of influence
SO_x	sulfur oxides
SPCC	spill prevention control and countermeasures
SSJVIC	Southern San Joaquin Valley Information Center
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCRs	tribal cultural resources
TDF	travel demand forecasting
TIZ-I	Traffic Impact Zone I
TIZ-II	Traffic Impact Zone II

TIZ-III	Traffic Impact Zone III
TIZ-IV	Traffic Impact Zone IV
tpy	tons per year
TSS	total suspended solids
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
VdB	vibration decibels
VMT	vehicle miles traveled

1 INTRODUCTION

1.1 INTRODUCTION AND REGULATORY GUIDANCE

This Initial Study/ Mitigated Negative Declaration (IS/MND) has been prepared by the City of Fresno to evaluate potential environmental effects resulting from proposed relocation and expansion of the existing rendering facility located on Belgravia Road between Church Avenue and E Street. The project would relocate the facility from its current location, just southwest of downtown, to a 40-acre site near the Fresno-Clovis Regional Wastewater Treatment Plant (WWTP) and expand its permitted processing limits from 850,000 pounds per day to a permitted maximum of 10 million pounds per week. The project would require a general plan amendment (GPA) to change the General Plan land use designation of the receiving site from Public Facility to Heavy Industrial, and a rezone of the same property from Public and Institutional (PI) to Industrial-Heavy (IH). Section 2 "Project Description" presents the detailed project information.

This document has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.). An initial study is prepared by a lead agency to determine if a project may have a significant effect on the environment (State CEQA Guidelines Section 15063[a]), and thus to determine the appropriate environmental document. In accordance with State CEQA Guidelines Section 15070, a "public agency shall prepare…a proposed negative declaration or mitigated negative declaration…when: (a) The Initial Study shows that there is no substantial evidence…that the project may have a significant impact on the environment, or (b) The Initial Study identifies potentially significant effects but revisions to the project plans or proposal are agreed to by the applicant and such revisions would reduce potentially significant effects to a less-than-significant level." In this circumstance, the lead agency prepares a written statement describing its reasons for concluding that the project would not have a significant effect on the environment and, therefore, does not require the preparation of an Environmental Impact Report (EIR). By contrast, an EIR is required when the project may have a significant environmental impact that cannot clearly be reduced to a less-than-significant effect by adoption of mitigation or by revisions in the project design.

1.2 WHY THIS DOCUMENT?

As described in the environmental checklist (Chapter 3), the project would not result in any unmitigated significant environmental impacts. Therefore, an IS/MND is the appropriate document for compliance with the requirements of CEQA. This IS/MND conforms to these requirements and to the content requirements of State CEQA Guidelines Section 15071.

Under CEQA, the lead agency is the public agency with primary responsibility over approval of the project. The City of Fresno is the CEQA lead agency because it is responsible for approving the proposed rendering plant relocation. The purpose of this document is to present to decision-makers and the public information about the environmental consequences of implementing the project. This disclosure document is being made available to the public for review and comment. This IS/MND will be available for a 30-day public review period from September 7, 2017 to October 9, 2017.

Supporting documentation referenced in this document is available for review at:

Development and Resource Management
2600 Fresno St, Room 3065
Fresno, CA 93721

Comments should be addressed to:

Mike Sanchez, AICP, MCRP, Assistant Director
Development and Resource Management
2600 Fresno St, Room 3065
Fresno, CA 93721

E-mail comments may be addressed to: Mike.sanchez@fresno.gov

If you wish to send written comments (including via e-mail), they must be postmarked by October 9, 2017.

After comments are received from the public and reviewing agencies, the City may (1) adopt the MND and approve the project; (2) undertake additional environmental studies; or (3) abandon the project. If the project is approved and funded, the project proponent may proceed with the project.

1.3 SUMMARY OF FINDINGS

Chapter 3 of this document contains the analysis and discussion of potential environmental impacts of the project. Based on the analysis of relevant issues, it was determined that the project would have either no impact or less-than-significant impacts for most of the issue areas identified in the Environmental Checklist, included as Appendix G of the State CEQA Guidelines. These include the following issue areas:

- agricultural resources
- geology and soils
- land use and planning
- mineral resources
- population and housing
- public services
- recreation
- utilities and service systems
- mandatory findings of significance

Potentially significant impacts were identified for aesthetics, air quality, biological resources, cultural resources, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, and traffic; however, mitigation measures included in the IS/MND would reduce all impacts to less-than-significant levels.

1.4 ENVIRONMENTAL PERMITS

In addition to approval of requested City entitlements, the project would require permits from the California Department of Food and Agriculture, County of Fresno Department of Public Health, US Environmental Protection Agency (EPA), the State Water Resources Control Board, the San Joaquin Valley Air Pollution Control District, and the City of Fresno. These permits are described in Section 2 “Project Description.”

1.5 DOCUMENT ORGANIZATION

This IS/MND is organized as follows:

Chapter 1: Introduction. This chapter introduces the environmental review process. It describes the purpose and organization of this document and presents a summary of findings.

Chapter 2: Project Description and Background. This chapter describes the background of the proposed project and provides a detailed description of the project characteristics.

Chapter 3: Environmental Checklist. This chapter presents an analysis of a range of environmental issues identified in the CEQA Environmental Checklist and determines for each if project actions would result in no impact, a less-than-significant impact, a less-than-significant impact with mitigation incorporated, or a potentially significant impact. If any impacts were determined to be potentially significant, an EIR would be required. For this project, however, none of the impacts were determined to be significant after implementation of mitigation measures.

Chapter 4: References. This chapter lists the references used in preparation of this IS/MND.

Chapter 5: List of Preparers. This chapter identifies report preparers.

This page intentionally left blank.

2 PROJECT DESCRIPTION

The City of Fresno is considering a general plan amendment (GPA) and rezone of approximately 40 acres of land adjacent to the City's wastewater treatment plant to accommodate relocation of the Darling Ingredients, Inc. rendering facility from a more urban location in the city. The project, including necessary entitlements and other approvals, is described in detail below.

2.1 PROJECT LOCATION AND SETTING

2.1.1 Location and Physical Setting

The project site is located within the city limits, but not within the city proper; the site is located just east of the Fresno-Clovis Regional Wastewater Reclamation Facility (RWRF) within a large island of incorporated, City-owned property along West Jensen Avenue. The site consists of 40 acres of land used for row crop cultivation (currently alfalfa). This land is located within a 3,200-acre area of incorporated land and is separated from the rest of the city by over 2 miles (Exhibit 2-1).

The project site is located between the RWRF and a PG&E substation at the southwest corner of South Cornelia Avenue and West Jensen Avenue. The RWRF treatment facilities occupy 180 acres (located adjacent to the western boundary of the project site) and percolation ponds occupy an additional 1,700 acres.

Most of the area surrounding the project site is in agricultural use (vineyards, orchards, and various row crops). A few agricultural residences are in the vicinity; the nearest two residences are approximately 1,200 feet northeast of the site and 1,300 feet southeast of the site, both on the east side of South Cornelia Avenue. (Exhibit 2-2). The northwest corner of the project site is not cultivated, but the ground is disturbed. There are no structures on the site, except for two metal-lattice electrical transmission towers supporting overhead power lines that bisect the site in an east-west direction.

2.1.2 Land Use Designations and Zoning

The project site is currently designated "Public Facility" in the Fresno General Plan (Exhibit 2-4) and zoned "Public and Institutional" (PI) (Exhibit 2-5). The Public Facility designation applies to public facilities such as City and County buildings, schools, colleges, municipal airports, hospitals, fire and police stations, recycling centers, sewage treatment plants, parks, trails, recreational centers, and golf courses.

Consistent with the General Plan designation, the PI zone allows public or quasi-public facilities, including City facilities, utilities, schools, health services, corporation yards, utility stations, and similar uses. Accessory retail uses and services, including food facilities and childcare, are permitted by right.

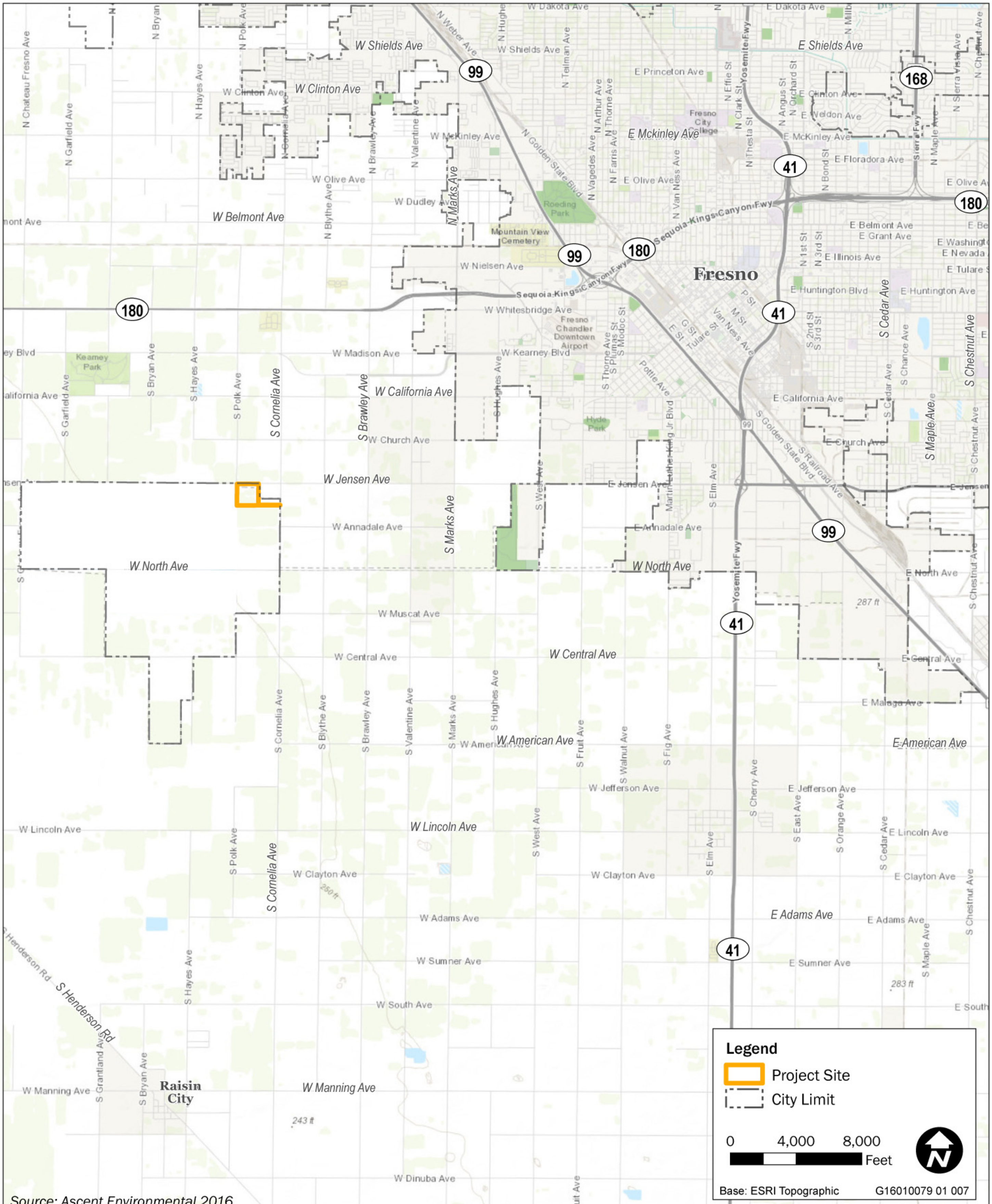


Exhibit 2-1 **Project Vicinity**

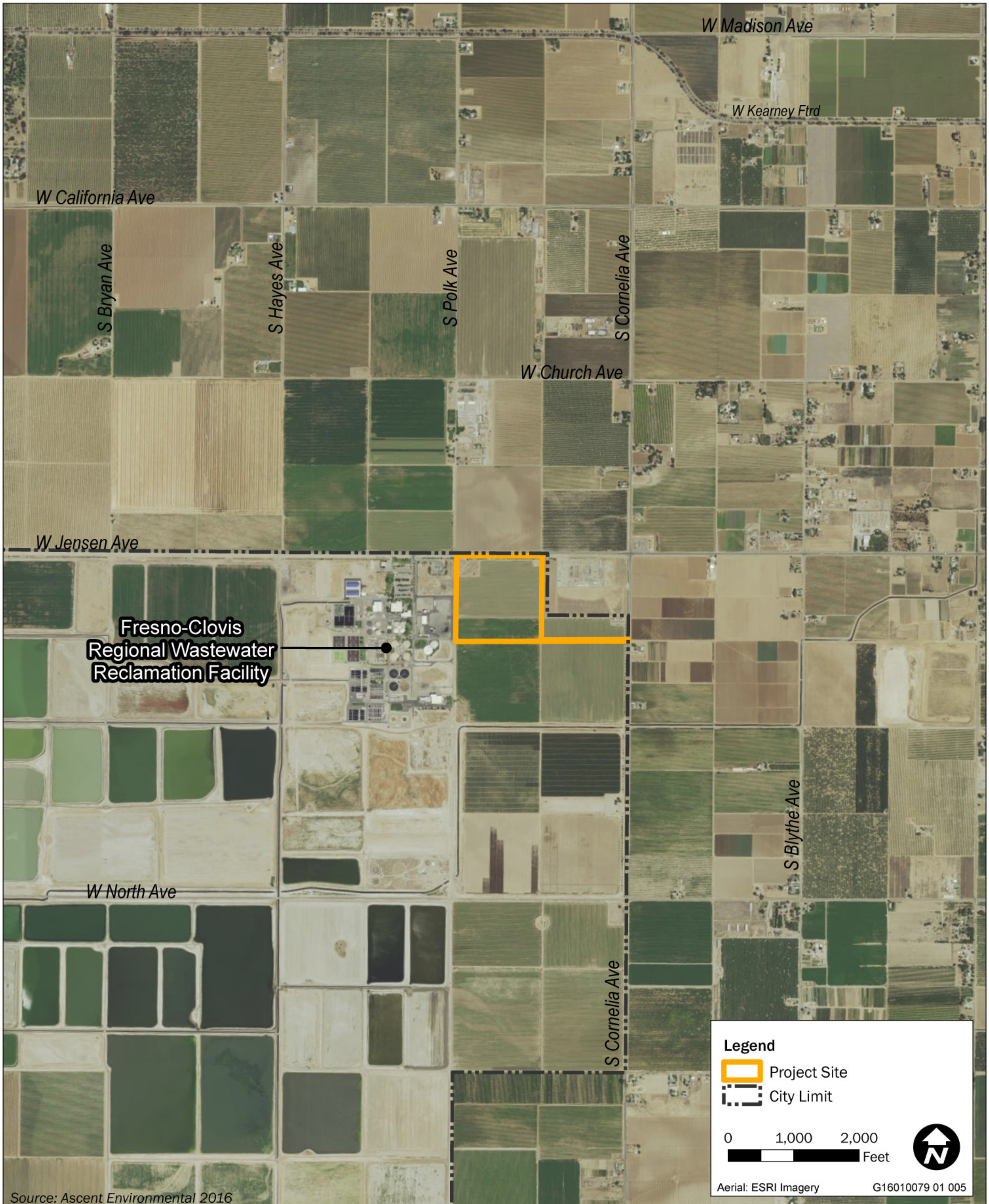
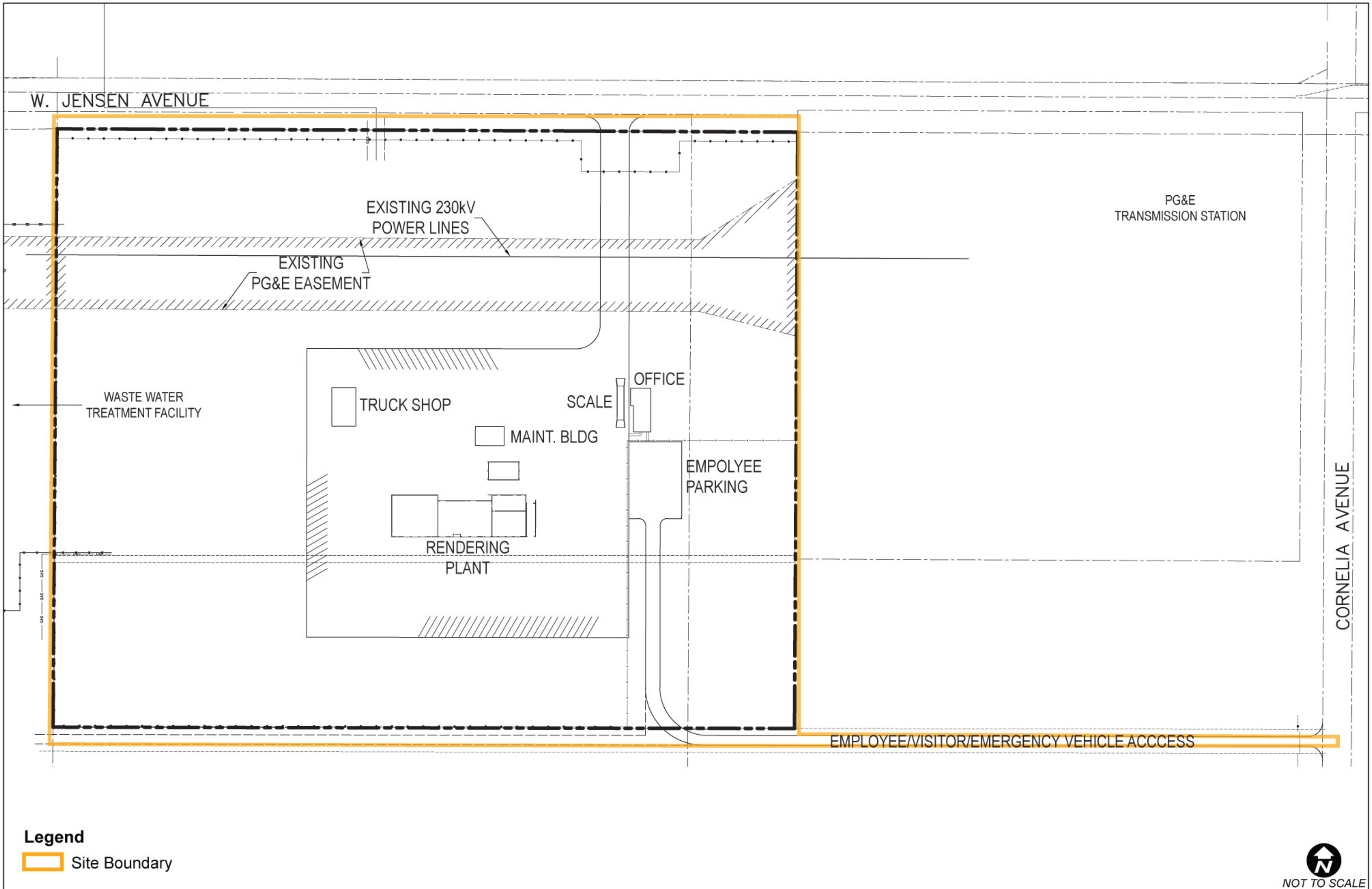


Exhibit 2-2 **Project Site**



Source: Design Group Facility Solutions

X16010079 01 003

Exhibit 2-3

Preliminary Site Plan

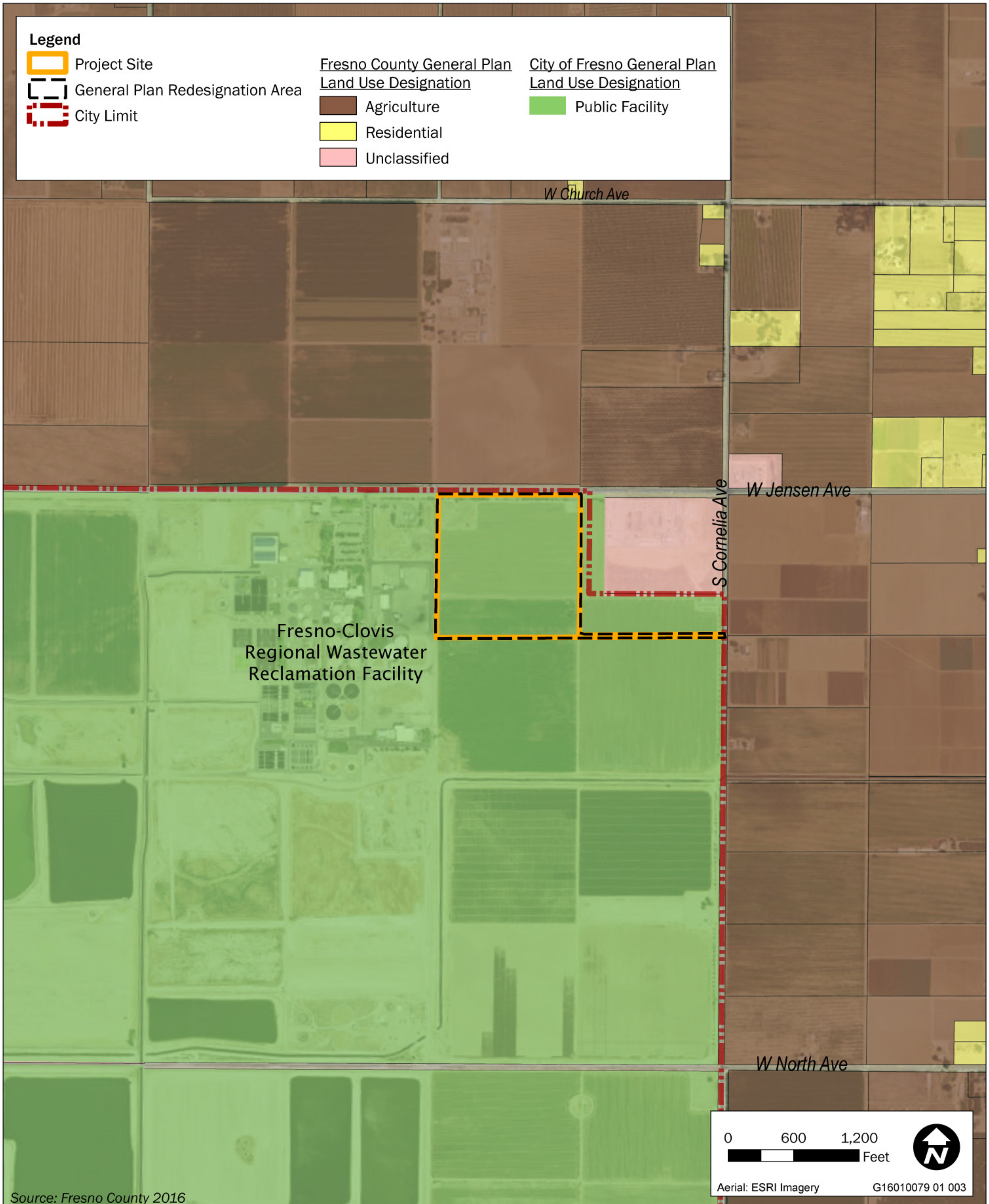


Exhibit 2-4 **Land Use**

2.2 PROJECT CHARACTERISTICS

2.2.1 Project Background

RENDERING PLANT

The existing Darling Ingredients Inc. facility is located on a 5.22-acre parcel on Belgravia Road between Church Avenue and E Street in the southwest area of the city. The facility was constructed and began operation in 1956 as a slaughterhouse and beef packing company, with limited rendering (i.e., processing of animal products for reuse) operations. Rendering gradually expanded, packing operations phased out and the rendering plant site was annexed to the city in 1971. Over the last 60 years, non-industrial urban uses were developed in the surrounding area such that residential neighborhoods are now within one-quarter mile of the rendering plant (City of Fresno 2016) with homes as close as 800 feet from the rendering plant structures.

The existing Darling facility is a food processing byproduct conversion operation that collects and processes raw material (primarily beef fat, bone, and offal) into proteins and fats that can be beneficially used as ingredients in food, fertilizer, feed, and fuel. The conversion process has the potential to generate odor which is managed through an odor abatement system. Evaporated moisture from the conversion process is condensed, pretreated, and discharged to the RWRF. Air emissions from the process, including but not limited to the boiler system and odor abatement system, are regulated and permitted by the San Joaquin Valley Air Pollution Control District (SJVAPCD). The facility currently employs 38 people and is permitted to process as much as 850,000 pounds of material per day in accordance with a SJVAPCD Permit. The facility's major sources of raw materials include Cargill, Harris Ranch Beef, and other sources. Most raw materials are shipped from within 200 miles of the existing facility.

The City is considering the relocation of this heavy industrial facility away from the residential neighborhoods that have been developed near the existing facility subsequent to its establishment. Darling has indicated a willingness to relocate to another suitable site in the city.

2.2.2 Project Elements

The project would relocate the Darling facility from its current location on Belgravia Ave just southwest of downtown to the new 40-acre site near the RWRF and expand its current permitted processing limits from 850,000 pounds per day to a permitted maximum of 10 million pounds per week. The project would require a GPA to change the General Plan land use designation of land from Public Facility to Heavy Industrial, and a rezone of the same property from PI to Industrial-Heavy (IH). The proposed Darling facility would also require a conditional use permit (CUP) to operate within the IH zone.

The project, including necessary entitlements and other approvals, is described in detail below. The preliminary site plan drawing is shown below in Exhibit 2-3 and the General Plan and Zoning are shown in Exhibits 2-4 and 2-5, respectively. The location of the existing rendering facility is shown in Exhibit 2-6.

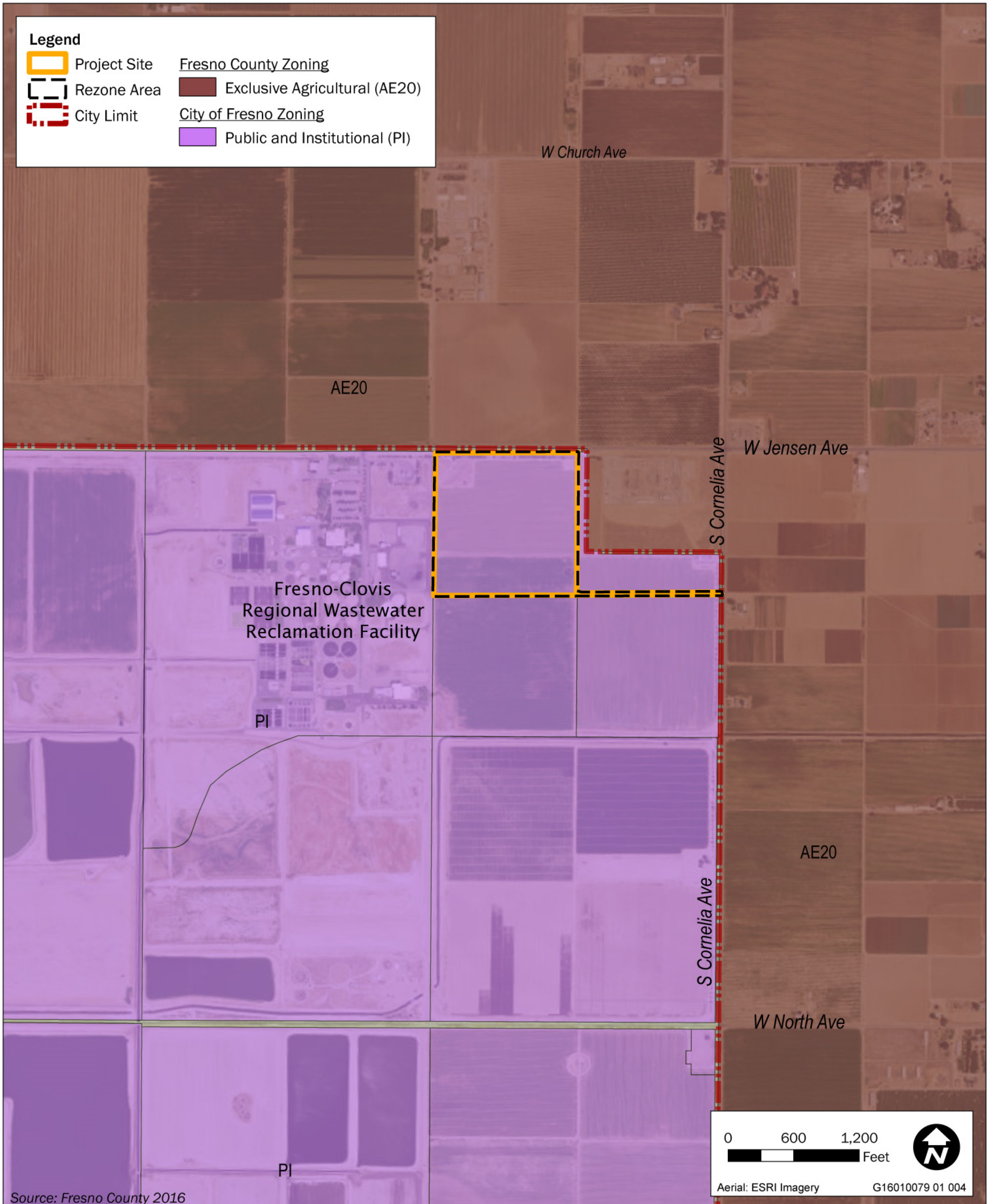


Exhibit 2-5 **Zoning**

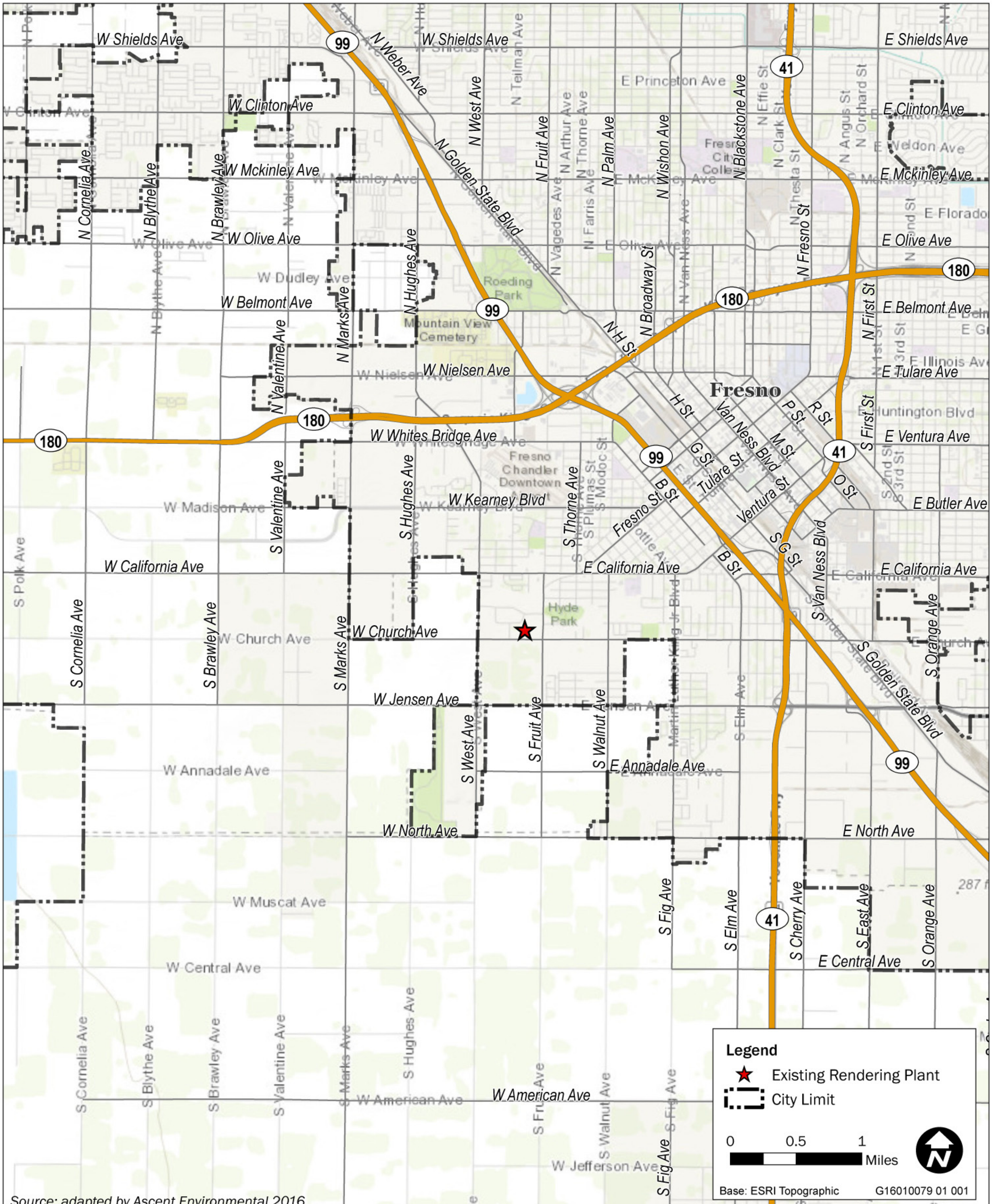


Exhibit 2-6 **Existing Rendering Plant Location**

PROJECT ENTITLEMENTS

Discretionary approvals and permits are required by the City for implementation of the project. The project would require the following discretionary approvals and actions, including:

- General Plan Amendment,
- Rezone, and
- Conditional Use Permit.

Subsequent ministerial actions would be required for implementation of the project including issuance of grading and building permits.

PERMITS AND LICENSES

Like the existing rendering plant, the permits, licenses, and plans listed in Table 2-1 below may be required from other agencies for operation of the relocated facility.

Table 2-1 Required Permits and Licenses for the Darling Facility

Permit/Licenses	Agency/Entity
Licensed Renderer	California Department of Food and Agriculture
Inedible Kitchen Grease Renderer	California Department of Food and Agriculture
Unified Program Facility Permit	County of Fresno Department of Public Health
Spill Prevention Control and Countermeasure Plan	US Environmental Protection Agency
Stormwater Pollution Prevention Plan	California State Water Resources Control Board
Air Permit	San Joaquin Valley Air Pollution Control District
Wastewater Discharge Permit	Regional Water Quality Control Board

Source: Darling 2017

RESPONSIBLE AND TRUSTEE AGENCIES

In addition to approvals from the City, the project would require permit issuance and other discretionary approvals from other agencies. These agencies would serve as responsible and trustee agencies pursuant to CEQA Guidelines Section 15381 and Section 15386, respectively. This document provides the necessary environmental information for discretionary actions by these agencies.

These agencies may include, but are not limited to, the following:

- California Department of Transportation (Caltrans),
- California State Water Resources Control Board (SWRCB),
- San Joaquin Valley Air Pollution Control District (SJVAPCD), or
- County of Fresno.

Actions that are necessary to implement the project that must be taken by other agencies are:

- Issuance of Encroachment Permits – Caltrans and County of Fresno;
- Obtain coverage under the State General Stormwater Permit – SWRCB; and
- Issuance of an Authority to Construct Permit – SJVAPCD.

RENDERING PLANT RELOCATION

Operation

The industrial activities related to the project would be similar to those of the existing Darling facility, and would include an increase in processing capacity. The new plant would continue to serve area businesses including packers, restaurants, food service establishments, butchers, and grocers in the production of animal and vegetable derived fats and proteins for use as ingredients in food, feed, fertilizer, and fuel. The primary industrial activities at the facility would include:

- raw material collection,
- conversion of raw materials,
- storage of finished products,
- shipment of finished products, and
- fleet-related activities.

Darling anticipates that the relocated operation would process up to 10 million pounds of food processing byproducts on a weekly basis. The anticipated daily production rate could reach 2 million pounds or more but would be limited on a weekly basis by the permitted maximum.

The primary operational goal is to process raw materials as quickly as possible. This focus helps improve operational efficiency and the quality of finished products, while at the same time limiting the odor potential. Limited outdoor staging of raw materials is sometimes necessary when inflow of raw materials exceeds processing rates or when there are plant malfunctions.

Wastewater Pretreatment

All the wastewater generated at the facility (a portion of which may include stormwater) would pass through a primary treatment system before being discharged to the RWRF. The primary treatment system would likely consist of a screening step, settling tank with skimmer, an equalization tank, and a dissolved air flotation system. This pretreatment step is designed to reduce the loading of solids, organic matter, and fat, oil, and grease to the RWRF. Despite the performance of the primary treatment system, certain levels of nutrients, soluble organic matter, and other pollutants would be discharged to the RWRF for further treatment. Table 2-2 below provides a summary of the predicted loading to the RWRF. The wastewater discharges from the Darling facility to the RWRF would be compliant with City's sewer ordinance.

Table 2-2 Anticipated Flow and Loading Ranges

Hydraulic Flow (gallons/day)[1]	Ammonia (lbs/week)[2]	BOD_5 (lbs/week)[3]	TSS (lbs/week)[4]	FOG (lbs/week)[5]
250,000-350,000	18,750–26,250	125,000–175,000	6,250–8,750	8,750–12,250

Notes:
1. Conservatively assumes weekly permitted volume is produced over 6 days.
2. Average concentration of 1,500 milligrams/liter (mg/L) with the flow ranges in the table above.
3. Average concentration of 10,000 mg/L with the flow ranges in the table above.
4. Average concentration of 750 mg/L with the flow ranges in the table above.
5. Average concentration of 500 mg/L (City Ordinance Limit) with the flow ranges in the table above.
6. Loading can be seasonally influenced.

lbs = pounds
BOD = biochemical oxygen demand
TSS = total suspended solids
FOG = fats, oils, and grease

Source: Darling 2017

Hours of Operation and Fleet Activities

Raw materials to be converted would be collected and delivered to the facility for processing 6 to 7 days per week. Processing would typically begin on Monday and run through Saturday or as needed Sunday.

The collection routes and delivery schedules would be variable and would likely change day to day depending on the work schedules of the byproduct generators. Raw materials would be delivered to the facility by way of Darling-owned trucks, contract haulers, and customer-owned trucks. The rendering process would be continuous and would typically operate 24 hours per day, 6 to 7 days per week. Delivery schedules would be relatively stable with only limited seasonal fluctuations.

The fleet would include, but would not be limited to, barrel trucks, pump trucks, end dumps, hopper trailers, and tankers (see Table 2-3 below for details). The types and numbers of vehicles would vary based on customer needs, type of service being provided, and economic conditions, but it is anticipated that project operation would use an average of 75 trucks per day, or 150 truck trips per day. The equipment used in the collection and delivery of these of raw materials to the facility would be maintained in good operating condition and travel in a closed/covered condition, consistent with industry standards.

Table 2-3 Anticipated Darling Vehicle Types[1]

Vehicle	Estimated Capacity
Fat and Bone (End Dumps)	15,000 to 45,000 lbs
Raw Material (Trailers)	Legal Load Limit
Used Cooking Oil (Barrel Trucks)	3,000 to 3,500 gal
Used Cooking Oil (Tank Trucks)	3,500 to 5,000 gal
Finished Fat (Tankers)	6,000 gal
Finished Meal (Hopper Trucks)	25 ton
Miscellaneous Plant Vehicles (fork lifts, man lifts, pickup trucks, yard trucks, front end loaders, etc.)	N/A

Notes:
1. This does not include contract hauler or customer-owned trucks.
lbs = pounds
gal = gallons
Source: Darling 2017

A truck shop and a fueling station would be located on-site. The fueling station would include a double-walled tank that is self-contained.

Spill Prevention

The potential for spills would be reduced through the management of Spill Prevention Control and Countermeasures (SPCC). The SPCC would be managed in accordance with the requirements of Title 40 Code of Federal Regulations (CFR) 112, Oil Pollution Prevention.

Air Quality

The project would require an Authority to Construct (ATC) permit from SJVAPCD. This ATC would require that Darling maintain and operate only state-of-the-art odor abatement technology, which would need to meet the Best Available Control Technology standards established by SJVAPCD. Details of an Odor Control Plan would be developed once the terms and conditions of the subject permit were defined. The ATC would also address combustion emissions associated with the facility boiler system.

Design and Appearance

The project would include a total of five buildings—the rendering plant (26,700 square feet [sf]), a meal area loadout (2,400 sf), a truck shop (8,000 sf), a maintenance shop (4,000 sf), and an office building (3,500 sf)—with a total floor area of approximately 44,600 sf, which is approximately 16,800 sf larger than the existing facility.

Excluding equipment (discussed below), typical building height would be approximately 28 feet with a maximum building height of 45 feet. The conversion facility would be a concrete pre-cast building, and the other three buildings would include metal, brick, or block veneer.

The tallest equipment would include two new 60-foot protein storage silos.

Landscaping and Lighting

The project would include green areas and landscaping per the City code. Treated non-potable water from the RWRF may be used for irrigation.

The project would include exterior lighting for nighttime operation and parking lot security. A lighting plan would be prepared for review and approval by the City.

Vehicular Access

Two dedicated access points would be provided for the site. Jensen Avenue would serve as the dedicated truck route, and all trucks would access the project site from Jensen Avenue. (See Exhibit 2-7) Employees and sales calls would access the site via Cornelia Avenue.

Parking

The proposed parking lot would include up to 36 spaces for employees and visitors. This is exclusive of the truck parking needed for raw material trucks which must be segregated to avoid contaminating the raw material.

Infrastructure and Utilities

Drainage

The project would add up to 10 acres of impervious surface to the site. Stormwater from these areas would sheet flow into grassy areas, which would function as bio filters to remove sediment from stormwater. Stormwater management would be addressed in the final site plan development.

Stormwater Quality Management

The proposed Darling facility would manage stormwater quality through a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the requirements of the SWRCB and would comply with City standards for stormwater management.

Utilities

The estimated demand for City-supplied water would be 75,000 gallons per day of potable water. Use of non-potable water would be on an as-needed basis. The facility would use air cooled condensing as part of the conversion process.

The demand for natural gas is estimated to be up to 150 million British thermal units (Btu) per hour; however, it is estimated that at least 18 percent of this demand would be supplied by conditioned gas, produced from the waste methane generated by the RWRF.

It is anticipated that one 4,000 kilovolt-ampere (kVA) transformer would be needed to support the demand for electricity.

The project includes extension of utilities from nearby off-site locations. Please see Exhibit 2-8 for the locations of these off-site utilities extensions.

Employment

Approximately 60 to 70 full-time employees would work at the facility (23 new positions would be required as a result of the operational expansion). The facility would operate in three shifts with three production shifts and one maintenance shift. It is expected that there would be a maximum of 25 employees on site per shift.

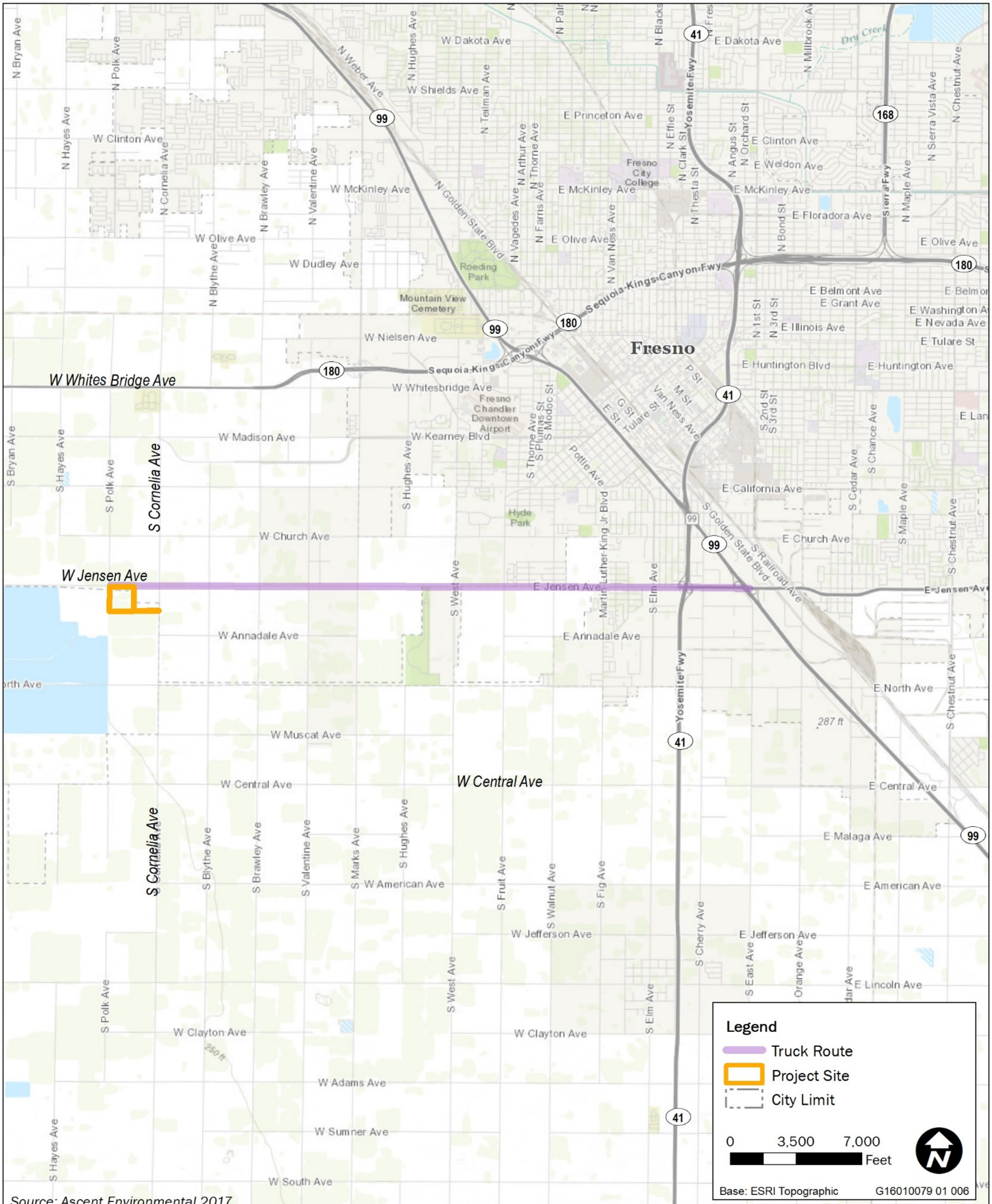
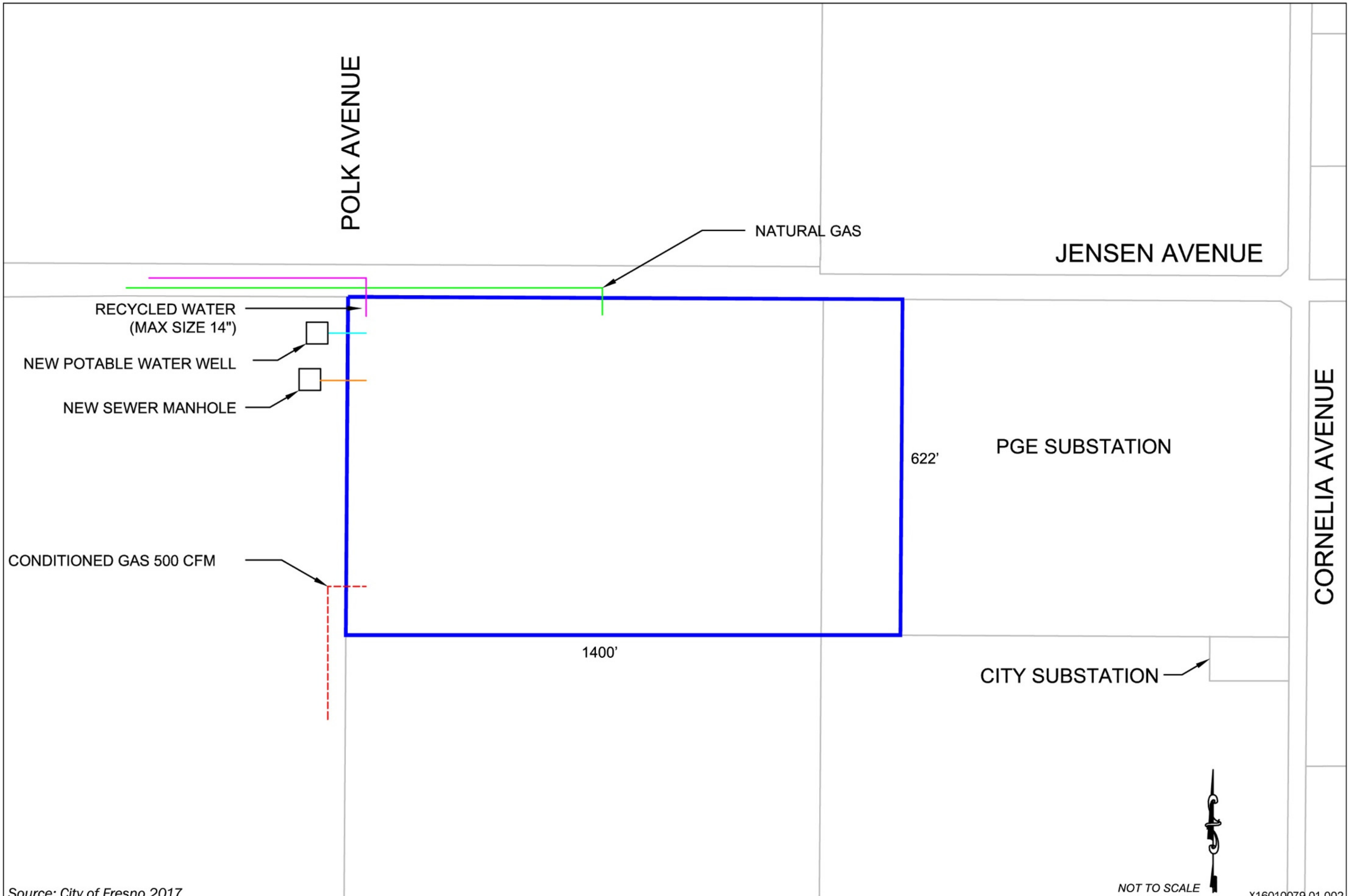


Exhibit 2-7 **Truck Route**



Source: City of Fresno 2017

X16010079 01 002

Exhibit 2-8

Off-Site Facilities

Project Construction

Project construction would include five primary phases: grading and site preparation; utility installation and connection; roadway, driveway, and parking lot construction; building construction and equipment installation; and landscape installation. Construction equipment would vary by phase, but the entire construction process would include operation of the following types of equipment: graders, dozers, excavators, scrapers, water trucks, cranes, forklifts, generators, pavers, rollers, welders, and air compressors. The construction staging area would be located on-site. Construction would take place during typical daytime hours, between 6:00 a.m. and 9:00 p.m., Monday through Friday, and 7:00 a.m. and 5:00 p.m., Saturday and Sunday. Depending on the phase of construction, there could be up to 50 construction workers on site on a given day.

Off-site construction would be limited to connection to the existing natural gas line and recycled water line, both located west of the site within the Jensen Avenue right of way, connection to the conditioned gas pipeline located southwest of the site on the RWRF property, and construction of and connection to a new potable water well and new sewer manhole, both located west of the site on the RWRF property. (See Exhibit 2-8.)

The following dust control measures are included as part of the project to comply with SJVAPCD Regulation VIII. These measures would become conditions upon approval of the project.

- 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 on-site unpaved roads and off-site 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.
- When materials are transported off-site, all material shall be covered, or effectively wetted to limit visible dust emissions, and at least six inches 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.
- An owner/operator of any site with 150 or more vehicle trips per day, or 20 or more vehicle trips per day by vehicles with three or more axles shall implement measures to prevent carryout and trackout.

Existing Rendering Plant Removal and Future Use of the Property

The existing rendering plant would cease operations at its current location within six months after the new plant site is fully permitted and operational. The existing equipment would be dismantled and silos would be removed within one year after the new plant site is fully permitted and operational. No structure demolition is proposed. Deed restrictions would be recorded prohibiting the use of the existing rendering plant site for future use as a rendering plant with the City of Fresno as a third-party beneficiary to the restriction. Potential future land uses that could locate on the existing rendering plant site are unknown at this time (except that a rendering plant use would not be allowed). Because it is unknown, future use of the existing rendering plant site is not evaluated in this CEQA document. Any future use proposed for the site would be subject to review under CEQA.

This page intentionally left blank.

3 ENVIRONMENTAL CHECKLIST

PROJECT INFORMATION

1.	Project Title:	Rendering Plant Relocation Project
2.	Lead Agency Name and Address:	City of Fresno, Development and Resource Management 2600 Fresno Street, Third Floor Fresno, CA 93721
3.	Contact Person and Phone Number:	Mike Sanchez, AICP, MCRP, Assistant Director, (559) 621-8040
4.	Project Location:	5449 West Jensen Avenue, Assessor's Parcel Numbers (APN) 32703041T and 32703038T
5.	Project Sponsor's Name and Address:	City of Fresno (2600 Fresno Street, Third Floor, Fresno, CA 93721) and Darling Ingredients Inc., 251 O'Connor Ridge Blvd, Suite #300, Irving, TX 75038
6.	General Plan Designation:	Public Facility
7.	Zoning:	Public and Institutional

8. Description of Project:

The project includes relocating the Darling Ingredients, Inc. rendering facility from its current location on Belgravia Ave, just southwest of downtown, to the undeveloped, 40-acre, City-owned parcel east of the existing Fresno-Clovis Regional Wastewater Reclamation Facility (RWRF). The facility would expand its peak daily processing operation from approximately 850,000 pounds to approximately 2 million pounds, consistent with the proposed permitted volume of up to 10 million pounds per week. The project site would require a Conditional Use Permit (CUP), as well as a General Plan Amendment (GPA) and Rezone from the existing "Public Facility" land use designation and "Public and Institutional" zoning classification to a "Heavy Industrial" land use designation and "Industrial-Heavy" zoning classification.

9. Surrounding Land Uses and Setting:

The project site is located between the RWRF and a Pacific Gas &Electric (PG&E) substation on West Jensen Avenue. RWRF treatment facilities occupy 180 acres (located adjacent to the western boundary of the project site) and percolation ponds occupy an additional 1,700 acres. Most of the area surrounding the project site is in agricultural use (vineyards, orchards, and various row crops). A few agricultural residences are in the vicinity; the nearest two residences are located approximately 1,200 feet northeast of the site and 1,300 feet southeast of the site, both on the east side of South Cornelia Avenue.

10: Other public agencies whose approval is required:

- California Department of Transportation (Caltrans)
- California Regional Water Quality Control Board (RWQCB), Central Valley Region
- San Joaquin Valley Air Pollution Control District (SJVAPCD)
- County of Fresno

Actions necessary to implement the project that must be taken by other agencies are:

- Issuance of Encroachment Permits – Caltrans and County of Fresno
- Obtain coverage under the General Stormwater Permit – RWQCB
- Indirect Source Review (Rule 9510) Compliance – SJVAPCD

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ 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	☐ Utilities / Service Systems	☐ Mandatory Findings of Significance
		☒ None with Mitigation

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the project could not have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.

☒ I find that although the project COULD have a significant effect on the environment, there WILL NOT be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.

☐ I find that the project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.

☐ I find that the project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the project, nothing further is required.

Signature 9/13/17

Date

Mike Sanchez, AICP, MCRP
Assistant Director
Development and Resource Management
City of Fresno

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less-than-Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

3.1 AESTHETICS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. Aesthetics. Would the project:				
a) Have a substantial adverse 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 which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

3.1.1 Environmental Setting

The project site is located west of the urbanized area of Fresno in a topographically flat area characterized mostly by farmland.

Land uses surrounding the project site include orchards and row crops across West Jensen Avenue to the north of the site, a PG&E substation to the east of the site (characterized by rows of metal poles, electrical wires, and other electrical equipment), the Fresno-Clovis RWRF to the west of the site (characterized by paved parking areas, small maintenance buildings, and landscape trees and shrubs), and row crops to the south of the site. Exhibit 3-1 shows the typical view of the project site from Jensen Avenue, as well as the view of the electrical substation from Jensen Avenue. Exhibit 3-2 shows a closer view of the electrical substation and also shows the existing rendering facility on Belgravia Avenue.

The 40-acre project site is flat and consists primarily of actively cultivated row crops. The northwest corner of the site is not cultivated, but the soil has been disturbed. There are no structures on the project site, except for two steel towers supporting high tension power lines, which bisect the site in an east-west direction. Because the project area is dominated by agricultural land, the visual character of the project site is not considered unique or distinctive.

The City of Fresno General Plan Master Environmental Impact Report (MEIR) defines a scenic vista as a "viewpoint that provides a distant view of highly valued natural or man-made landscape features for the benefit of the general public;" the MEIR further indicates that typical scenic vistas are locations where views of rivers, hillsides, and open space areas can be obtained as well as locations where valued urban landscape features can be viewed in the distance. According to the MEIR, the City has not identified or designated scenic vistas, but the MEIR acknowledges that scenic vistas may be present in certain areas, such as views of the San Joaquin River along the northern boundary of the City of Fresno Planning Area (the boundary of the area evaluated by the MEIR and the foothills of the Sierra Nevada (City of Fresno 2014b:5.1-1). None of these features are distinctly visible from the project site.

According to Caltrans, no officially designated State Scenic Highways, or eligible State Scenic Highways, are located in the vicinity of the project site (Caltrans 2017).

View of the Project Site from Jensen Avenue

View of the Project Site with Electrical Substation in Background

Exhibit 3-1 **Existing Views of the Project Site**

Source: Ascent Environmental 2017

View of Electrical Substation

Source: Ascent Environmental 2017

X16010079 01 005

View of Existing Rendering Facility

Exhibit 3-2 **Views of Existing Facilities**

The project site is undeveloped and is, therefore, void of light and glare sources, which is also true of most of the surrounding agricultural properties. However, the surrounding electrical substation and RWRF use security lighting at night.

3.1.2 Discussion

a) Have a substantial adverse effect on a scenic vista?

No impact. Views of the project site and project area are dominated by farmland. As described above under "Environmental Setting," no features are visible from the project site that would constitute a "scenic vista" as defined by the MEIR. Therefore, the proposed development of the site with industrial facilities would not adversely affect a scenic vista. No impact would occur.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No impact. The project would not result in removal of large trees, rock outcroppings, or historic buildings because none of these features occur on the project site. As described above under "Environmental Setting," the project site is not located near a State Scenic Highway. Therefore, the project would result in no impact to these features.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Less than significant impact. The visual character of the project site is dominated by farmland. Farmland surrounds the project site to the north and south. Electrical and wastewater facilities surround the site to the east and west, respectively. Because the project site is currently surrounded by electrical and wastewater facilities, development of the project site with industrial facilities would not substantially alter the visual character of the surrounding properties; however, the proposed development would substantially alter the visual character of the project site from primarily active farmland to industrial development. As mentioned above under "Environmental Setting," the visual character of the project site is not unique or distinctive relative to the visual character of the surrounding region, which is also dominated by farmland. Furthermore, the project includes landscaping as well as large sections of undeveloped areas, which softens the industrial character. This impact would be less than significant because, although the project would substantially change the character of the project site, the change would not be a substantial degradation; the visual character of the site is not unique to the region and proposed landscaping and undeveloped areas would soften the industrial character of the site.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less than significant with mitigation incorporated. Although not considered a major source of daytime glare, the project would add metal and other reflective surfaces associated with the rendering facilities and parked cars in the parking lot. These industrial facilities would also include exterior night lighting, including parking lot lighting, used during nighttime operation. The addition of reflective surfaces would increase daytime glare on the project site, which currently includes very few sources of daytime glare (existing power lines and metal power transmission structures may reflect sunlight at certain angles). However, because the project site is surrounded on two sides by facilities that include other glare sources (electrical facilities and parked vehicles), and because the project would not add a major source of daytime glare, the environmental effect would not be substantial. Similarly, although the project would add nighttime lighting to the project site where there is currently no lighting, the project site is surrounded on two sides by facilities that include nighttime lighting; therefore, nighttime lighting is not new to the project vicinity. However, addition of nighttime lighting could result in skyglow and light pollution if light is cast in an upward direction. This would be a *potentially significant* impact.

> **Mitigation Measure AES-1.** A detailed lighting plan shall be developed, which demonstrates that all exterior lighting is directed downward and includes full shielding to minimize light pollution and to minimize light spillage onto adjacent properties. All lighting shall be consistent with International Dark Sky Standards (IDSS). The City's Development and Resource Management will review and approve the lighting plan prior to issuance of building permits.

Impact after Implementation of Mitigation Measure

Implementation of Mitigation Measure AES-1 would minimize light pollution and skyglow potential by requiring all exterior lighting to be shielded and downward facing, which focuses light on the ground and away from the night sky. This would reduce the impact to a **less-than-significant** level.

3.2 AGRICULTURE AND FOREST RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. Agriculture and Forest Resources.				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				
Would the project:				
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)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. Agriculture and Forest Resources.				
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?	☐	☐	☒	☐

3.2.1 Environmental Setting

The Fresno region is characterized as a mature agricultural area, with a well-defined pattern of farming activities. Much of the land under agricultural operation is devoted to relatively stable crops such as orchards and vineyards. The primary crops within Fresno County include fruits and nuts, livestock and poultry, vegetable crops, and field crops.

The California Department of Conservation Important Farmland classifications recognize the suitability of land for agricultural production by considering physical and chemical characteristics of the soil. Important Farmland classifications consist of: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. Appendix G of the State CEQA Guidelines addresses direct conversion of agricultural land on Prime Farmland, Farmland of Statewide Importance, or Unique Farmland together under the term “Agricultural Land” (Public Resources Code [PRC] Sections 21060.1 and 21095 and State CEQA Guidelines Appendix G).

The project site contains approximately 40 acres of Prime Farmland and Farmland of Statewide Importance, as designated under the Department of Conservation, Farmland Mapping and Monitoring Program (California Department of Conservation 2015). (See Exhibit 3-3.) The project site is used for the active cultivation of row crops (currently alfalfa). Much of the area near the project site is also in agricultural use (vineyards, orchards, and various row crops), and few agricultural residences are located in the vicinity.

3.2.2 Discussion

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?

Less than significant impact. The project would convert approximately 40 acres of Prime Farmland and Farmland of Statewide Importance to a non-agricultural use. The City’s General Plan designates the project site “Public Facility” in the Fresno General Plan (Exhibit 2-3) and zoned “Public and Institutional” (PI) (Exhibit 2-4). The Public Facility designation allows public facilities such as City and County buildings, schools, colleges, municipal airports, hospitals, fire and police stations, recycling centers, sewage treatment plants, parks, trails, recreational centers, and golf courses. As part of the General Plan Update process, the City’s MEIR evaluated the potential for future development associated with the General Plan to result in impacts related to conversion of important farmland to non-agricultural use. The General Plan identified policies to reduce potential impacts to farmland conversion, such as Policy RC-9-c, which mandates a preservation program when farmland is converted outside of the city limit (but inside the sphere of influence). This would primarily apply to annexations of land into the city. Because the project site is located within the city limit,

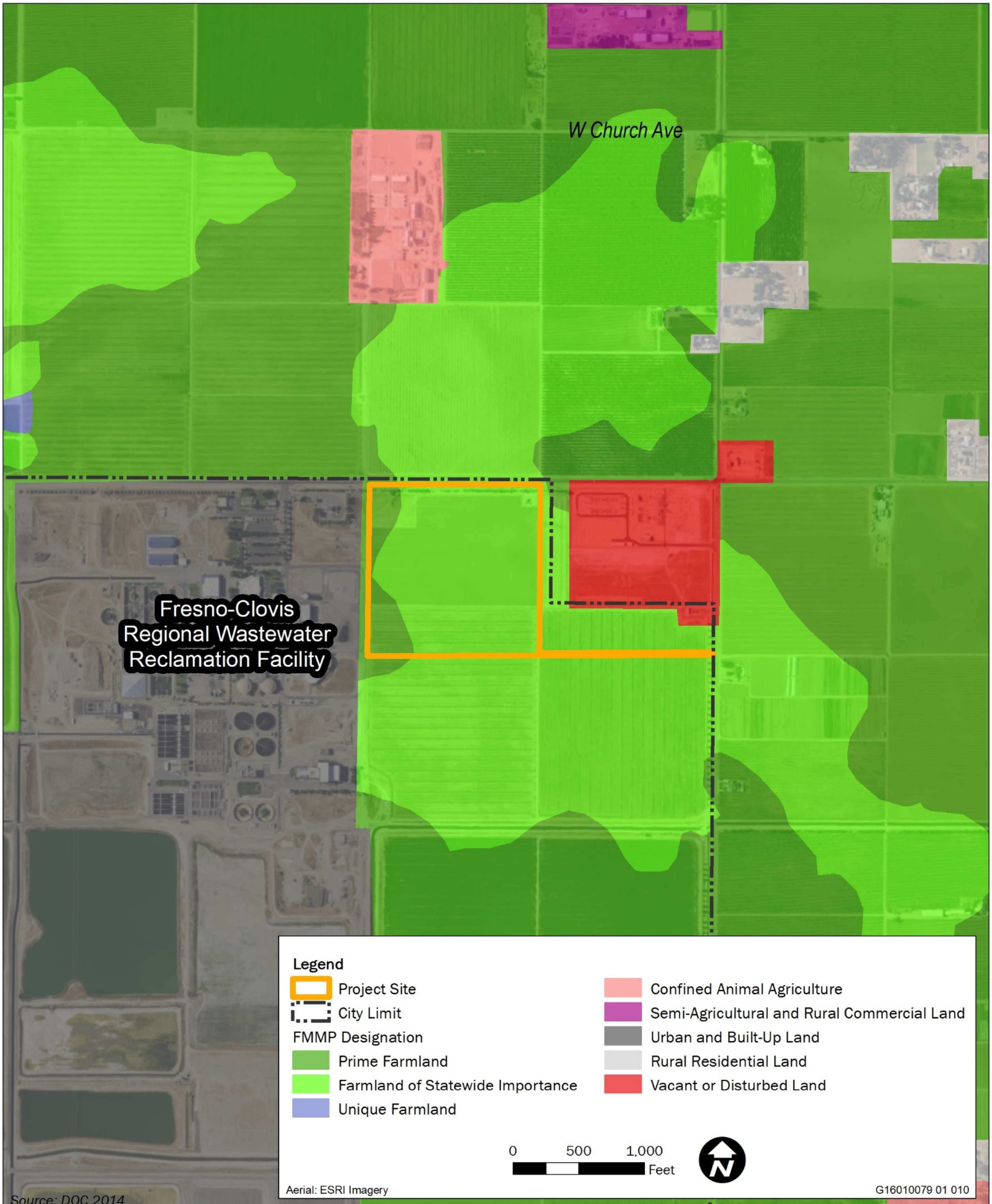


Exhibit 3-3 **Farmland Mapping and Monitoring Program (FMMP) Designations**

Policy RC-9-c would not apply to the proposed project. The MEIR concluded that implementation of the General Plan would result in a significant impact related to farmland conversion and that no mitigation measures are available (beyond implementation of General Plan policies) to reduce the impact to a less-than-significant level. The MEIR ultimately concluded that the impact is significant and unavoidable (City of Fresno 2014b:p. 5.2-1). City Council reviewed the MEIR as part of its decision to approve the General Plan and adopted a statement of overriding considerations for all significant and unavoidable impacts, including the impact related to conversion of Important Farmland.

CEQA states that if a development project is consistent with the general plan of a local agency and an environmental impact report was certified with respect to that general plan, the application of this division to the approval of that development project shall be limited to effects on the environment which are peculiar to the parcel or to the project and which were not addressed as significant effects in the prior environmental impact report, or which substantial new information shows will be more significant than described in the prior environmental impact report (PRC 21083.3[b]). See also CCR 15183. Although the project includes an amendment to the General Plan to allow the proposed industrial use, the amendment relates only to the type of development that occurs on the property and does not change the fact that the General Plan identified urban development (see list of allowed uses above) for the site, which was evaluated in the MEIR. Therefore, there are no issues related to farmland conversion that are peculiar to the site and which were not evaluated in the MEIR. The project would not result in additional impacts to Important Farmland beyond those evaluated and disclosed in the MEIR, and the impact is less than significant.

b) Conflict with existing zoning for agricultural use or a Williamson Act contract?

No impact. The project site is not subject to a Williamson Act Contract (California Department of Conservation 2015). The project site is not designated or zoned for agricultural use. The project includes a General Plan Amendment and Rezone of approximately 40 acres designated “Public Facility” and zoned “Public and Institutional” to the “Heavy Industrial” land use designation and “Industrial Heavy” (IH) zoning classification. Therefore, there would be no impact relative to conflicts with agricultural zoning or Williamson Act contracts.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No impact. There is no forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)) on or near the project site. Thus, there would be no related zoning conflict and there would be no impact.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

No impact. There is no forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g)) on or near the project site. Thus, there would be no loss or conversion of forest land to non-forest use and there would be no impact.

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?

Less than significant impact. Adjacent land to the west is designated as "Public Facility" and does not currently support active agriculture. Adjacent land to the south and east, and north across West Jensen Avenue contains actively cultivated row crops. Those lands are designated Agriculture and Public Facility. Agricultural uses often involve application of pesticides, herbicides, and fertilizers, which may produce odors or may be perceived as hazardous by more sensitive land uses, such as schools and residences. Sometimes these perceived conflicts may result in complaints and, ultimately, sometimes limitations to the agricultural operations to reduce potential exposure of sensitive uses to odors and chemicals. However, because of the industrial nature of activities associated with the rendering facility, the facility is not considered a sensitive use that could be adversely affected by or conflict with agricultural operations.

Also, because the rendering facility is not a major employment generating use, a major housing development, or a major regional visitor attraction, relocating the rendering facility to the project site would not increase development pressure in the vicinity and would consequently not result in indirect impacts related to farmland conversion. Thus, although the project site would be developed with a non-agricultural purpose, the project would not result in changes in the existing environment that could result in conversion of farmland to non-agricultural uses. This impact would be less than significant.

3.3 AIR QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. Air Quality.				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations.				
Would the project:				
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 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 affecting a substantial number of people?	☐	☒	☐	☐

3.3.1 Environmental Setting

The project site is in the City of Fresno, which lies within the San Joaquin Valley Air Basin (SJVAB) and is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). With respect to ozone, Fresno County is currently designated nonattainment for the 1-hour ozone California Ambient Air Quality Standard (CAAQS) and for the 8-hour ozone National Ambient Air Quality Standard (NAAQS) (CARB 2015). Fresno County is designated as nonattainment for the state PM_{10} (i.e., respirable particulate matter with an aerodynamic diameter of 10 micrometers or less) CAAQS and attainment for the national PM_{10} NAAQS, and the County is designated as nonattainment for the $PM_{2.5}$ (i.e., fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less) CAAQS and NAAQS (CARB 2015).

Air quality within Fresno County is regulated by such agencies as the U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB) at the federal and State levels, respectively, and locally by the SJVAPCD. SJVAPCD seeks to improve air quality conditions in Fresno County through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. SJVAPCD's clean air strategy includes the development of programs for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. SJVAPCD also inspects stationary sources, responds to citizen complaints, monitors ambient air quality and meteorological conditions, and implements other programs and regulations required by the federal Clean Air Act (CAA), federal Clean Air Act Amendments of 1990 (CAAA), and the California Clean Air Act (CCAA).

SJVAPCD has developed plans to attain CAAQS and NAAQS for ozone and particulate matter. The air quality plans include emissions inventories to measure the sources of air pollutants, to evaluate how well different control methods have worked and to show how air pollution will be reduced. The plans also use computer modeling to estimate future levels of pollution and make sure that the SJVAB will meet air quality goals.

Further, SJVAPCD has established thresholds of significance for criteria air pollutant emissions, which are based on New Source Review (NSR) offset requirements for stationary sources. Using project type and size, SJVAPCD has pre-quantified emissions and determined a size below which it is reasonable to conclude that a project would not exceed applicable thresholds of significance. Based on SJVAPCD guidance, general heavy industry land use projects smaller than 920,000 square feet (sf) would not exceed applicable SJVAPCD-adopted thresholds or ambient air quality standards.

For informational purposes, SJVAPCD thresholds of significance for CEQA analyses are:

- reactive organic gases (ROG): 10 tons per year (tpy),
- nitrogen oxides (NO_X): 10 tpy,
- particulate matter (PM_{10} and $PM_{2.5}$): 15 tpy,
- carbon monoxide (CO): 100 tpy, and
- sulfur oxides (SO_X): 27 tpy.

3.3.2 Discussion

a,b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation; conflict with or obstruct implementation of an applicable air quality plan?

Less-than-significant impact. Project construction would include five primary phases: grading and site preparation; utility installation and connection; roadway, driveway, and parking lot construction; building construction and equipment installation; and landscape installation. Construction equipment would vary by phase, but the entire construction process would include operation of the following types of equipment: graders, dozers, excavators, scrapers, water trucks, cranes, forklifts, generators, pavers, rollers, welders, and air compressors. Exhaust emissions would occur from the use of heavy-duty construction equipment, on-road vehicle, and fugitive dust would occur from earth movement activities.

Operational activities related to the project would be similar to those of the existing rendering facility but would include an increase in processing capacity. Daily operations would increase from a processing capacity of 850,000 pounds per day to approximately 2 million pounds per day up to the maximum permitted 10 million pounds per week. The proposed expansion would result in 40 additional daily delivery truck trips and up to 23 new employees. The proposed facility floor area would total 44,600 sf, including a larger processing floor, stationary mechanical equipment (e.g., cooker, boiler, presser), and a truck shop/loading dock, approximately 16,800 sf larger than the existing facility. Emissions would be associated with mobile sources from worker commute and delivery trucks, as well as stationary sources from on-site processing equipment (e.g., rendering units, boilers, and generators).

To evaluate increases in project-generated emissions, screening tables established by SJVAPCD for heavy industrial land uses were used. The screening tables are based on emissions modeling for typical industrial projects and account for both construction and operational emissions. Thus, the proposed heavy industrial land use of 44,600 sf would be substantially below the screening size of 920,000 sf, and the project would not exceed SJVAPCD thresholds of significance for criteria air pollutants or contribute substantially to the existing nonattainment status of the SJVAB. (The 273 total daily vehicle trips generated by the proposed rendering facility is also below the SJVAPCD screening level for trip generation, which is 1,506 daily vehicle trips for an industrial use.) In addition, all construction activities within the SJVAPCD jurisdiction are required to comply with Regulation VIII Control Measures during the construction phase. As described in the project description, the project would implement all applicable control measures during construction to reduce fugitive dust and exhaust emissions. These include watering of exposed surfaces twice daily, covering all haul trucks carrying dust or loose material, and cleaning dirt track-out from construction equipment daily.

Further, SJVAPCD has rules in place that regulate stationary sources (e.g., boilers, diesel generators, and rendering facilities), that would require additional evaluation during the permitting process. SJVAPCD Regulation II applies to permitted emission sources (e.g., boilers, rendering facilities, generators) and includes rules such as New and Modified Stationary Source Review (Rule 2201), which would apply to the project (E. McLaughlin [SJVAPCD], personal communication, May 31, 2017). Through the permitting process, Rule 2201 requires that stationary source emissions are reduced or mitigated to below the SJVAPCD's significance thresholds. Upon SJVAPCD review of the permit application for the proposed rendering facility, SJVAPCD would verify that there is no net increase in emissions above specified thresholds from New and Modified Stationary Sources for all nonattainment pollutants and their precursors.

Given that the project is below the screening table limit for industrial land uses, would comply with Regulation VIII (minimizing construction-related emissions), and would be subject to stationary permit limits/requirements required by Rule 2201, project-generated emissions would not violate or contribute substantially to an existing or projected air quality violation or conflict with air quality planning efforts of the SJVAPCD. This impact would be less than significant.

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)?

Less-than-significant impact. By its very nature, air pollution is largely a cumulative impact. Past, present and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. As explained in SJVAPCD's Guide for Assessing and Mitigating Air Quality Impacts (2015), and consistent with CEQA, if a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant. In developing thresholds of significance for air pollutants, air districts consider the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. If the project: does not exceed the identified significance thresholds (for State or federal AAQS), combine with other proposed projects in the same area to exceed the thresholds, or cause a cumulative increase in CO or TAC, the project would not result in a considerable contribution to a cumulative air quality impact. Thus, because the project would not exceed SJVAPCD screening levels for small projects, as discussed above, because no other projects are proposed in the area in the near term, and because (as described below) the project would not exceed thresholds for CO or TACs, the project would not result in a cumulatively considerable net increase of any criteria pollutant. This impact would be **less than significant.**

d) Expose sensitive receptors to substantial pollutant concentrations?

Less-than-significant impact. As discussed in "b" above, project implementation would not result in emissions of criteria air pollutants or precursors from construction or operational-related activities that would exceed applicable thresholds of significance. Thus, project-generated criteria air pollutant and precursor emissions would not expose sensitive receptors to substantial pollutant concentrations.

The project would result in short-term diesel exhaust emissions from on-site construction equipment. Operation of the rendering facility would result in truck trips (and associated diesel exhaust) as well as various pollutants emitted from the on-site stationary equipment. The project site is located adjacent to the existing RWRF along West Jensen Avenue. Surrounding land uses are primarily agriculture. A few agricultural residences are in the vicinity; the nearest two residences are located approximately 1,200 feet northeast of the site and 1,300 feet southeast of the site, both on the east side of South Cornelia Avenue.

For construction activity, diesel PM is the primary TAC of concern. With regard to exposure of diesel PM, the dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher level of health risk for any exposed receptor. Thus, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period. According to the Office of Environmental Health Hazard Assessment (OEHHA), Health Risk Assessments, which are studies that determine the exposure of sensitive receptors to TAC emissions, should be based on a 70- or 30-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project (OEHHA 2012:11-3).

As discussed previously, project-related construction emissions, including PM_{10} (a surrogate for diesel PM) would not exceed SVJAPCD significance thresholds and would not be substantial. Further, the construction phase would be relatively short (i.e., 18 to 24 months). Thus, considering that project emissions would not exceed SJVAPCD thresholds, the short duration of construction-related activities and the distance to nearby receptors (i.e., over 1,000 feet), project construction would not expose sensitive receptors to substantial pollutant concentrations.

Operation of the rendering facility would include emissions from on-site stationary sources (e.g., boilers, generators) and diesel exhaust emissions from truck loading/unloading at the rendering facility. Regarding stationary sources, SJVAPCD Regulation II ensures that stationary source emissions will be reduced or mitigated to below applicable limits, thus not exposing existing sensitive receptors to substantial TAC concentrations. Regarding diesel exhaust from delivery trucks, the CARB has developed recommendations for siting new sensitive land uses such as residences near various TAC sources (CARB 2005). Based on this guidance, distribution centers would be similar sources to the loading/unloading activities that would take place at the rendering facility. CARB recommends that sensitive receptors should not be located within 1,000 feet of a distribution center that accommodates more than 100 trucks per day. Existing sensitive receptors are located as close as 1,200 feet from the new facility and operation would result in up to 75 truck trips per day at maximum capacity. Thus, project truck activity would be consistent with CARB recommendations and would not expose nearby sensitive land uses to substantial concentrations of diesel PM. The project would relocate the existing facility from its current location, which is near a residential area of the city, to a much more rural area that is not close to highly populated areas. Thus, project-related construction and operation would not expose nearby sensitive receptors to substantial levels of pollutants and this impact would be less than significant.

e) Create objectionable odors affecting a substantial number of people?

Less than significant with mitigation incorporated. The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to distress and often generating citizen complaints to local governments and regulatory agencies.

Odor emissions could result during construction and operation of the project. However, diesel exhaust from the use of heavy equipment during construction activities would be intermittent and temporary and would dissipate rapidly from the source with an increase in distance, so this discussion is focused on long-term operational odor sources.

The proposed rendering facility could result in odor emissions from the various stages of raw material handling and processing operations that could affect nearby residences. SJVAPCD has established a screening-level distance of 1 mile for assessing odor impacts from these types of facilities (i.e., rendering facility) at nearby receptors. Complaints have been submitted to the City and SJVAPD regarding the existing rendering facility. Moving the rendering facility to a location that would expose fewer sensitive receptors to odors is one of the primary objectives of the project. There are currently hundreds of residences and several schools within one mile of the existing rendering plant, compared to the project site where fewer than 40 residences are located within one mile. Thus, relocation of the facility would result in a substantial decrease in the number of people that would be exposed to odors from project operation. In addition, the existing rendering facility includes some odor abatement equipment and processes; however, due to the age of the facility and equipment, the level of achievable odor abatement is less than the level that could be achieved by the proposed new facility with all new equipment and use of the latest technology (such as real-time odor detection and notification systems and mechanically controlled doors).

The closest sensitive receptors to the project site are two residences located approximately 1,200 feet northeast of the site and 1,300 feet southeast of the site, both on the east side of South Cornelia Avenue. These residences are already located near the RWRF and are surrounded by agricultural operations, which involve application of fertilizer and other potentially odorous emissions. Therefore, these residences are currently exposed to some existing nuisance odors.

In accordance with SJVAPCD permitting requirements (Rule 2201), stationary sources are required to maintain and implement odor control technology that meets SJVAPCD standard for Best Available Control Technology (BACT). As part of the proposed relocation, SJVAPCD would require a re-evaluation of existing permits and continue to require BACT requirements for controlling odors. Based on the existing Odor Control Plan (Appendix A), wet scrubbers and thermal oxidizers are currently used to control odor emissions. Upon SJVAPCD review of the new facility location, similar or more advanced odor control technology would be required. Further, as a component of the odor control plan that would be required by SJVAPCD (similar to current operating requirements), an odor response component would be included that requires odor complaints be reported by the plant manager to SJVAPCD and correct any equipment failures per SJVAPCD Rule 1100.

It is likely that, because the project would include new equipment and would be required to incorporate BACT requirements, odor emission from the proposed facility would not substantially affect residences in the vicinity. However, City's General Plan MEIR includes Mitigation Measure (MM) AQ-4 which requires projects that could result in exposure of sensitive receptors to odors (including rendering facilities located within 1 mile of sensitive receptors) to prepare an odor management plan for approval by the City that minimizes impacts to a less-than-significant level (City of Fresno 2014:p. 5.3-64). Therefore, without preparation of such a plan, the project could result in a *potentially significant* impact.

> Mitigation Measure AIR-1. The project proponent shall retain a qualified air quality specialist to prepare an odor management plan. This odor management plan will include measures to minimize the potential for substantial odor increase at residences within one mile of the project site. These measures will include those measures in the Odor Control Plan to be submitted to SJVAPCD as part of the permit requirements, but may include additional measures, if necessary, to minimize odor generation such that the potential for project-related odor complaints from existing residents would be reduced to the degree feasible. Such measures may include (but would not be limited to) mechanically operating doors, odor detection and notification system, other mechanical upgrades, and an odor monitoring and response plan, which would involve regular (at least annual) outreach to all residents within 1 mile of the project site to verify that project-related odor is not a nuisance. The plan shall identify appropriate response actions to correct any verified odor issues.

Impact after Implementation of Mitigation Measure

Implementation of Mitigation Measure AIR-1 would meet the General Plan MEIR mitigation requirements for potential odor generating uses, such as the project. This would reduce odor-related impacts of the project on sensitive receptors near the project site to a less-than-significant level. However, it is important to note that the project results in an overall beneficial impact related to odors by using all new equipment with advanced odor reducing technologies and moving the existing rendering operation away from a more densely populated area to a new location with fewer residences that are located farther away from the facility.

3.4 BIOLOGICAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. Biological Resources. Would the project:				
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 Wildlife or the 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 Wildlife or the U.S. 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?	☐	☒	☐	☐

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. Biological Resources. Would the project:				
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?	☐	☐	☐	☒

3.4.1 Environmental Setting

The 40-acre project site is located within an incorporated city-owned island of property, 2 miles east of the City of Fresno proper, that is surrounded by primarily agricultural land uses within unincorporated portions of western Fresno County, The RWRF and a PG&E substation are located directly west and east of the project site, respectively. The remaining adjacent properties are in irrigated row and field crops and orchards.

Vegetation on the project site consists almost exclusively of cultivated alfalfa, except for a small portion of disturbed soil in the northwestern portion of the site that is characterized by weedy, nonnative, annual grasses and forbs commonly found in disturbed upland habitats in the region, such as ripgut brome (*Bromus diandrus*), common wild oat (*Avena fatua*), soft chess (*Bromus hordeaceus*), Russian thistle (*Salsola tragus*), sow thistle (*Sonchus* spp.), and bristly ox-tongue (*Helminthotheca echioides*). Alfalfa is an irrigated, perennial crop grown in rows, with open space between the rows. Alfalfa crops are subject to a moderate disturbance regime typically associated with farming activities and are generally cut once per month during the spring and summer growing season. Ornamental trees and shrubs (e.g., redwood, cork oak, olive, boxwood, and firethorn) line the northern boundary of the project site. There are no native plant communities present on or adjacent to the project site. A project access road to the site would cross an agricultural ditch running parallel to South Cornelia Avenue. The ditch is approximately 10 feet wide at the ordinary high-water mark. The channel and banks are maintained to be free of vegetation, but sparse cover of weedy annual plants is present. Small, planted redwood trees are present in a row along the west side of the ditch.

The project site was previously graded and is almost completely flat with an elevation range of 250 to 253 feet above mean sea level. Soils on the project site are Atwater loamy sand, 0 to 3 percent slopes; Madera sandy loam; and Greenfield sandy loam, moderately deep, 0 to 3 percent slopes. These are primarily moderately coarse or coarse soils derived from granitic alluvium. These soils contain components that are mildly or moderately alkaline in some horizons, and components that are slightly or moderately acid to neutral. Vegetation in uncultivated and undisturbed portions of these soils typically consists of annual grasses and forbs, some shrubs, and scattered oaks.

In general, the project site provides low value habitat for most wildlife species because of an overall lack of native vegetation and natural communities and a high level of disturbance from agricultural activities. Common wildlife species that are likely to be associated with the disturbed and cultivated habitats present on or immediately adjacent to the project site are species adapted to disturbed or urban environments, such as western fence lizard (*Sceloporus occidentalis*), mourning dove (*Zenaida macroura*), American crow (*Corvus branchyrhychos*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), California ground squirrel (*Spermophilus beechyi*), black-tailed jackrabbit (*Lepus californicus*), and raccoon (*Procyon lotor*). Small mammals, such as Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), and California meadow vole (*Microtus californicus*) may also be present and provide prey for a variety of raptor species likely to hunt in the area, including American kestrel (*Falco sparverius*), barn owl (*Tyto alba*), and red-tailed hawk (*Buteo jamaicensis*).

SPECIAL-STATUS SPECIES

A list of special-status species that could occur on the project site or immediate vicinity, provided suitable habitat conditions were present, was developed primarily through review of available background reports and biological resource databases, including California Natural Diversity Database (CNDDB) (2017) and California Native Plant Society (CNPS) Inventory (2017) records of previously documented occurrences of special-status species in the Biola, Herndon, Fresno North, Fresno South, Kearney Park, Kerman, Helm, Raisin, and Caruthers U.S. Geological Survey 7.5-minute quadrangles. The project site is located on the Kearney Park quadrangle. Exhibit 3-4 shows the location of special-status species occurrences recorded in the CNDDB that are within five miles of the project site. An official list of threatened and endangered species that may occur in or be affected by the project was obtained from the U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Conservation System (IPaC) (USFWS 2017). The City of Fresno General Plan and Development Code Update Master Environmental Impact Report (Fresno GP MEIR) (City of Fresno 2014) was also reviewed for information about special-status species known to occur in the region.

Special-status Plants

The Fresno GP MEIR identified 11 special-status plant species as having potential to occur within the City Planning Area, and eight additional special-status plant species have been documented in the project region, according to CNDDB and CNPS records. Most of these species are restricted to vernal pools, alkaline sinks and flats, or other wetland habitats that do not occur in the project vicinity. Others are found in chenopod scrub or woodland habitats that also do not occur in the project vicinity. Because the entire project site has been altered by human activities and is subject to ongoing farming, vegetation management, and surface soil manipulation, there is no potential habitat for special-status plant species.

Special-status Wildlife

The Fresno GP MEIR identifies 17 special-status wildlife species as occurring in the City Planning Area and 29 additional wildlife species are documented in the CNDDB, IPaC, or by other sources, as occurring in the project region. Most of these species were eliminated from further evaluation in this document because they are restricted to particular habitat types (e.g., saltbush scrub, chaparral, woodland, vernal pools, streams and rivers, marsh, riparian woodland, and forest) that are not present on or adjacent to the project site or because the project site is outside of their known geographic range. Special-status wildlife species that have potential to be found in agricultural or ruderal habitats in the project area are evaluated further in Table 3-1.

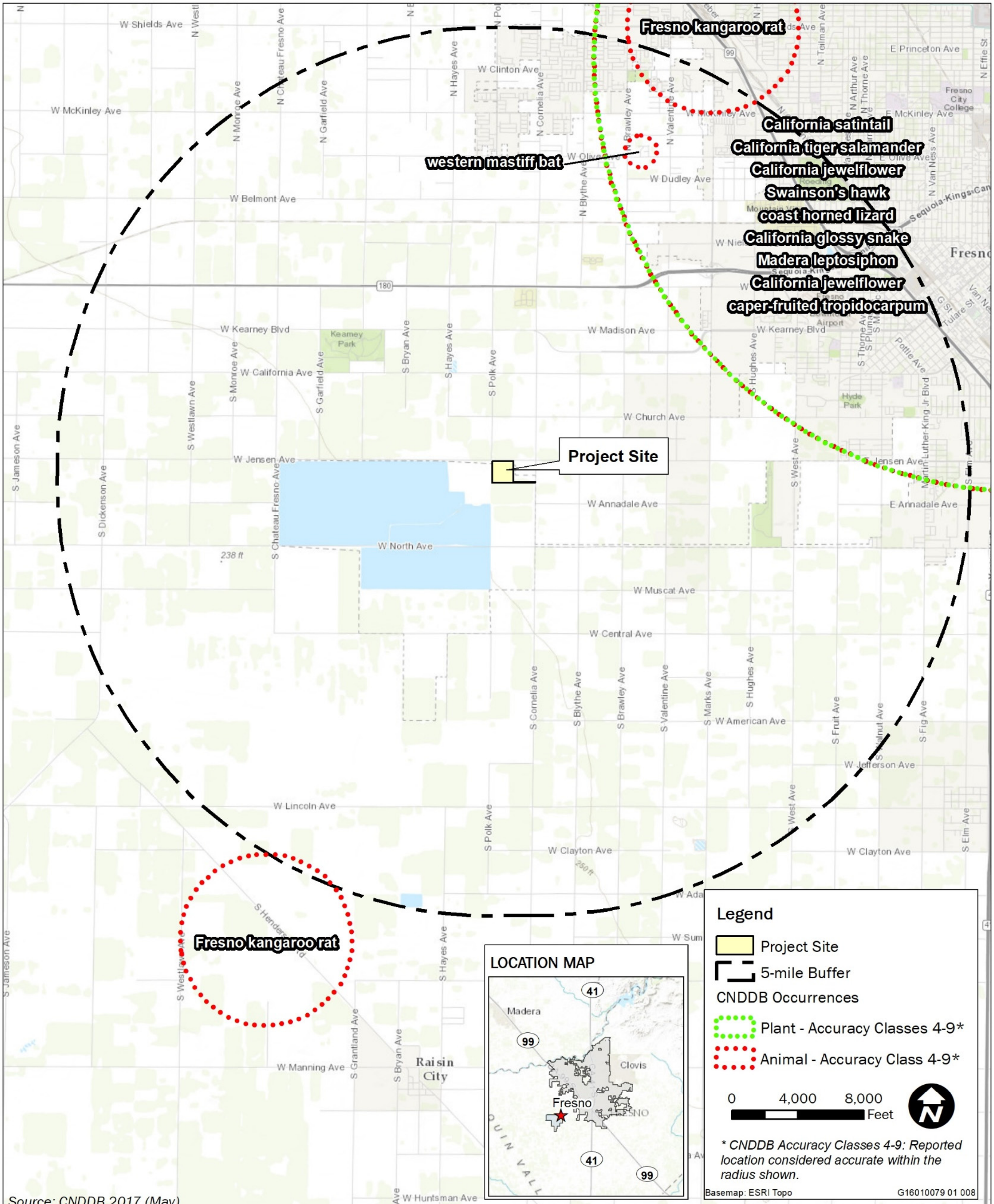


Exhibit 3-4 **CNDDB Occurrences within 5-miles of the Project Site**

Table 3-1 Special-Status Wildlife with Potential to Occur in the Project Vicinity

Species	Listing Status[1, 2] Federal	State	Habitat	Potential for Occurrence on the Project Site[2]
Invertebrates				
Valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T	–	Below 3,000 feet in elderberry shrubs, especially in elderberry within riparian habitats.	Unlikely to occur; there are no elderberry shrubs on the project site.
Amphibians and Reptiles				
Silvery legless lizard *Anniella pulchra pulchra*	–	SC	Valley grassland and saltbush scrub. Open, dry habitats with little or no tree cover. Needs mammal burrows for refuge and oviposition.	Unlikely to occur; agricultural habitat is generally unsuitable and the ruderal habitat is not characteristic of habitats where this species is typically found.
Coast horned lizard *Phrynosoma blainvillii*	–	SC	Open areas of sandy soil and low vegetation within grasslands, coniferous forests, woodlands, and chaparral. Generally, forages on the ground between shrubs and often near ant nests; depends on native ant colonies, especially harvester ants.	Unlikely to occur; agricultural habitat is generally unsuitable for this species and the ruderal habitat is not characteristic of habitats where this species is typically found.
California glossy snake *Arizona elegans occidentalis*	–	SC	Habitat generalist found in a variety of scrub and grassland habitats, often with loose or sandy soils.	Unlikely to occur; regular agricultural disturbance makes the project generally unsuitable and this species has not been documented in the area since 1939.
Western pond turtle *Emys marmorata*	–	SC	Permanent and nearly permanent waters, including ponds, lakes, marshes, slow-moving streams, rivers, sloughs, and irrigation canals/ditches with open bank areas, emergent vegetation, and logs or boulders for basking. Nests along the aquatic habitat shore or in adjacent uplands in sunny, open hillsides or fields, as long as appropriate soil moisture and warmth are present. Generally nest within 325 feet of aquatic habitat.	Unlikely to occur; lack of permanent water and dredging and vegetation management in the agricultural ditch make it unsuitable for this species.
Giant garter snake *Thamnophis gigas*	T	T	Slow-moving streams, sloughs, ponds, marshes, inundated floodplains, rice fields, and irrigation/drainage ditches on the Central Valley floor with mud bottoms, earthen banks, emergent vegetation, abundant small aquatic prey and absence or low numbers of large predatory fish. Require adequate water supply through active season (early spring through late fall). Also require upland refugia not subject to flooding during the snake's inactive season.	Unlikely to occur due to lack of permanent water during the active season, dredging and vegetation management in the agricultural ditch, and isolation from known populations. The species' current distribution is very fragmented with nine populations occurring in the following areas: Butte Basin, Colusa Basin, Sutter Basin, American Basin, Yolo Basin, Cosumnes-Mokelumne Watershed, Delta Basin, San Joaquin Basin, and Tulare Basin (USFWS 2012). The only remaining occupied area in the Tulare Basin is the Mendota Wildlife Area (USFWS 2012) located approximately 20 miles west of the project site.
Birds				
Tricolored blackbird *Agelaius tricolor* (nesting colony)	–	C	Forages in agricultural lands and grasslands; nests in marshes, riparian scrub, and other areas that support cattails or dense thickets of shrubs or herbs. Requires open water and protected nesting substrate, such as flooded, spiny, or thorny vegetation (Schuford and Gardali 2008: 439).	Unlikely to nest; the agricultural land provides foraging opportunities, but there is no suitable nesting habitat on or near the project site.

Table 3-1 Special-Status Wildlife with Potential to Occur in the Project Vicinity

Species	Listing Status[1,2] Federal	State	Habitat	Potential for Occurrence on the Project Site[2]
Burrowing owl *Athene cunicularia* (burrow sites)	–	SC	Nests and forages in grasslands, agricultural lands, open shrublands, and open woodlands with existing underground rodent burrows or friable soils, and open, well-drained terrain.	Could occur; potential habitat is present at edges of agricultural fields and in the ruderal habitat.
Swainson's hawk *Buteo swainsoni* (nesting)	–	T	Forages in grasslands and agricultural lands; nests in riparian forests or woodlands and isolated trees.	Could occur; row crops on the project site and surrounding areas provide suitable foraging habitat and potential nesting trees are present in the project vicinity. There is one CNDDB nesting record within 5 miles of the project site; it is from 1956.
California horned lark *Eremophila alpestris actia* (nesting)	–	–	Found in a variety of open habitats, usually where trees and shrubs are absent. Nests on open ground.	Could occur; potential nesting habitat is present along field borders and in ruderal habitat.
Mammals				
Pallid bat *Antrozous pallidus*	–	SC	Deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts in rock crevices, oak hollows, bridges, or buildings.	Unlikely to occur; there is no potential roost habitat on the project site.
Western mastiff bat *Eumops perotus californicus*	–	SC	Open, semi-arid to arid habitats, including conifer and deciduous woodlands, annual and perennial grasslands, and urban; roosts in rock crevices, high buildings, trees, and tunnels.	Unlikely to occur; there is no potential roost habitat on the project site.
San Joaquin pocket mouse *Perognathus inornatus*	–	–	Dry, open grasslands or scrub areas with friable soils	Unlikely to occur; agricultural habitats are generally unsuitable for this species.
Fresno kangaroo rat *Dipodomys nitratoides*	E	E	Scrub or herb habitats with scattered shrubs on sandy loam soils that are mildly to moderately alkaline in scrub on the Valley floor near central Fresno County. Genera	Unlikely to occur; although potentially suitable soil types are present, agricultural habitats are generally unsuitable for this species and the herb-dominated ruderal habitat is small, disturbed, and isolated from known populations and other suitable habitats.
American badger *Taxidea taxus*	–	SC	Drier open shrub, forest, and herbaceous habitats with friable soils for digging burrows. Needs friable soils and open, uncultivated ground.	Unlikely to occur; agricultural habitats are generally unsuitable for this species. Nearest documented occurrence is a 1989 record of a foraging adult from approximately 2.25 miles west of the project site (west of I-5).
San Joaquin kit fox *Vulpes macrotis mutica*	E	T	Annual grasslands or grassy open areas with scattered shrubs. Needs loose-textured, sandy soils for burrowing and suitable prey base.	Unlikely to occur; agricultural habitats are generally unsuitable for this species.

Notes: CNDDB = California Natural Diversity Database; USFWS = U.S. Fish and Wildlife Service

1 Legal Status Definitions

Federal:
E Endangered (legally protected)
T Threatened (legally protected)

State:
C Candidate for listing (legally protected)
SC Species of special concern (no formal protection other than CEQA consideration)
E Endangered (legally protected)
T Threatened (legally protected)

2 Species has no federal or state legal status, but is listed as another species for consideration in the City of Fresno General Plan.

Source: CNDDB 2017, USFWS 2017, City of Fresno 2014a, Schuford and Gardali 2008; data compiled by Ascent in 2017

3.4.2 Discussion

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 Wildlife or the U.S. Fish and Wildlife Service?

Less than significant with mitigation incorporated. Project implementation would result in removal of up to 40 acres of agricultural and ruderal habitat that could serve as foraging and/or nesting habitat for three special-status bird species: Swainson's hawk, burrowing owl, and California horned lark.

Potential burrowing owl habitat is present in the mostly unvegetated soils at field edges, and California lark could also nest on the ground in these areas. Similar potential habitat on adjacent parcels could also support these species. Burrowing owls need burrows at all life stages and displacing individuals from their burrows can result in indirect impacts such as predation, increased energetic costs, increased stress, and risks associated with having to find and compete for burrows, all of which can lead to take or reduced reproduction.

Loss of foraging habitat for special-status bird species and common raptors would be a less-than-significant impact because the amount of foraging habitat loss is relatively low, and there is abundant foraging habitat available on the large tracts of agricultural lands surrounding the project site. Because Swainson's hawk breeding pair density is low in the local area and the region (Anderson et al. 2007, CNDDB 2017), foraging habitat is not currently a limiting factor for this species and loss of up to 40 acres of foraging habitat would not reduce nesting success, survival rates, and availability of prey for the local population, or result in displacement of nesting pairs of Swainson's hawk.

Construction activities associated with project implementation have the potential to cause direct loss of active nests or occupied burrows and/or disturbance of nesting pairs of special-status birds resulting in nest abandonment and mortality of chicks and eggs. The potential loss of an active nest or mortality of chicks and eggs of special-status bird species is considered a *potentially significant* impact.

> Mitigation Measure BIO-1: To avoid, minimize, and mitigate potential impacts on Swainson's hawk nesting on or adjacent to the project site, the project proponent shall retain a qualified biologist to conduct preconstruction surveys and identify active nests on and within 0.5 mile of the project site for construction activities conducted during the breeding season (March 1 through August 31). The surveys shall be conducted no more than 30 days before the beginning of construction. If no nests are found, no further mitigation will be required.
>
> If active Swainson's hawk nests are found within the nest survey area, the construction contractor shall avoid impacts on such nests by establishing appropriate buffers around active nest sites identified during preconstruction raptor surveys. No project activity shall commence within the buffer areas until a qualified biologist has determined, in coordination with California Department of Fish and Wildlife (CDFW), the young have fledged, the nest is no longer active, or reducing the buffer would not result in nest abandonment. CDFW guidelines recommend implementation of 0.25- or 0.5-mile-wide buffers for Swainson's hawk nests, but the size of the buffer may be decreased if a qualified biologist and the City, in consultation with CDFW, determine that such an adjustment would not be likely to adversely affect the nest.
>
> No construction activity shall occur within the buffer area of a particular nest until a qualified biologist, in consultation with CDFW, confirms that the chicks have fledged or the nesting cycle has otherwise completed. Monitoring of the nest by a qualified biologist during construction activities shall be required if the activity has the potential to adversely affect the nest. If construction activities cause the nesting bird to vocalize, make defensive flights at intruders, get up from a brooding

position, or fly off the nest, then the no-disturbance buffer shall be increased until the agitated behavior ceases. The exclusionary buffer will remain in place until the chicks have fledged or as otherwise determined by a qualified biologist.

Mitigation Measure BIO-2: To avoid, minimize, and mitigate potential impacts on burrowing owl, the project proponent shall retain a qualified biologist to conduct focused breeding and nonbreeding season surveys for burrowing owls in areas of suitable habitat on and within 1,500 feet of the project site. Surveys will be conducted prior to the start of construction activities and in accordance with Appendix D of CDFW's Staff Report on Burrowing Owl Mitigation (2012). If no occupied burrows are found, a letter report documenting the survey methods and results will be submitted to the City and CDFW and no further mitigation will be required.

If an active burrow is found during the nonbreeding season (September 1 through January 31), owls will be relocated to suitable habitat outside of the project area using passive or active methodologies developed in consultation with CDFW and may include active relocation to preserve areas if approved by CDFW and the preserve managers. No burrowing owls will be excluded from occupied burrows until a burrowing owl exclusion and relocation plan is developed by the project proponent and approved by CDFW.

If an active burrow is found during the breeding season (February 1 through August 31), occupied burrows will not be disturbed and will be provided with a 150- to 1,500-foot protective buffer unless a qualified biologist verifies through noninvasive means that either: 1) the birds have not begun egg laying, or 2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. The size of the buffer will depend on the time of year and level of disturbance, as outlined in the CDFW Staff Report (2012, p. 9). Once the fledglings are capable of independent survival, the owls will be relocated to suitable habitat outside the project area in accordance with a burrowing owl exclusion and relocation plan developed in consultation with CDFW and the burrow will be destroyed to prevent owls from reoccupying it. No burrowing owls will be excluded from occupied burrows until a burrowing owl exclusion and relocation plan is approved by CDFW. Following owl exclusion and burrow demolition, the site shall be monitored by a qualified biologist to verify burrowing owls do not recolonize the site prior to construction.

If active burrowing owl nests are found on the project site and these nest sites, after abandonment, are lost as a result of implementing the project, the project proponent shall mitigate the loss through preservation of other known nest sites in Fresno County, at a minimum ratio of 1:1. The proponent shall develop a habitat monitoring plan for the compensatory mitigation areas. The habitat monitoring plan will include detailed information on the habitats present within the preservation areas, the long-term management and monitoring of these habitats, legal protection for the preservation areas (e.g., conservation easement, declaration of restrictions), and funding mechanism information (e.g., endowment). All burrowing owl mitigation lands shall be preserved in perpetuity and incompatible land uses shall be prohibited in habitat conservation areas.

The project proponent shall transfer said burrowing owl mitigation land, through either conservation easement or fee title, to a third-party, nonprofit conservation organization (Conservation Operator), with the City and CDFW named as third-party beneficiaries. The Conservation Operator shall be a qualified conservation easement land manager that manages land as its primary function. Additionally, the Conservation Operator shall be a tax-exempt nonprofit conservation organization that meets the criteria of Civil Code Section 815.3(a) and shall be selected or approved by the City, after consultation with CDFW. The City, after consultation with CDFW and the Conservation Operator, shall approve the content and form of the conservation easement. The City, CDFW, and the Conservation Operator shall each have the power to enforce the terms of the conservation easement. The Conservation Operator shall monitor the easement in perpetuity to ensure compliance with the terms of the easement.

Mitigation Measure BIO-3: To avoid, minimize, and mitigate potential impacts on California horned lark, the project proponent shall retain a qualified biologist to conduct preconstruction surveys and identify active nests on and within 300 feet of the project site for construction activities conducted during the California horned lark breeding season (March 1 through July 31). The surveys shall be conducted no more than 30 days before the beginning of construction. If no nests are found, no further mitigation will be required.

If an active horned lark nest is found within the nest survey area, the construction contractor shall avoid impacts on such nests by establishing a no-disturbance buffer around the nest. The appropriate buffer size shall be determined by a qualified biologist in consultation with CDFW, based on the nature of the project activity, the extent of existing disturbance in the area, visibility of the disturbance from the nest site, and other relevant circumstances. No construction shall occur within the established buffer area of an active nest until a qualified biologist, in consultation with California Department of Fish and Wildlife, confirms that the chicks have fledged and are no longer dependent upon the nest or the nesting cycle has otherwise completed. Monitoring of the nest by a qualified biologist during construction activities shall be required if the activity has the potential to adversely affect the nest. If construction activities cause the nesting bird to vocalize, make defensive flights at intruders, get up from a brooding position, or fly off the nest, then the no-disturbance buffer shall be increased until the agitated behavior ceases. The exclusionary buffer will remain in place until the chicks have fledged or as otherwise determined by a qualified biologist.

Significance After Implementation of Mitigation Measures

Implementation of Mitigation Measures BIO-1 through BIO-3 would reduce the impact to candidate, sensitive, or special-status species to a less-than-significant level by identifying the presence of protected species on-site and ensuring these species are not disturbed during nesting so that project construction would not result in nest abandonment and loss of eggs or young. In addition, Mitigation Measure BIO-2 would require that if any occupied burrowing owl habitat would be lost as a result of the project, replacement habitat would be preserved at the appropriate ratio to compensate for the habitat value lost.

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 Wildlife or the U.S. Fish and Wildlife Service?

No impact. There are no riparian habitats or other sensitive natural communities on the project site. Therefore, implementation of the project would not have any adverse effects on sensitive natural communities and no impact would occur.

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?

No impact. There are no wetlands or other waters of the United States on the project site. The agricultural ditch crossed by the project access road at South Cornelia Avenue conveys irrigation water intermittently and was created in uplands, does not drain wetlands, and has no natural surface connection to other waters of the United States. As such, the agricultural ditch does not meet the definition of a federally protected wetland or water of the United States. Therefore, implementation of the project would not have any adverse effects on federally protected wetlands or waters of the United States and there would be no impact related to this topic.

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?

Less than significant with mitigation incorporated. Wildlife corridors are areas that provide connections between habitat patches or habitat features that would otherwise be isolated and unusable. There are no established wildlife corridors on the project site, and project development would not interfere substantially with the movement of any native resident or migratory wildlife species because the project site does not currently provide an important connection between any areas of natural habitat that would otherwise be isolated. However, project construction would result in removal of ornamental trees and shrubs that provide suitable nesting habitat for nesting birds and raptors protected by the Migratory Bird Treaty Act (MBTA) and Sections 3503 and 3503.5 of the California Fish and Game Code.

Vegetation removal and ground disturbances associated with project implementation could result in direct destruction of active nests of common birds and raptors protected under the MBTA or California Fish and Game Code. Project construction could also result in indirect disturbance of nesting birds on or near the project site causing nest abandonment by the adults and mortality of chicks and eggs. Loss of active bird nests is considered a *potentially significant* impact.

> Mitigation Measure BIO-4: If construction activity, tree removal, trimming, or pruning on the project site is to begin during the nesting season for protected bird species in this region (generally late February through early September), a qualified biologist shall conduct preconstruction surveys in areas of suitable nesting habitat for common raptors and bird species protected by the Migratory Bird Treaty Act or California Fish and Game Code. Surveys shall be conducted no more than 30 days before any ground disturbance is expected to occur and shall extend at least 300 feet from the edge of the disturbance activity for non-raptor bird species and at least 500 feet of project activity for all raptor species potentially nesting in the area. Surveys shall cover potential nesting habitat for tree and shrub nesting species as well as ground nesting species.
>
> If no active nests are found, no further mitigation is required. If active nests are found, the construction contractor shall avoid impacts on such nests by establishing a no-disturbance buffer around the nest. The appropriate buffer size for all nesting birds shall be determined by a qualified biologist, in consultation with CDFW, based on the species of nesting bird, nature of the project activity, the extent of existing disturbance in the nest area, visibility of the disturbance from the nest site, and other relevant circumstances.
>
> No construction shall occur within the established buffer area of an active nest until a qualified biologist, in consultation with CDFW, confirms that the chicks have fledged and are no longer dependent upon the nest or the nesting cycle has otherwise completed. Monitoring of the nest by a qualified biologist during construction activities shall be required if the activity has the potential to adversely affect the nest. If construction activities cause the nesting bird to vocalize, make defensive flights at intruders, get up from a brooding position, or fly off the nest, then the no-disturbance buffer shall be increased until the agitated behavior ceases. The exclusionary buffer will remain in place until the chicks have fledged or as otherwise determined by a qualified biologist.

Significance After Implementation of Mitigation Measures

Implementation of Mitigation Measure BIO-4 would reduce the impact to nesting bird species to a less-than-significant level by identifying the presence of active nests on or near the project site and avoiding or minimizing potential impacts prior to construction.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less-than-significant impact. As described previously, the project site consists of cultivated row crops and a small area of disturbed land. There are scattered trees along the northern perimeter of the project site along West Jensen Avenue and along South Cornelian Avenue where a project access road is proposed. The project would be required to comply with the Planning Director's decision to replace any trees that are removed in accordance with Section 13-Article 3 Street Trees and Parkways of the Municipal Code of Ordinances (City of Fresno, 2017). Additionally, as described above, the potential for special-status plants is very low and the potential for special-status species is addressed in above in Section 3.4.2 (a). The project is consistent with the resource objectives and policies contained within the City of Fresno General Plan Parks, Open Space, and Schools Element that address protection of natural resources. Construction of the project would be confined to existing disturbed areas within the project boundaries, and is not anticipated to result in impacts to biological resources or conflict with any policies pertaining to the protection of such resources. Therefore, implementation of the project would result in less-than-significant conflicts with local policies or ordinances.

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?

No impact. The project site is not located within any habitat conservation or natural community conservation plan areas (City of Fresno, 2014b:5.4-24). Therefore, the project would not conflict with a habitat conservation or natural community conservation plan, and there would be no impact related to this topic.

3.5 CULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. Cultural Resources. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 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?	☐	☒	☐	☐

3.5.1 Environmental Setting

The general structure of the central San Joaquin Basin took shape due to the effects of subductive North American and Pacific Plates colliding, periodically lifting and submerging the basin numerous times. Therefore, there is the potential for the discovery of paleontological resources due to ground disturbing activities (City of Fresno, 2014b:5.5-2).

The majority of the San Joaquin Valley is associated with either Native American or Euroamerican occupation (City of Fresno, 2014b:5.5-5). Cultural resources in the San Joaquin Valley include prehistoric-era archaeological sites, historic-era archaeological sites, Native American traditional cultural properties, sites of religious and cultural significance, and historical buildings, structures, objects, and sites. Archaeological resources are places where human activity has measurably altered the earth or left deposits of physical remains. Archaeological resources may be either prehistoric (before the introduction of writing in a particular area) or historic (after the introduction of writing).

Prior to European settlement, the area around the city was occupied by the Southern Valley Yokuts, and the environment was rich with abundant water resources from the nearby sloughs, lake basins, and river systems. Swamps and tule marshes surrounded the waterways and teemed with wildlife, including aquatic mammals, fish, and waterfowl. Adjacent grasslands provided food for herds of elk, antelope, and (in the winter) deer. The regional flora was equally, if not more, diverse and was used as a main staple of the Yokuts diet (City of Fresno, 2014b:5.5-4).

The Central Valley was settled by Europeans in the early 1800s, with the San Joaquin River becoming a valuable resource. As Spanish California passed to Mexican control, American trappers increasingly began to exploit the region’s resources and once gold was discovered, the population rush into California began, with mineral exploration in the mountains and foothills east of the City of Fresno. During the latter half of the 19th century, the size of all Yokuts populations dwindled dramatically, due to the spread of European settlements and the diseases the Europeans brought with them (City of Fresno, 2014b:5.5-5)

There have been sixteen Native American archeological sites recorded within the City of Fresno by the Southern San Joaquin Valley Information Center (SSJVIC), a depository for information on cultural resources. According to the SSJVIC the probability of finding subsurface cultural resources is considered low to moderate in most areas, with the exception of the waterways (City of Fresno, 2014a:8-9). A sacred lands file and archaeological resource search request was submitted to the Native American Heritage Commission (NAHC) specifically for this project. The NAHC indicated that the sacred lands search yielded a negative result.

A confidential records search for the project site was conducted by Ascent Environmental at the Southern San Joaquin Valley Information Center (SSJVIC) on June 12, 2017 (SSJVIC Records Search Number 17-302). The search included a review of the National Register of Historic Properties (NRHP), the California Register of Historical Resources (CRHR), California State Historical Landmarks, California State Points of Historical Interest, Archaeological Determinations of Eligibility, records of previously recorded cultural resources, and records of previous field studies. The records search revealed no archaeological sites and only one historic-era structure on the project site. The structure, Pacific Gas and Electric Company's Panoche-Kearney 230 kV transmission line, was evaluated in 2015 and found not historically significant under the four NRHP- or CRHR-eligibility criteria. Because the transmission line does not appear to meet the criteria for the NRHP or the CRHR, it is therefore not considered to be significant for the purposes of CEQA.

The project site is currently used for the cultivation of irrigated row crops, and, except for the transmission line towers, there are no existing structures on site.

3.5.2 Discussion

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

No impact. The project site does not contain any existing structures that would be eligible for designation as a historical resource under Section 15064.5. Therefore, implementation of the project would not result in substantial adverse changes to historical resources and there would be no impact related to this topic.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less than significant with mitigation incorporated. According to the City's General Plan MEIR, the probability of finding subsurface cultural resources is considered low to moderate in most areas in the city, with the exception of the waterways (City of Fresno, 2014a:8-9). NAHC indicated that its sacred land file search identified no record of existing known sacred lands in the vicinity and no record of a known archaeological resource was identified during the SSJVIC records search. However, given the limited area within the city that has been surveyed by a professional archaeologist (0.3 percent of the incorporated city), the archaeological sensitivity of the project site is uncertain. Due to the lack of archaeological information, the potential to disturb archaeological resources during grading and construction activities within previously undisturbed soils would be *potentially significant*.

> **Mitigation Measure CULT-1**: Prior to approval of grading plans, the applicant shall retain a qualified archaeologist to conduct a field survey for archaeological resources. The following procedures shall be followed.
>
> If archaeological resources are found during the field survey, the resources shall be inventoried using appropriate State record forms and submit the forms to the Southern San Joaquin Valley Information Center. The resources shall be evaluated for significance. If the resources are found to be significant, measures shall be identified by the qualified archaeologist. Appropriate mitigation measures for significant resources could include avoidance or capping, incorporation of the site in green space, or data recovery excavations of the finds. In addition, appropriate mitigation for excavation and construction activities in the vicinity of the resources found during the field survey shall include an archaeological monitor. The monitoring period shall be determined by the qualified archaeologist. If additional archaeological resources are found during excavation and/or construction activities, the procedure identified below for the discovery of unknown resources shall be followed.
>
> If archaeological resources are not found during the field survey, excavation and/or construction activities can commence. In the event that archaeological resources are discovered during excavation and/or construction activities, construction shall stop in the immediate vicinity of the find and a qualified archaeologist shall be consulted to determine whether the resource requires further study. The qualified archaeologist shall make recommendations to the City on the measures that shall be implemented to protect the discovered resources, including but not limited to excavation of the finds and evaluation of the finds in accordance with Section 15064.5 of the CEQA Guidelines. If the resources are determined to be unique archaeological resources as defined under Section 15064.5 of the CEQA Guidelines, avoidance and/or minimization measures shall be identified by the monitor and recommended to the City. Appropriate measures for significant resources could include avoidance or capping, incorporation of the site in green space, or data recovery excavations of the finds. No further grading shall occur in the area of the discovery until the City approves the measures to protect these resources. Any archaeological resources recovered as a result of mitigation shall be provided to a City-approved institution or person who is capable of providing long-term preservation to allow future scientific study.

Significance After Implementation of Mitigation Measure

Implementation of Mitigation Measure CULT-1 would reduce this impact to a **less-than-significant** level by identifying archaeological resources prior to construction, or stopping work temporarily if resources are found during construction and identifying and implementing appropriate response, handling, and or curation of any discovered significant archaeological resource.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less than significant with mitigation incorporated. The project site does not contain any unique geologic features. However, according to the City's General Plan EIR, the city has undergone a period of glacial activity, and a period of erosion, indicating that the potential for discovery of paleontological resources in the city is high. Based on a review of geologic maps of the city, the project site consists of two primary surficial deposits: 1) Pleistocene non-marine and 2) Quaternary non-marine fan deposits which occurred as a result of erosion along the western Sierra Nevada (City of Fresno, 2014b: Appendix D). All undisturbed alluvial deposits have the potential of containing vertebrate fossils and both deposit types are highly sensitive to ground disturbing activities and could be impacted by excavation and construction within previously undisturbed soils (City of Fresno, 2014b:5.5-14). Although the project site is highly disturbed due to ongoing crop cultivation, which substantially reduces the likelihood for discovering in-tact paleontological resources, grading and trenching activities would disturb deeper levels of soil in some areas, which could uncover previously undiscovered paleontological resources. Therefore, impacts to paleontological resources would be *potentially significant*.

> **Mitigation Measure CULT-2:** Prior to issuance of grading permits, a qualified paleontologist shall conduct a screening-level site survey to better determine, based on site conditions and geology, the potential for significant paleontological resources to be present at a depth that could be disturbed by proposed activities. If the screening-level site survey indicates that the project site is not likely to include significant paleontological resources at a depth that could be adversely affected by proposed activities, the qualified paleontologist shall submit the findings to the City and no additional mitigation is necessary, grading permits may be issued, and construction may proceed. If the paleontologist finds that the potential for significant paleontologists are likely present and could be affected by proposed activities, the paleontologist shall prepare an adequate mitigation program for avoiding or minimizing adverse impacts to paleontological resources. The program must include (but shall not be limited to): 1) an intensive field survey and surface salvage prior to earth moving, if applicable; 2) monitoring by a qualified paleontological resource monitor of trenching and other disturbance of previously undisturbed soil and a plan for stopping work in areas of finds (including identification of appropriate buffers for restricting construction equipment); 3) salvage of unearthed fossil remains and/or traces (e. g., tracks, trails, burrows, etc.); 4) screen washing to recover small specimens, if applicable; 5) preparation of salvaged fossils to a point of being ready for curation (i.e., removal of enclosing matrix, stabilization and repair of specimens, and construction of reinforced support cradles where appropriate); 6) identification, cataloging, curation, and provision for repository storage of prepared fossil specimens; and 7) a final report of the finds and their significance. All of the steps identified in the program shall be overseen by a qualified paleontologist. The mitigation program shall be submitted to the City and approved prior to issuance of grading permits.

Significance After Implementation of Mitigation Measure

Implementation of Mitigation Measure CULT-2 would reduce this impact to a **less-than-significant** level by requiring construction monitoring, if needed, and requiring appropriate handling, recording, and curation of any significant paleontological resources discovered.

d) Disturb any human remains, including those interred outside of formal cemeteries?

Less than significant with mitigation incorporated. There are no known Native American cemeteries located on the project site; however, various cemeteries are located throughout the city (City of Fresno, 2014b:5.5-30). There is a possibility that ground-disturbing activities associated with future development may uncover previously unknown buried human remains. Because project-related construction activities could uncover previously unknown human remains, the impact would be *potentially significant*.

Mitigation Measure CULT-3: If human remains are unearthed during excavation and grading activities of the project, all activity shall cease immediately. Pursuant to Health and Safety Code (HSC) Section 7050.5, no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98(a). If the remains are determined to be of Native American descent, the coroner shall within 24 hours notify the Native American Heritage Commission (NAHC). The NAHC shall then contact the most likely descendent of the deceased Native American, who shall then serve as the consultant on how to proceed with the remains. Pursuant to PRC Section 5097.98(b), upon the discovery of Native American remains, project proponent will ensure that the immediate vicinity, according to generally accepted cultural or archaeological standards or practices, where the Native American human remains are located is not damaged or disturbed by further development activity until the project proponent has discussed and conferred with the most likely descendants regarding their recommendations, if applicable, taking into account the possibility of multiple human remains. The project proponent will discuss and confer with the descendants all reasonable options regarding the descendants' preferences for treatment.

Significance After Implementation of Mitigation Measure

Implementation of Mitigation Measure CULT-3 would reduce this impact to a less-than-significant level by identifying a course of action, consistent with existing law, that would appropriately handle human remains in the event that they are discovered during grading or construction.

3.6 GEOLOGY AND SOILS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. Geology and Soils. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
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? (Refer to California Geological Survey Special Publication 42.)	☐	☐	☒	☐
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, as updated), creating substantial risks to life or property?	☐	☐	☒	☐

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. Geology and Soils. Would the project:				
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

3.6.1 Environmental Setting

The City of Fresno is located along the eastern margin of the southern San Joaquin Valley portion of the Great Valley Geomorphic Province of California. The San Joaquin Valley is bordered to the north by the Sacramento Valley portion of the Great Valley, to the east by the Sierra Nevada, to the west by the Coast Ranges, and to the south by the Transverse Ranges. The project site is located west of the urbanized portion of the city within an incorporated island and approximately 10 miles south of the San Joaquin River. There are no active faults within the city. The closest fault, the San Andreas, is 61 miles to the west. As with most areas in California, the city would be exposed to ground shaking from seismic events on local and regional faults. However, the Fresno area has historically experienced a low to moderate degree of seismicity and is not located in an area within a seismic settlement or lateral spread hazard area (City of Fresno, 2014b:5.6-2).

The city is within a region of the San Joaquin River Valley that consists of mostly flat topography within the Central Valley. Accordingly, the General Plan MEIR indicates there is no risk of large landslides in the majority of the Planning Area (City of Fresno, 2014b:5.6-4).

The predominant soils anticipated to be encountered within the city consist of varying combinations of very loose/very soft to very dense/hard silts, clays, sands, and gravels. Moderate cohesion strength is associated with the clayey soils. Based on these characteristics, the potential for soil liquefaction within the city ranges from very low to moderate due to the variable density of the subsurface soils and the presence of shallow groundwater. Groundwater wells in the area of the project site were at approximate depths of 70-80 feet below ground surface during exploratory drilling in 2014 (Fresno Irrigation, 2014).

The southern and west parts of the San Joaquin Valley have been subject to land subsidence due to fluid withdrawal (groundwater and petroleum). However, the city is not located within those areas (City of Fresno, 2014b:5.6-7).

The surface and near-surface soils observed throughout the city consist of varying combinations of clays, silts, sands, gravels, and cobbles. The clayey and sandy soils are considered to be slightly to moderately expansive (City of Fresno, 2014b:5.6-6). Soils on the project site are Atwater loamy sand, 0 to 3 percent slopes; Madera sandy loam; and Greenfield sandy loam, moderately deep, 0 to 3 percent slopes.

3.6.2 Discussion

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? (Refer to California Geological Survey Special Publication 42.)

ii) Strong seismic ground shaking?

iii) Seismic-related ground failure, including liquefaction?

iv) Landslides?

Less-than-significant impact. The project site is not located within an Alquist-Priolo active fault zone, and there are no active faults located in the region. The San Andreas Fault line, which is the closest fault line, is located approximately 61 miles west of the project site (California Department of Conservation, 2016b). The project would include construction of buildings that would be occupied by humans. As noted above, the project site is not located in an area that is susceptible to strong seismicity, liquefaction, or landslides. Further, the buildings would be constructed in conformance with California Building Code (CBC) Title 24, which identifies specific design requirements to reduce damage from strong seismic ground shaking, ground failure, landslides, soil erosion, and expansive soils. This impact would be less than significant.

b) Result in substantial soil erosion or the loss of topsoil?

Less-than-significant impact. Construction would involve soil disturbance, including grading and excavation. Potential impacts related to erosion are discussed further in Section 3.9 Hydrology and are minimized using common and accepted practices to address runoff and storm water pollution prevention. For projects larger than 1 acre, a storm water pollution prevention plan must be provided that includes an erosion control site plan that identifies best management practices (BMPs) such as soil control for the project perimeter, track out locations, concrete wash areas, and drop inlet protections. Compliance with these policies and with other pertinent regulations would ensure that potential soil erosion impacts, or the potential loss of topsoil, would be less than significant.

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?

Less-than-significant impact. As described in item a) above, the project site is not located in a seismically active area. Additionally, the project site and the surrounding area are flat. Portions of the San Joaquin Valley have been subject to land subsidence or collapse due to groundwater and petroleum extraction. Damage caused by subsidence or collapse has been restricted principally to significant changes in gradients of canals and aqueducts, and breakage of deep-water well casings. Within the San Joaquin Valley, subsidence or collapse is concentrated in the southern part and the west side of the valley where rainfall is sparse and groundwater recharge is minimal. Although subsidence or collapse is a significant concern in western Fresno County, as well as other portions of the San Joaquin Valley, the city is not known to be subject to such subsidence or collapse hazards (City of Fresno, 2014b:5.6-7). However, the potential for failure from subsidence and lateral spreading is highest in areas where the groundwater table is high, where relatively soft and recent alluvial deposits exist, and where creek banks are relatively high. As described above, the project site does not have high levels of groundwater, nor does it contain any ephemeral streams or creeks. Therefore, the potential for subsidence is low. As such, the project would not be expected to be prone to landslides, lateral spread, subsidence, or liquefaction. Therefore, this impact would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?

Less-than-significant impact. As described above, the western portion of the project site consists of Atwater loamy sand, Madera sandy loam, and Greenfield sandy loam. These soils are well-drained and minimally expansive (USDA, 2015 and 2003). The exact mix of soils on the project site is unknown, and expansive soils may occur. Expansive soils are soils that are high in clays or silts and swell and shrink with wetting and drying, respectively. This shrinking and swelling can result in differential ground movement, which can cause damage to foundations. However, proper fill selection, moisture control, and compaction during construction can prevent these types of soils from causing significant damage. In compliance with Section 1803 of the CBC, the project proponent would be required to perform soil investigations by a registered engineer in order to determine the presence of expansive soils prior to construction. If the project site is determined to contain expansive soils, the project proponent would be required to provide design (especially foundation design) and construction solutions to reduce the risks associated with unstable and expansive soils. Therefore, the project would result in less-than-significant impacts related to expansive soils.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No impact. All wastewater generated at the facility (a portion of which would be stormwater) would pass through a primary treatment system before being discharged to the City's wastewater collection and treatment system. The primary treatment system would likely consist of a rotary screen, settling tank with skimmer, an equalization tank, and a dissolved air flotation system. The specific design of the system would be finalized in coordination with City staff. The project would not involve the use of septic tanks that could be affected by poor soils. There would be no impact related to this issue.

3.7 GREENHOUSE GAS EMISSIONS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. Greenhouse Gas Emissions. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☒	☐	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

3.7.1 Environmental Setting

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. GHGs are responsible for "trapping" solar radiation in the earth's atmosphere, a phenomenon known as the greenhouse effect. Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Human-caused emissions of these GHGs in excess of natural ambient concentrations are believed responsible for intensifying the greenhouse effect and leading to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is "extremely likely" that more than half of the observed increase in global average surface temperature from 1951 to 2010 was caused by the anthropogenic increase in GHG concentrations and other anthropogenic factors together (IPCC 2014). By adoption of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, and Senate Bill (SB) 97, the State of California has acknowledged that the effects of GHG emissions cause adverse environmental impacts. AB 32 mandates that emissions of GHGs must be capped at 1990 levels by the year 2020 (CARB 2007).

On January 20, 2017, CARB released its proposed 2017 Climate Change Scoping Plan Update (proposed 2017 Scoping Plan Update), which lays out the framework for achieving the 2030 reductions as established in EO B-30-15 and SB 32 and AB 197 (discussed below). The proposed 2017 Scoping Plan Update identifies the GHG reductions needed by emissions sector to achieve a statewide emissions level that is 40 percent below 1990 levels before 2030. It also identifies how GHGs associated with projects could be evaluated under CEQA. Specifically, it states that achieving "no net increase" in GHG emissions is the correct overall objective of projects evaluated under CEQA if conformity with an applicable local GHG reduction plan cannot be demonstrated. CARB also recognizes that it may not be appropriate or feasible for every development project to mitigate its GHG emissions and that this may not necessarily imply a substantial contribution to the cumulatively significant environmental impact of climate change. At the time of writing this environmental checklist, CARB has not yet approved its proposed 2017 Scoping Plan Update.

In August 2016, Governor Brown signed SB 32 and AB 197, which serve to extend California's GHG reduction programs beyond 2020. SB 32 amended the Health and Safety Code to include Section 38566, which contains language to authorize CARB to achieve a statewide GHG emission reduction of at least 40 percent below the AB 32 goal of 1990 levels by 2020 by no later than December 31, 2030. SB 32 codified the targets established by EO B-30-15 for 2030, which set the next interim step in the State's continuing efforts to pursue the long-term target expressed in EOs S-3-05 and B-30-15 of 80 percent below 1990 emissions levels by 2050.

GHGs have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. Although the emissions of one single project would not cause global climate change, GHG emissions from multiple projects throughout the world could result in a cumulative impact with respect to global climate change.

The Governor's Office of Planning and Research (OPR) guidance does not include a quantitative threshold of significance to use for assessing a project's GHG emissions under CEQA, nor has CARB established such a threshold or recommended a method for setting a threshold for project-level analysis. In the absence of a consistent statewide threshold, a threshold of significance for analyzing a project's GHG emissions was developed. The issue of setting a GHG threshold is complex and dynamic, especially considering the California Supreme Court decision in *Center for Biological Diversity v. California Department of Fish and Wildlife* (referred to hereafter as the Newhall Ranch decision). The California Supreme Court ruling also highlighted the need for the threshold to be tailored to the specific project type, its location, and the surrounding setting. Therefore, the threshold used to analyze the project is specific to the analysis herein, and the City of Fresno retains the ability to develop and/or use different thresholds of significance for other projects in its capacity as lead agency.

The San Joaquin Valley Air Pollution Control District (SJVAPCD) has guidance on evaluating GHG emissions for stationary source projects using Best Performance Standards (BPS). SJVAPCD defines BPS as "the most effective Achieved-in-Practice means of reducing or limiting GHG emissions from a GHG emissions source" (SJVAPCD 2009). For stationary sources, BPS refers to equipment type, equipment design, and operational and maintenance activities. Because this project has not committed to using BPS in the project design, GHG emissions must be quantified and disclosed in the CEQA document, per SJVAPCD guidance. For the evaluation of this project, an impact would be significant if the project would not incorporate BPS in stationary sources such that emissions are considered consistent with AB 32, SB 32, and CARB's Scoping Plan.

In 2014, the City of Fresno adopted a Greenhouse Gas Reduction Plan (GHG Plan) as its primary strategy for reducing GHG emissions. The GHG Plan focuses on emissions generated by activities under the control or influence of the City. The GHG Plan is designed to ensure that the development accommodated by the buildout of the General Plan supports the goals of AB 32. The strategy identified in the GHG Plan will continue to provide reductions past 2020 and includes "interim" targets for 2035 and 2050 that show the amount of reductions that would be required to be on a path to achieve the State's long-term goal of reducing emissions to 80 percent below 1990 levels by 2050. The GHG Plan includes projections that show the amount of emission reduction that will be required to achieve consistency with percentage reductions that meet targets in later years, but the GHG Plan does not include a comprehensive strategy to achieve the later targets pending adoption of a statewide strategy for those later years.

3.7.2 Discussion

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Short-term construction-generated and long-term operational GHG emissions were calculated using the California Emissions Estimator Model (CalEEMod) Version 2016.3.1 computer program (CAPCOA 2016). Model assumptions were based on project-specific information (i.e., construction start, equipment, number of workers); and default values in CalEEMod that are based on the project's location and land use type.

Less than significant with mitigation incorporated. Construction-related activities that would generate GHGs include worker commute trips, haul trucks carrying supplies and materials to and from the project site, and off-road construction equipment (e.g., dozers, graders, excavators). Project construction would include five primary phases: grading and site preparation; utility installation and connection; roadway, driveway, and parking lot construction; building construction and equipment installation; and landscape installation. Construction equipment would vary by phase, but the entire construction process would include operation of the following types of equipment: graders, dozers, excavators, scrapers, water trucks, cranes, forklifts, generators, pavers, rollers, welders, and air compressors. Construction of the land uses proposed under the project would occur over approximately a two-year period. Project construction would be anticipated to start in January 2018 and continue until late-2019.

Total construction emissions for each year of construction are summarized in Table 3-2. Additional details on the modeling assumptions, inputs, and outputs are provided in Appendix B.

Table 3-2 Estimated GHG Emissions Associated with Project Construction Activities by Construction Year

Construction Year	GHG Emissions ($MTCO_2e$/year)
2018	229
2019	206

Notes: $MTCO_2e$/year = metric tons of carbon dioxide equivalent per year.

Source: Data modeled by Ascent Environmental in 2017.

As shown in Table 3-2, construction activities would result in maximum annual emissions of 229 metric tons of carbon dioxide equivalent ($MTCO_2e$) per year. For comparison, many air districts in California (e.g., Bay Area Air Quality Management District [BAAQMD], Sacramento Metropolitan Air Quality Management District [SMAQMD]) have adopted construction-related GHG thresholds of 1,100 $MTCO_2e$/year for stationary sources. SJVAPCD has not adopted a construction-related GHG threshold for stationary sources.

However, operational activities could result in potentially significant emissions. Operational activities related to the project would be similar to those of the existing rendering facility but would include an increase in processing capacity. Daily operations would increase from a processing capacity of 850,000 pounds per day to 10 million pounds per week (or approximately 2 million pounds per day). The proposed expansion would result in 40 additional daily delivery truck trips and up to 23 new employees. The proposed facility would be a total of 44,600 sf, including a larger processing floor, stationary mechanical equipment (e.g., cooker, boiler, presser), and a truck shop/loading dock, approximately 16,800 sf larger than the existing facility. Emissions would be associated with mobile sources from worker commute and delivery trucks, as well as stationary sources from on-site processing equipment (e.g., rendering units, boilers, generators). The project would relocate next to the existing Fresno-Clovis RWRF, which would provide the project with 18 percent of its natural gas demand through conditioned gas produced from waste methane. This 18 percent was excluded from the project's estimated GHG contribution because it is reuse of otherwise released GHG from the RWRF. The emissions quantified for this analysis address only the increase in operations, excluding the existing facility's contribution.

The project's operational GHG emissions were estimated for 2020, which is the year when the proposed land uses would become fully operational. Emissions associated with mobile trips were based on vehicle-miles-traveled (VMT) estimates (provided by Fehr & Peers as part of their traffic analysis for the project), specifically, the increase in vehicle trips by both employees and trucks. The vehicle emissions were estimated using CalEEMod Version 2016.3.1. Water consumption, wastewater treatment, and solid waste generation GHG emissions were also estimated using CalEEMod. Natural gas and electricity demand data were provided by the project proponent and emissions were calculated using utility provider emission factors. The utility provider was assumed to be PG&E, and 2020 emission factors were used based on PG&E-reported intensities (PG&E 2015).

Table 3-3 summarizes all the direct and indirect annual GHG emissions associated with the project upon full buildout in 2020. These emissions estimates account for existing regulations pertaining to vehicle emissions. See Appendix B for modeling assumptions.

Table 3-3 Summary of Annual GHG Emissions Associated with the Project at Full Buildout in 2020

Emissions Activity	2020 (MT CO_2e/year)
Vehicle Trips (Mobile Sources)	1,212
Electricity Consumption	570
Natural Gas (excluding RWRF-provided gas)	10,992
Water Consumption and Wastewater Treatment	57
Solid Waste Generation	25
Total Annual Emissions	12,855

Notes: See Appendix B for detail on model inputs, assumptions, and project-specific modeling parameters.

$MTCO_2e$/year = metric tons of carbon dioxide equivalents per year.

Source: Modeling performed by Ascent Environmental in 2017.

Although SJVAPCD has not adopted GHG thresholds for stationary sources, air districts in California, including BAAQMD, SMAQMD, and South Coast Air Quality Management District, have adopted operational stationary source GHG emission thresholds of 10,000 $MTCO_2e$/year. These air districts developed this threshold to demonstrate consistency with State-adopted GHG emission reduction targets, such as those set forth by AB 32 and SB 32. Although this threshold is not used as the basis for this analysis (because SJVAPCD has not recommended using this threshold), it is provided here for informational purposes to show how the project emissions compare to this commonly accepted numeric threshold. As shown in Table 3-3, operation of the project would result in annual emissions of 12,855 $MTCO_2e$/year. Because the project has not included BPS in the project design, operational emissions, GHG emissions would need to reduce to a level consistent with adopted GHG reduction targets, and the project would result in a *potentially significant* impact.

> **Mitigation Measure GHG-1**: To reduce GHG emissions from operation of the project, the project proponent shall implement SJVAPCD-recommended Best Performance Standards (BPS) for stationary equipment, such that a reduction of at least 29 percent is achieved. Such a reduction would reduce the project's GHG emissions to a level that is considered consistent with State-adopted GHG reduction targets. This reduction could be achieved using BPS boilers, steam generators, process heaters, or other stationary sources the rendering plant may use. A complete list of available BPS for stationary equipment, along with their respective GHG emission reduction percentages, can be found on the SJVAPCD's website (http://www.valleyair.org/Programs/CCAP/bps/BPS_idx.htm) and are attached to the IS as Appendix C.

Significance After Implementation of Mitigation Measure

With the implementation of Mitigation Measure GHG-1, the project's operational GHG emissions would consistent with statewide GHG reduction goals. This impact would be reduced to a **less-than-significant** level.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less-than-significant impact. As discussed in a) above, with the implementation of Mitigation Measure GHG-1, the project would demonstrate compliance with State-adopted GHG emission reduction targets set forth in AB 32 and SB 32. Therefore, the project would not conflict with or obstruct implementation of CARB's Scoping Plan for achieving GHG reductions consistent with AB 32. For these same reasons, the project would also not conflict with the City's GHG Reduction Plan. This impact would be **less than significant.**

3.8 HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. Hazards and Hazardous Materials. Would 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/or 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?	☐	☐	☐	☒

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. Hazards and Hazardous Materials. Would the project:				
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?	☐	☐	☒	☐

3.8.1 Environmental Setting

The current rendering plant operation involves use and transport of hazardous materials. An existing residential subdivision is located within 800 feet of the existing rendering plant.

Based upon a review of the State Water Resources Control Board (SWRCB) GeoTracker database, the EPA Envirofacts/Enviromapper website, and the state Cortese list via the California Department of Toxic Substances Control (DTSC) EnviroStor database, no hazards were identified on-site. There was a leaking underground storage tank located near the project site at 5607 Jensen Avenue West; however, cleanup was completed in 2000 (U.S. EPA 2016; DTSC 2016).

The site was used historically for crop cultivation; therefore, residue from pesticides, fertilizers, and other agricultural chemicals may be present on the site. Current agricultural practices do not generally employ toxic chemicals with long-persistence; however, chemicals formerly used in agriculture included heavy metals and organic compounds, such as DDT, which may persist in soil for decades, and which, depending upon concentration, may be toxic to humans coming into contact with these compounds.

The closest airport, Fresno Chandler Executive airport, is 3.5 miles northeast of the project site. Bland Field, a small privately-owned airport, is approximately 8 miles west of the project site and Fresno-Yosemite International Airport is approximately 10 miles northeast of the project site. The project site is not located within any airport planning area zones.

The City of Fresno has an Emergency Operations Plan that describes actions the City would take in response to an emergency. This plan establishes requirements for the emergency management organization to mitigate emergency disasters affecting the City of Fresno. This includes the operation concepts and procedures associated within initial response operations to emergencies, the extended response operations, and the recovery process (City of Fresno, 2014b:5.8-8).

3.8.2 Discussion

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

Less-than-significant impact. Separate discussions are provided below for the construction and operation phases of the project.

Short-term Construction Impacts

Proposed construction activities would temporarily involve transportation, use, storage, and disposal of hazardous materials and petroleum products (such as diesel fuel, lubricants, paints and solvents, and cement products containing strong basic or acidic chemicals) that are commonly used at construction sites. Hazardous waste generated during construction may consist of welding materials, fuel and lubricant containers, paint and solvent containers, and cement products containing strong basic or acidic chemicals. Although the transportation of hazardous materials could result in accidental spills, leaks, toxic releases, fire, or explosion, the U.S. Department of Transportation (USDOT) Office of Hazardous Materials Safety prescribes strict regulations for the safe transportation of hazardous materials, as described in Title 49 of the Code of Federal Regulations (CFR). These standard accident and hazardous materials recovery training and procedures are enforced by the state and followed by private state-licensed, certified, and bonded transportation companies and contractors.

Further, pursuant to 40 CFR 112, the project would be required to prepare a spill prevention and treatment plan for rapidly, effectively, and safely cleaning up and disposing of any spills or releases that may occur during construction at the project site. As required under state and federal law, notification and evacuation procedures for site workers and local residents would be included as part of the plan in the event of a hazardous materials release during on-site construction.

In addition to 40 CFR 112, SWRCB Construction General Permit (2009-0009 DWQ) requires spill prevention and containment plans to avoid spills and releases of hazardous materials and wastes into the environment. Inspections would be conducted to verify consistent implementation of general construction permit conditions and BMPs to avoid and minimize the potential for spills and releases, and of the immediate cleanup and response thereto. BMPs include, for example, the designation of special storage areas and labeling, containment berms, coverage from rain, and concrete washout areas. Compliance with the aforementioned regulations would minimize the potential risk of a spill or accidental release of hazardous materials during construction.

Long-Term Operational Impacts

The project would relocate an existing rendering, recycling, and recovery operation that collects and processes raw material (primarily beef fat, bone, and offal) into bone meal and purified fat that can be used to make animal feed, oleo chemicals (e.g., soaps, cosmetics), fuel (e.g., biodiesel), and lubricants. The primary activities at the facility include processing food byproducts generated by local packers, restaurants, food service establishments, butchers, and grocers into animal- and vegetable-derived fats and proteins. These finished products would be sold as ingredients to produce animal feed, fertilizer, and biofuels.

The use of hazardous materials and disposal of hazardous wastes are subject to numerous laws and regulations at all levels of government. Hazardous materials are required to be stored in designated areas designed to prevent accidental release to the environment. CBC requirements prescribe safe accommodations for materials that present a moderate explosion hazard, high fire or physical hazard, or health hazards. Compliance with all applicable federal and state laws related to the storage of hazardous materials would be implemented to maximize containment and to provide for prompt and effective clean-up if an accidental release occurs.

As described above for construction, conformance with established policies would reduce the potential for improper handling of materials and wastes that could result in accidental releases. Commercial uses on the project site would prepare and implement hazardous materials plans, such as the following, to avoid occurrences, and minimize the effects of, hazardous materials spills and releases:

- California hazardous materials business plan (pursuant to California Health and Safety Code Section 25500), which specifies requirements for material inventory management, inspections, training, recordkeeping, and reporting.
- A spill prevention, containment, and countermeasures plan (pursuant to 40 CFR 112) or, for smaller quantities, a spill prevention and response plan, which identifies BMPs for spill and release prevention and provides procedures and responsibilities for rapidly, effectively, and safely cleaning up and disposing of any spills or releases.

The routine use of any of the materials used by the facility handled in accordance with laws and regulations would not create a significant hazard to the public or the environment. This would be a **less-than-significant** impact.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?

Less than significant with mitigation incorporated. Data on historic and documented releases of hazardous materials in the surrounding area were obtained through internet searches including review of the SWRCB GeoTracker database, the EPA Envirofacts/Enviromapper website, and the state Cortese list via the DTSC EnviroStor database. No hazards were identified on-site. However, due to the historic agricultural use of the site, residue from pesticides, fertilizers, and other agricultural chemicals may be present, including potential metals and organic compounds, such as DDT (which were historically common in agrochemicals, but are no longer used). If concentrations of these toxic compounds in the soil are high, the project could expose individuals coming into contact with the soil, such as construction workers, to increased health risk.

Operation of the facility would require raw materials to be collected and delivered to the facility for processing 6 to 7 days per week. Processing would typically begin on Monday and run through Saturday. The regional collection routes and delivery schedules would be variable and would likely change day to day depending on the work schedules of the byproduct generators. Raw materials would be delivered to the facility by way of Darling-owned trucks, contract haulers, and customer-owned trucks. Although the truck route would be locally limited to Jensen Avenue, the routes may vary for the portions of truck trips that occur outside the city. Delivery schedules would be relatively stable with only limited seasonal fluctuations. The equipment used in the collection and delivery of these of raw materials to the facility would be maintained in good operating condition and travel in a closed/covered condition, consistent with industry standards. As discussed under a), the potential for spills would be reduced through the implementation of a Spill Prevention Control and Countermeasures (SPCC) plan. The SPCC plan would be managed in accordance with the requirements of 40 CFR 112, Oil Pollution Prevention, which requires a spill prevention plan and includes notification/response procedures. In addition, operation of the facility (and associated use of fuels, oils, and other industrial-related hazardous materials) would be located farther away from existing sensitive uses than the current location of the rendering facility. Therefore, potential for the project to release and expose sensitive user groups to hazardous materials would be unlikely.

High voltage power lines transect the project site. The project site is configured such that the nearest structure is located approximately 250 feet away from the power line. Therefore, no structures would interfere with the operation or maintenance of the power lines and would not likely be affected in the case a power line might fall. The proposed rendering facility would, therefore, not pose hazards related to the existing high voltage power lines.

Because potential toxic chemicals associated with previous agricultural activities may be present on the site and could expose construction workers to increased health risk, the impact would be *potentially significant*.

> Mitigation Measure HAZ-1: Prior to initiation of grading or other groundwork, the project proponent shall hire a qualified environmental professional to conduct a Phase I environmental site assessment (ESA), consistent with the American Society for Testing and Materials standards (ASTM E1527). The Phase I ESA will evaluate the likelihood that hazardous chemicals are present and whether soil sampling is necessary. If the Phase I ESA indicates that contamination is unlikely, no further mitigation is necessary other than any recommendations identified in the Phase I ESA (such as stopping work if stained soil is encountered). If the Phase I ESA indicates that additional soil sampling or other further evaluation is necessary, the project proponent shall hire a qualified environmental professional to conduct a Phase II ESA to determine the presence and extent of contamination. The assessment will include soil sampling consistent with DTSC's guidelines for development of former agricultural properties. (The investigation may include borings and composite samples for organochlorine pesticides and samples for arsenic.) If the results indicate that contamination exists at levels above regulatory action standards, then the site will be remediated in accordance with recommendations made by applicable regulatory agencies, including Fresno County Environmental Health Department, RWQCB, and DTSC. The agencies involved shall depend on the type and extent of contamination. If remediation is necessary, the applicant shall hire a qualified environmental professional to prepare a work plan that identifies necessary remediation activities, including excavation and removal of on-site contaminated soils, appropriate dust control measures, and redistribution of clean fill material on the project site. The plan shall include measures that ensure the safe transport, use, and disposal of contaminated soil removed from the site. The plan shall also identify when and where soil disturbing construction activities may safely commence.

Significance After Implementation of Mitigation Measure

Implementation of Mitigation Measure HAZ-1 would reduce this impact to a less-than-significant level by appropriately identifying and remediating any on-site soil contamination related to prior use of the site.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No impact. There are no schools located within 0.25-mile of the project site. The nearest school is Westpark Elementary located over 1.5 mile east of the project site. Therefore, there would be no impact on nearby schools.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No impact. As described in b) above, the project site does not contain known hazards, and is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. Therefore, there would be no impact related to hazardous materials sites.

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?

No impact. The project site is not located within 2 miles of a public airport and is not located within an airport land use plan. There would be no impact related to airports.

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?

No impact. As described in e) above, the project site is not located within 2 miles of a private airstrip. No impact would occur.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less-than-significant impact. Implementation of the project would result in construction of multiple industrial structures on-site and would include two access points, which would reduce potential obstruction of emergency vehicle access. The site plan would be reviewed by the City Fire Department and the final site plan would be required to meet all City Fire Department requirements for emergency vehicle access and turnaround, as well as secure evacuation routes. The project also would not substantially increase traffic on local roadways and would not obstruct emergency vehicle response or any adopted emergency response plan or evacuation plan. Therefore, implementation of the project would result in a less-than-significant impact. See Section 3.14, Public Services for more detailed discussion regarding emergency response.

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?

Less-than-significant impact. The project site is surrounded by existing development and irrigated agricultural land. The site is not located within a designated urban-wildland interface area. Due to the surrounding developed land and irrigated agricultural land the likelihood for wildland fire in this area is low. Implementation of the project would result in construction of several structures that would be occupied by humans; therefore, all constructed buildings would be required to meet the building standards in Chapter 7A of the CBC at this level of hazard (CALFIRE 2007). The project would be served by well water in the case of emergency. This impact would be less than significant.

3.9 HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. Hydrology and Water Quality. Would the project:				
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 that 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 on- or offsite erosion or siltation?	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or offsite flooding?	☐	☒	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
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) Result in inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒

3.9.1 Environmental Setting

The primary surface water feature within the City of Fresno is the San Joaquin River, which is located approximately 10 miles north of the project site. The water quality within the segment running through the city is not substantially impaired. A network of agricultural canals and flood control channels traverse the city. Numerous agricultural ponds, recharge basins, and other similar features dot the city's landscape. The City began to use surface water as a source of potable water supply in 2004 (City of Fresno, 2014b:5.9-5).

The Kings River is connected to the San Joaquin River by the James Bypass, a manmade canal. Three dams control flows on the San Joaquin River and the Kings River: the Friant, Mendota, and Pine Flat Dams. In addition to the dams on the two rivers, there are reservoirs and detention basins that have been constructed to prevent flooding (City of Fresno, 2014b:5.9-1). The City of Fresno is located in the alluvial fans of numerous foothill streams and creeks that drain the western slope of the Sierra Nevada foothills. Based on a review of the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps for the city, there are areas that are subject to the 100-year frequency flood zone; however, the project site is not located within a 100-year flood zone (City of Fresno, 2014b:5.9-7).

Storm drainage facilities within the Fresno-Clovis metropolitan area are planned, implemented, operated and maintained by the Fresno Metropolitan Flood Control District (FMFCD). The storm drainage facilities within a drainage area consist of storm drain inlets, pipeline, retention basins, urban detention (water quality) basins, and stormwater pump stations. The project site is not connected to the City's municipal drainage system.

The City of Fresno is underlain by the Kings River Sub-basin, which, along with six other sub-basins, comprises the San Joaquin Valley Groundwater Basin. Groundwater levels in the city have declined by an average of 1.5 feet per year since 1990. In the past 80 years, the water level has decreased from 30 feet below ground surface to more than 128 feet below ground surface, according to 2009 data provided by the City. A groundwater mound is located near the RWRF as a result of the disposal of treated effluent near the treatment facility into the percolation basins. Currently, subsurface recharge occurs from the movement of groundwater from external sources such as the Sierra Nevada moving into the local aquifer. Since the groundwater table surrounding the city is higher than inside the city, subsurface water tends to flow from surrounding areas with a higher groundwater table into the aquifer within the city that has a lower groundwater table. However, the City estimates that by the year 2025, groundwater operations (i.e., subsurface inflows and outflows) would be balanced and subsurface flows will not be directed to the city. Therefore, during and after the year 2025, subsurface water flows will not be a water supply source for the city since the water levels within the city would match the levels of the entire region. Additionally, while the groundwater supply within the Kings River Sub-basin generally meets drinking water standards, extensive contamination occurs throughout the city (City of Fresno, 2014b:5.9-4).

Of the City's 272 groundwater wells, 134 are affected by contaminant plumes. Nitrate, pesticides, and nutrients in agricultural drainage are currently found within much of the city's groundwater supply, and their levels exceed some drinking water standards established by the State. While nitrates may occur naturally, their presence is often attributed to anthropogenic reasons. Leaking septic tanks, which are prevalent in the less dense southeast portion of the city, are also a substantial source of nitrate contamination. Another major problem facing the city's groundwater supply is the presence of dibromochloropropane. This fumigant was widely used in the 1960s to control nematodes in vineyards and is now present in down-gradient groundwater wells. (City of Fresno, 2014b:5.9-3).

3.9.2 Discussion

a, f) Violate any water quality standards or waste discharge requirements?

Otherwise substantially degrade water quality?

Less-than-significant impact. Separate discussions are provided below for the construction and operation phases of the project.

Short-term Construction Impacts

All earth-disturbing activities during construction would be subject to the National Pollutant Discharge Elimination System (NPDES). The NPDES Permit Program, which in this region is administered by the Central Valley RWQCB, helps control pollution in stormwater by regulating sources of pollution at construction sites that would result in the discharge of pollutants into the stormwater and subsequent receiving waters during both construction and operations activities. As required by NPDES, the project would be required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit Order 2009-0009-DWQ). The NPDES Construction General Permit identifies limits on can be discharged, monitoring and reporting requirements, and other provisions to ensure that the discharge does not hurt water quality or people's health (EPA 2017). Construction activities subject to the Construction General Permit include clearing, grading, and other ground-disturbing activities such as stockpiling or excavation. The Construction General Permit requires development and implementation of a Storm Water Pollution Prevention Plan (SWPPP) and BMPs such as maintaining or creating drainages to convey and direct surface runoff away from bare areas, and installing physical barriers such as berms, silt fencing, waddles, straw bales, and gabions. Because the project would be required to comply with the provisions of the Construction General Permit, including preparation of a SWPPP and implementation of all identified BMPs, short-term construction impacts associated with water quality standards and waste discharge requirements would be minimized.

Long-Term Operational Impacts

The project includes development of a new industrial use on land that is currently under agricultural production. This development would result in approximately 10 acres of new impervious surface. Additionally, during operation, the project has the potential to generate polluted runoff associated with storage of cleaning chemicals and vehicle/equipment leaks. The City of Fresno is a co-permittee with the FMFCD, the County of Fresno, the City of Clovis, and California State University Fresno in the Phase 1 NPDES Permit for Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). This Phase 1 MS4 Permit requires that the City and its co-permittees implement water quality and watershed protection measures for all development projects. The waste discharge requirements contained in the NPDES Permit have been designed to be consistent with the water quality standards and goals established in the Central Valley RWQCB's Basin Plan. The project would manage stormwater quality through a SWPPP in accordance with the requirements of Section B of NPDES General Permit No. CAS000001 for the discharge of stormwater associated with industrial activities, excluding construction activities. Implementation of the SWPPP and BMPs, which include programs, technologies, processes, practices, and devices that control, prevent, remove, or reduce pollution, would reduce impacts to surface waters to acceptable levels and long-term project impacts to surface or groundwater quality would not exceed acceptable levels. Thus, short- and long-term impacts on surface and groundwater quality would be less than significant.

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 that would not support existing land uses or planned uses for which permits have been granted)?

Less-than-significant impact. The project would receive its water supply from a new well located near the northwestern corner of the project site. The well would deliver groundwater at a rate of 50 pounds per square inch. The estimated demand for City-supplied water would be 75,000 gallons per day (gpd). As described above in "Environmental Setting," although the groundwater table throughout most of the city is depleted, the project site is adjacent to a groundwater mound which is created by the presence of treated effluent from the RWRF. Therefore, groundwater is readily available for use by the facility. Additionally, the facility would use non-potable recycled water available from the adjacent RWRF, in such quantities as Darling Industries, Inc. may reasonably require for operation of its rendering plant activities and maintenance. Due to the high level of groundwater associated with the RWRF, and the use of recycled water, the project would not substantially affect groundwater levels.

Implementation of the project would add approximately 10 total acres of impervious surface to the site, and would leave approximately 30 acres without impervious surface, including landscape areas and grassy areas for stormwater filtration. Stormwater from the impervious surfaces would sheet flow into the undeveloped, grassy areas and would percolate into groundwater. Therefore, the project would not substantially impede groundwater recharge. Impacts related to groundwater levels and recharge would be less than significant.

c, d, e) 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 on- or offsite erosion or siltation?

Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or offsite flooding?

Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less than significant with mitigation incorporated. The project site is undeveloped, does not contain streams or rivers, and does not contain impervious surfaces. As discussed in a) above, construction of the project would result in ground-disturbing activities such as grading, excavation, trenching, and spoil pile storage. The project would add approximately 10 acres of impervious surface to the currently undeveloped site, which would change the existing drainage rate and pattern of the site, which could increase soil erosion, which increases silt in stormwater that could contribute to degradation of downstream surface waters. However, the project would be required to comply with the following regulatory mechanisms prior to construction:

- The City of Fresno grading plan check process,
- The FMFCD Storm Drainage Master Plan (SDMP), and
- NPDES Construction General Permit- Phase 1 MS4.

Compliance with the grading plan check process requires that all new development drains properly and is routed to the appropriate location. Additionally, these regulations would result in appropriate handling of stormwater on site to reduce potential for substantial increased runoff and minimize potential for downstream flooding. Participation in the Phase 1 MS4 permit and implementation of the SDMP would reduce water quality impacts to surface and groundwater by ensuring that discharged water meets the water quality standards and goals established in the Central Valley RWQCB's Basin Plan through the implementation of BMPs described above. However, because the project would not drain into a municipal storm drain system, and no such system exists in the vicinity of the project site, increased stormwater rate and volume could cause increased potential for localized flooding if stormwater is not appropriately handled. Therefore, impacts would be *potentially significant* related to off-site flooding.

> **Mitigation Measure HYD-1:** The project proponent shall prepare an on-site drainage plan for review and approval by the City's utilities department. The plan shall identify on-site stormwater quality and any needed storage features, such as (but not limited to) bioswales, bioretention facilities, and detention facilities. These facilities shall reduce the peak stormwater runoff rates (flowing off the site) to the existing runoff rate, or other appropriate runoff rate consistent with City and County standards, and shall be designed to minimize siltation in stormwater leaving the site.

<u>Significance after Implementation of Mitigation Measure</u>

Implementation of Mitigation Measure HYD-1 would result in a reduction in the potential for peak runoff rates to an appropriate adopted City standard or to existing runoff rates. This would reduce the potential impacts related to erosion and downstream flood potential to a **less-than-significant** level.

g, h, i) 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?

Place within a 100-year flood hazard area structures that would impede or redirect flood flows?

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?

No impact. According to Federal Emergency Management Agency Flood Insurance Rate Map Panel 2085H, the project site does not fall within a floodplain, a FEMA-designated floodway, or an inundation area (FEMA, 2009). No housing is proposed as a part of this project. Therefore, the project would not place housing or structures within a 100-year flood hazard area or otherwise expose people or structures to increased flood risk. There would be **no impact.**

j) Result in inundation by seiche, tsunami, or mudflow?

No impact. The project area is located inland with no large water bodies located in the vicinity, and there is no known history of mud flow in the vicinity. The project would not subject people or structures to a significant risk of inundation from sea level rise, tsunami, seiche, or mudflow. There would be **no impact.**

3.10 LAND USE AND PLANNING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. Land Use and Planning. Would the project:				
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, a 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?	☐	☐	☐	☒

3.10.1 Environmental Setting

The project site, currently owned by the City of Fresno, is located within an incorporated island that is surrounded by land in unincorporated Fresno County. The project site is currently designated “Public Facility” in the Fresno General Plan (Exhibit 2-3) and zoned PI (Exhibit 2-4). The Public Facility designation allows public facilities such as City and County buildings, schools, colleges, municipal airports, hospitals, fire and police stations, recycling centers, sewage treatment plants, parks, trails, recreational centers, and golf courses.

Consistent with the General Plan designation, the PI zone allows public or quasi-public facilities, including City facilities, utilities, schools, health services, corporation yards, utility stations, and similar uses. Accessory retail uses and services, including food facilities and childcare, are permitted by right.

The project site is not located within the boundaries of any approved or draft habitat conservation plan (HCP), natural community conservation plan (NCCP), or other adopted local, regional, or state HCP.

3.10.2 Discussion

a) Physically divide an established community?

No impact. The project includes a General Plan Amendment and Rezone to allow construction of the proposed industrial facility on land currently designated and zoned for public-facility-related uses. The project site is over 2 miles from the city proper and would occupy an industrially zoned island that is surrounded by rural agricultural uses and public facility uses. There are a few scattered agricultural residences in the vicinity, but the nearest two residences are located over 1,200 feet east of the site (although the eastern project driveway intersects with Cornelia Avenue approximately 100 feet away from the southernmost residence). Because the project would primarily be limited to improvements within the property, and because of the project’s consistency with the character of the surrounding area (RWRF and electrical substation), the project would not divide an established community. Furthermore, the project includes relocation of the existing rendering plant from an area near an existing residential community to the project site, which is much further from an existing residential community, and is therefore considered a much more appropriate location of this type of industrial land use. Therefore, there would be no impact.

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

Less-than-significant impact. The project requires a General Plan Amendment, Rezone, and CUP. Approval of these entitlements would change the underlying land use designation and zoning to be consistent with the proposed industrial land use. Requests for discretionary permits require that the project be evaluated for compliance and consistency with a variety of policy and regulatory programs that have been adopted in order to avoid or reduce the severity of potential environmental effects. Such plans, policies, and programs include the General Plan policies and adopted mitigation measures of the MEIR; subdivision, zoning and other ordinances incorporated into the City of Fresno Municipal Code; and various other resolutions and policy documents adopted by County decision-making bodies. The project would not conflict with these policies, ordinances, or other resolutions.

The proposed industrial use would be consistent with adjacent land uses including the RWRF, the electrical substation, and general agricultural land uses. The current Darling Ingredients Inc. facility has had a history of documented odor complaints and Darling Ingredients, Inc. has indicated a willingness to relocate to another suitable site in the city. Relocation of the facility to this project site aligns with stated City goals and policies in the General Plan related to improving quality of life in existing communities. Therefore, the impacts related to land use consistency would be less than significant.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No impact. The project site is not located in any approved or draft HCP, NCCP or other adopted local, regional or state HCP. Thus, the project would not conflict with any applicable HCP or NCCP. There would be no impact.

3.11 MINERAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. Mineral Resources. Would the project:				
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?	☐	☐	☐	☒

3.11.1 Environmental Setting

Mineral resources are all the physical materials that are extracted from the earth for use. Mineral reserves are known deposits of minerals that can be legally mined economically using existing technology. The principal area for mineral resources in the city is located in and immediately adjacent to the San Joaquin River Corridor (City of Fresno, 2014b:8-1). The project site is located approximately 10 miles south from the nearest point of the San Joaquin River. According to the California Department of Conservation Mineral Resource Zone Map, the project site is not located within an identified mineral resource zone (Department of Conservation 1986).

3.11.2 Discussion

a, b) 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?

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?

No impact. The project site is not located within a mapped mineral resource zone. No loss of availability of a known mineral resource that would be of value to the region and the residents of the state would occur. There are no locally important mineral resource recovery sites delineated on a local general plan, specific plan, or other land use plan that include the project area. Therefore, there would be no impact related to mineral resources.

3.12 NOISE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. Noise. Would the project 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 in other applicable local, state, or federal standards?	☐	☒	☐	☐
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?	☐	☐	☐	☒

3.12.1 Environmental Setting

Existing noise conditions are governed by the presence of noise-sensitive receptors, the location and type of noise sources, and overall ambient noise levels. Noise-sensitive land uses are generally considered to consist of those land uses where noise exposure could result in health-related risks to individuals, as well as places where a quiet setting is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Noise-sensitive land uses are also considered vibration-sensitive. There are no sensitive receptors located within the immediate project area. Most of the area surrounding the project site is in agricultural use (vineyards, orchards, and various row crops). A few agricultural residences are in the vicinity; the nearest two residences are located approximately 1,200 feet northeast and 1,300 feet southeast of the site, respectively. These receptors are on the east side of South Cornelia Avenue located within the County of Fresno.

The existing noise environment in the project vicinity is primarily influenced by transportation noise from vehicle traffic on the surrounding roadway systems (e.g., South Cornelia Avenue, West Jensen Avenue, South Brawley Avenue, South Marks Avenue, and South West Avenue) and the RWRF to the west. The activities at the RWRF include mobile noise sources from maintenance vehicles and employee vehicles, as well as stationary noise sources associated with pumps and motors that run the various processes at the RWRF.

The City and County have established noise standards to protect citizens from potential hearing damage and other adverse physiological and social effects from noise exposure. Section 10-101 of the City Municipal Code contains the City Noise Ordinance as detailed in Tables 9-2 and 9-3 in the City of Fresno General Plan Noise and Safety Element (City of Fresno 2014a). The County of Fresno Noise Ordinance (Chapter 8.40 of the County of Fresno Ordinance Code) and the Health and Safety Element of the County of Fresno General Plan contain the noise compatibility guidelines (County of Fresno 2000).

The nearby noise-sensitive receptors are located within the county; therefore, construction and operational stationary source noise impacts were compared to the County's noise standards. The noise impacts resulting from operational truck traffic to the project site were assessed based on the City and County noise standards because, although Jensen Avenue is a City road, it passes through both the city and county.

CITY OF FRESNO NOISE ORDINANCE

The City Noise Ordinance (Chapter 10e, Article 1 of the City of Fresno Municipal Code) specifies that construction between the hours of 7:00 a.m. and 10:00 p.m. on any day except Sunday is exempt from exterior noise standards in the Noise Ordinance (Section 10-109).

CITY OF FRESNO GENERAL PLAN

The City General Plan (City of Fresno 2014a) specifies maximum hourly noise levels for outdoor activity areas and indoor spaces measurement standards; uniform guidelines for acoustical studies based on current professional standards; required noise mitigation standards and enforcement procedures for stationary noise sources which cause the allowable noise limits to be exceeded. The Noise Ordinance establishes performance standards for noise reduction for new developed properties that may be exposed to community noise levels exceeding target acceptable noise levels for outdoor activity levels and indoor spaces. The maximum noise levels are described below in Table 3-4.

Table 3-4 City of Fresno Transportation (Non-Aircraft) Noise Sources

Noise-Sensitive Land Use	Outdoor Activity Areas	Interior Spaces	
	L_{dn}/ CNEL, dB[1]	L_{dn} / CNEL, dB	L_{eq} dB[1]
Residential	65	45	-
Transient Lodging	65	45	-
Hospitals, Nursing Homes	65	45	-
Theaters, Auditoriums, Music Halls	-	-	35
Churches, Meeting Halls	65	-	45
Office Buildings	-	-	45
Schools, Libraries, Museums	-	-	45

Notes: CNEL = Community Noise Equivalent Level; dB = decibels; L_{dn} = day-night average sound level; L_{eq} = equivalent sound level

[1]As determined for a typical worst-case hour during periods of use.

Source: City of Fresno 2014a.

The City General Plan Noise and Safety Element includes policies applicable to the project, which are listed below.

- **Policy NS-1-a Desirable and Generally Acceptable Exterior Noise Environment.** Establish 65 decibels (dB) day-night average sound level (L_{dn}) or Community Noise Equivalent Level (CNEL) as the standard for the desirable maximum average exterior noise levels for defined usable exterior areas of residential and noise-sensitive uses for noise, but designate 60 dB L_{dn} or CNEL (measured at the property line) for noise generated by stationary sources impinging upon residential and noise- sensitive uses. Maintain 65 dB L_{dn} or CNEL as the maximum average exterior noise levels for non-sensitive commercial land uses, and maintain 70 dB L_{dn} or CNEL as maximum average exterior noise level for industrial land uses, both to be measured at the property line of parcels where noise is generated which may impinge on neighboring properties.

- **Policy NS-1-b Conditionally Acceptable Exterior Noise Exposure Range.** Establish the conditionally acceptable noise exposure level range for residential and other noise sensitive uses to be 65 dB L_{dn} or require appropriate noise reducing mitigation measures as determined by a site specific acoustical analysis to comply with the desirable and conditionally acceptable exterior noise level and the required interior noise level standards set in Table 9-2.

- **Policy NS-1-c Generally Unacceptable Exterior Noise Exposure Range.** Establish the exterior noise exposure of greater than 65 dB L_{dn} or CNEL to be generally unacceptable for residential and other noise sensitive uses for noise generated by sources in Policy NS-1-a, and study alternative less noise-sensitive uses for these areas if otherwise appropriate. Require appropriate noise reducing mitigation measures as determined by a site specific acoustical analysis to comply with the generally desirable or generally acceptable exterior noise level and the required 45 dB interior noise level standards set in Table 9-2 as conditions of permit approval.

- **Policy NS-1-j. Significance Threshold.** Establish, as a threshold of significance for the City's environmental review process, that a significant increase in ambient noise levels is assumed if the project would increase noise levels in the immediate vicinity by 3 dB L_{dn} or CNEL or more above the ambient noise limits established in this General Plan Update.

- **Policy NS-1-m. Transportation Related Noise Impacts.** For projects subject to City approval, require that the project sponsor mitigate noise created by new transportation and transportation-related stationary noise sources, including roadway improvement projects, so that resulting noise levels do not exceed the City’s adopted standards for noise- sensitive land uses.

COUNTY OF FRESNO NOISE ORDINANCE

The County Noise Ordinance (Chapter 8.40 of the County of Fresno Ordinance Code) indicates that construction noise is exempt from local noise standards on weekdays from 6:00 a.m. to 9:00 p.m. and on Saturday and Sunday from 7:00 a.m. to 5:00 p.m.

The County Noise Ordinance includes noise standards that apply to all residences, schools, hospitals, churches, and public libraries. Table 3-5 lists the exterior noise standards by time of exposure within a one-hour period. Table 3-6 shows the interior noise standards for all residential land uses.

Table 3-5 County of Fresno Noise Control Ordinance: Exterior Noise Standards (dB)

Cumulative Number of Minutes in Any 1-Hour Period	Corresponding L%	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
30	L_{50}	50	45
15	L_{25}	55	50
5	$L_{8.3}$	60	55
1	$L_{1.7}$	65	60
0	-	70	65

Notes: % = percent; dB = decibels; L_x = noise level exceeded X percent of a specific period of time
Source: County of Fresno 1978

Table 3-6 County of Fresno Noise Control Ordinance: Interior Noise Standards (dB)

Cumulative Number of Minutes in Any 1-Hour Period	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
5	45	35
1	50	40
0	55	45

Notes: dB = decibels
Source: County of Fresno 1978

COUNTY OF FRESNO GENERAL PLAN

The County General Plan Health and Safety Element (County of Fresno 2000), which includes a noise section, establishes maximum acceptable noise levels for residential land uses. Table 3-7 lists the maximum acceptable noise levels for noise-sensitive land uses.

Table 3-7 County of Fresno Maximum Acceptable Noise Levels (dB)

Noise-Sensitive Land Use	L_{50}		L_{dn}	
	Daytime	Nighttime	Exterior	Interior
Rural Residential	50	45	55	45
Urban Residential and Noise-sensitive Receivers[1]	55	50	60	45
Urban Commercial	65	60	-	-
Urban Industrial	70	70	-	-

Notes: dB = decibels; L_{50} = noise level exceeded 50 percent of a specific period of time; L_{dn} = day-night average sound level
[1]Schools, parks, hospitals, and rest homes.
Source: County of Fresno 2000

The County General Plan Health and Safety Element (County of Fresno 2000) specifies locational restrictions for different land use types.

- Policy HS-G.1. The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses.
- Policy HS-G.5: Where noise mitigation measures are required to achieve acceptable levels according to land use compatibility or the Noise Control Ordinance, the County shall place emphasis on such measures upon site planning and project design. These measures may include, but are not limited to, building orientation, setbacks, earthen berms, and building construction practices. The County shall consider the use of noise barriers, such as soundwalls, as a means of achieving the noise standards after other design-related noise mitigation measures have been evaluated or integrated into the project.
- Policy HS-G.6: The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance.
- Policy HS-G.7. Where existing noise-sensitive uses may be exposed to increased noise levels due to roadway improvement projects, the County shall apply the following criteria to determine the significance of the impact:
  - Where existing noise levels are less than 60 dB L_{dn} at outdoor activity areas of noise-sensitive uses, a 5 dB L_{dn} increase in noise levels will be considered significant.
  - Where existing noise levels are between 60 and 65 dB L_{dn} at outdoor activity areas of noise-sensitive uses, a 3 dB L_{dn} increase in noise levels will be considered significant; and
  - Where existing noise levels are greater than 65 dB L_{dn} at outdoor activity areas of noise-sensitive uses, a 1.5 dB L_{dn} increase in noise levels will be considered significant.
- Policy HS-G.8: The County shall evaluate the compatibility of proposed projects with existing and future noise levels through a comparison to Chart HS-1, "Land Use Compatibility for Community Noise Environments."

3.12.2 Discussion

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?

Less than significant with mitigation incorporated. Separate discussions are provided below for increases in short-term construction noise, operational stationary noise sources, and operational traffic-related noise sources generated by the project.

Short-Term Construction Noise Impacts

Construction activities would result in short-term noise. Construction activities would consist of grading and site preparation; utility installation and connection; roadway, driveway, and parking lot construction; building construction and equipment installation (e.g., rendering units, boilers, generators, cookers, pressers); and landscape installation. The construction staging area would be located on site. Construction activities would be limited to the less noise-sensitive hours (e.g., daytime) between 6:00 a.m. and 9:00 p.m., Monday through Friday, and 7:00 a.m. and 5:00 p.m., Saturday and Sunday. No pile driving or blasting would take place.

Construction-generated noise levels would fluctuate depending on the type, number, and duration of equipment used. The effects of construction noise largely depend on the type of construction activities occurring on any given day, noise levels generated by those activities, distances to noise-sensitive receptors, and the existing ambient noise environment at nearby receptors. Construction equipment would vary by phase, but the entire construction process would include operation of the following types of equipment: graders, dozers, excavators, scrapers, water trucks, cranes, forklifts, generators, pavers, rollers, welders, and air compressors. Noise generated from these pieces of equipment would be intermittent and short as typical use is characterized by periods of full-power operation followed by extended periods of operation at lower power, idling, or powered-off conditions.

The grading and site preparation phase typically generates the most substantial noise levels because of the on-site equipment associated with grading, compacting, and excavation are the noisiest. Site preparation equipment and activities include graders, dozers, and excavators. Minimal site preparation and trenching would be required for off-site construction activities. Off-site construction activities would be limited to connection to the existing natural gas line and recycled water line (located west of the site within the Jensen Avenue right-of-way), connection to the conditioned gas pipeline (located southwest of the site on the RWRF property), and construction of and connection to a new potable water well and new sewer manhole (located west of the site on the RWRF property).

Although a detailed construction equipment list is not currently available, based on the types of construction activities associated with the proposed project (e.g., site grading, facility construction, parking construction) it is expected that the primary sources of noise would include graders, dozers, and excavators. Noise emission levels from these types of construction equipment are shown in Table 3-8 below. Based on the reference noise levels listed in the table and accounting for typical usage factors for each piece of equipment, on-site construction activities could generate a combined average noise level of approximately 86 dB equivalent continuous sound level (L_{eq}) and 85 dB maximum sound level (L_{max}) at 50 feet from the project boundary. Calculations of these combined noise levels are provided in Appendix B.

The daytime noise exposure level was estimated for the closest noise-sensitive receptor that could be adversely affected by construction noise. The attenuated noise levels at the nearest noise-sensitive receptor (located 1,200 feet from the project area), would be 50 dB L_{eq} and 49 dB L_{max}. These estimates are conservative because the modeling assumes that the noise-generating equipment could operate simultaneously in proximity to each other near the boundaries of the project area. Detailed inputs and parameters for the estimated construction noise attenuation calculations are also provided in Appendix B.

Table 3-8 Noise Levels Generated by Typical Construction Equipment

Equipment Type	Maximum Noise Level (dB L_{max}) at 50 feet[1]	Typical Noise Level (dB L_{eq}) at 50 feet[1,2]
Grader	85	81
Dozer	85	81
Excavator	85	81
Combined Noise Level at 50 feet	85	86
Attenuated Noise Level at 1,200 feet	49	50

Notes: dB= decibels; L_{max} = maximum sound level; L_{eq} = equivalent continuous sound level

[1] Assumes all equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacture-specified noise levels for each piece of heavy construction equipment.

[2]Assumes typical usage factors.

Source: Federal Transit Administration (FTA) 2006; data modeled by Ascent Environmental 2017.

However, the County of Fresno Noise Ordinance (Chapter 8.40 of the County of Fresno Ordinance Code), exempts construction-related noise, provided that all construction activities are performed between 6:00 a.m. and 9:00 p.m., Monday through Friday, and between 7:00 a.m. and 5:00 p.m., Saturday and Sunday. As stated above, construction activities would be limited to the less noise-sensitive hours (e.g., daytime) between 6:00 a.m. and 9:00 p.m., Monday through Friday, and 7:00 a.m. and 5:00 p.m., Saturday and Sunday. Thus, noise-generating construction activities would be consistent with the limitations of the County Noise Ordinance. Therefore, short-term on-site construction noise would not result in the exposure of persons to or generation of noise levels in excess of applicable standards.

Long-Term Operational Stationary Noise Impacts

Raw materials would be delivered to the site by way of operator-owned trucks, contract haulers, and customer-owned trucks. The rendering process would be continuous and typically operate 24 hours per day, 6 to 7 days per week. Processing would typically begin on Monday and run through Saturday or as needed on Sunday. Delivery schedules would be relatively stable with only limited seasonal fluctuations. Mechanical equipment would be located indoors; therefore, operational noise would be generated primarily from truck deliveries and on-site equipment (e.g., fork lifts, man lifts, pickup trucks, yard trucks, front-end loaders).

While trucks are typically a mobile noise sources, delivery-related activities behave more like a stationary noise source when they operate on a project site because they primarily occur in one location (e.g., various operational modes including short periods of full-power operation followed by extended periods of operation at lower power, idling, powered-off conditions, or extended presence at a given location to perform continuous or periodic operations [e.g., weighing, unloading]). As discussed in the project description, the fleet would include, but would not be limited to, barrel trucks, pump trucks, end dumps, hopper trailers, and tankers. The types and numbers of vehicles would vary based on customer needs, type of service being provided, and economic conditions, but it is anticipated that up to approximately 75 trucks could access the site daily. The equipment used in the collection and delivery of these of raw materials to the site would be maintained in good operating condition and travel in a closed/covered condition, consistent with industry standards. As shown in Table 3-9, on-site operational equipment would include fork lifts, man lifts, pickup trucks, and front-end loaders. Flatbed trucks were included in the modeling to account for the noise generated by delivery trucks when operating on-site. When occurring concurrently and in close proximity, such activities could result in noise levels of approximately 86 dB L_{eq} and 90 dB L_{max} at a distance of 50 feet. Because the facility would operate 24-hour hours per day, these activities would not be limited to the less noise-sensitive daytime hours.

Table 3-9 Noise Levels Generated by Typical Operational Equipment

Equipment Type	Maximum Noise Level (dB L_{max}) at 50 feet[1]	Typical Noise Level (dB L_{eq}) at 50 feet[1,2]
Man Lift	85	81
Pickup Truck	55	51
Front End Loader	80	76
Flatbed Truck	84	80
Flatbed Truck	84	80
Combined Noise Level at 50 feet	90	86
Attenuated Noise Level at 1,750 feet[3]	59	55

Notes: dB= decibels; L_{max} = maximum sound level; L_{eq} = equivalent continuous sound level

[1] Assumes all equipment is fitted with a properly maintained and operational noise control device, per manufacturer specifications. Noise levels listed are manufacture-specified noise levels for each piece of equipment.

[2]Assumes typical usage factors.

[3]Distance from operational activity area of the project to the nearest sensitive receptor.

Source: Federal Transit Administration (FTA) 2006; data modeled by Ascent Environmental 2017.

Noise levels were modeled from the location where on-site operational activity would occur (near the rendering plant building) and attenuated out to the nearest noise-sensitive receptor. Therefore, although the nearest sensitive receptor is approximately 1,200 feet away from the project site, it would be approximately 1,750 feet away from the operational activity area. Detailed inputs and parameters for the estimated operational noise attenuation calculations are provided in Appendix B.

The County General Plan indicates that operational noise may not exceed 50 dB L_{50} during daytime hours or 45 dB L_{50} during nighttime hours, and 55 dB L_{dn} at an exterior location or 45 dB L_{dn} at an interior location. The exterior noise exposure level at the nearest noise-sensitive receptor that could be adversely affected by operational noise (residence located 1,750 feet east of the rendering plant building) would be 55 dB L_{eq}, 59 dB L_{max}, and 62 dB L_{dn}. Therefore, based the estimated operational noise attenuation calculations, nearby sensitive receptors could experience exterior noise levels exceeding the County General Plan exterior noise standards of 50 dB L_{50} during daytime, 45 dB L_{50} during nighttime, and 55 dB L_{dn}.

Assuming the average exterior-to-interior noise level reduction of 24 dB typically provided by residential buildings (EPA 1978:11), the highest exterior L_{dn} that nearby sensitive receptors could experience without exceeding the 45-dB interior noise standard detailed in the County General Plan is 69 L_{dn} (69-24=45). Based on noise attenuation calculations conducted for the project and shown in Appendix B, no sensitive receptors would experience noise exceeding 69 L_{dn}. Thus, noise levels would not exceed the 45 dB L_{dn} nighttime interior noise standard

Long-Term Operational Traffic Noise Impacts

Project implementation would result in an increase in average daily traffic volumes on affected roadway segments and, potentially, an increase in traffic noise levels. Generally, a doubling of a noise source is required to result in an increase of 3 dB, which is perceived as barely noticeable by humans (Egan 2007:21). The City General Plan Policy NS-1-j establishes a 3 dB increase in the immediate vicinity of the noise source as a substantial noise increase. The City's standard for noise increase is more stringent than the County's standard, which, according to Policy HS-G.7 would be 5 dB in this area of the county. Thus, using the City's more stringent standard regarding traffic noise, an increase in 3 dB or more in traffic noise would be considered substantial.

Roadway segment traffic operations were conducted using the roadway segment analysis methodology applied for the City's General Plan Update. All traffic volume forecasts were adjusted using the "difference method," to account for the difference between existing counts and the base year model forecasts. The traffic volume for the modeled roadway segments were provided in the *Rendering Plant Relocation Project Transportation Impact Analysis* (Fehr & Peers 2017). This modeling was performed to evaluate the degree to which project-generated vehicle trips would result in a change in traffic noise levels, rather than precisely estimate the roadside noise levels. Tables 3-10, 3-11, and 3-12 summarize the modeled traffic noise levels along these roadway segments under existing and existing-plus-project conditions. For further details on traffic-noise modeling inputs and parameters, refer to Appendix B.

As shown by the modeling below, the additional trips because of the project would not result in substantial increases (i.e., 3 dB or greater) in traffic noise on affected roadways. This is primarily because the additional trips would be a relatively minor increase in comparison to existing traffic volumes. Thus, increases in project-related traffic would not result in a substantial permanent increase in ambient noise levels in the project vicinity.

Table 3-10 Modeled Traffic Noise Levels along Truck Access Route under Existing Conditions[1]

Roadway Segment	L_{dn} (dB)	Distance to Contour (feet)			
		70 dB	65 dB	60 dB	55 dB
South Cornelia Avenue from West Church Avenue to West Jensen Avenue	68	30	64	138	296
South Cornelia Avenue from West Jensen Avenue to Project Driveway	59	31	67	143	309
West Jensen Avenue from Project Driveway to South Cornelia Avenue	67	62	133	287	618
West Jensen Avenue from South Cornelia Avenue to South Brawley Avenue	76	66	143	307	662
West Jensen Avenue from South Brawley Avenue to South Marks Avenue	79	77	166	358	770
West Jensen Avenue from South Marks Avenue to South West Avenue	70	79	170	365	787
West Jensen Avenue from South West Avenue to South Fruit Avenue	70	80	173	373	804

Table 3-10 Modeled Traffic Noise Levels along Truck Access Route under Existing Conditions[1]

Roadway Segment	L_{dn} (dB)	Distance to Contour (feet)			
		70 dB	65 dB	60 dB	55 dB
South Brawley Avenue from West Church Avenue to West Jensen Avenue	70	24	52	113	243
South Brawley Avenue from West Jensen Avenue to West North Avenue	68	15	32	68	146
South Marks Avenue from West Church Avenue to West Jensen Avenue	67	27	59	128	275
South Marks Avenue from West Jensen Avenue to West North Avenue	66	20	44	94	202
South West Avenue to West Church Avenue to West Jensen Avenue	56	12	25	54	116
South West Avenue from West Jensen Avenue to West North Avenue	62	10	21	45	96

Notes: dB = decibels; Ldn = Day-Night Average Sound Level

[1] This modeling was performed to evaluate the degree to which project-generated vehicle trips would result in a change in traffic noise levels, rather than precisely estimate the roadside noise levels.

Source: Modeled by Ascent Environmental 2017. Refer to Appendix B for detailed noise modeling input data and output results.

Table 3-11 Modeled Traffic Noise Levels along Truck Access Route under Existing-Plus-Project Conditions[1]

Roadway Segment	L_{dn} (dB)	Distance to Contour (feet)			
		70 dB	65 dB	60 dB	55 dB
South Cornelia Avenue from West Church Avenue to West Jensen Avenue	68	30	64	138	298
South Cornelia Avenue from West Jensen Avenue to Project Driveway	59	34	73	158	341
West Jensen Avenue from Project Driveway to South Cornelia Avenue	67	65	139	300	647
West Jensen Avenue from South Cornelia Avenue to South Brawley Avenue	77	71	153	329	709
West Jensen Avenue from South Brawley Avenue to South Marks Avenue	79	81	175	378	813
West Jensen Avenue from South Marks Avenue to South West Avenue	70	83	178	384	828
West Jensen Avenue from South West Avenue to South Fruit Avenue	71	84	182	391	843
South Brawley Avenue from West Church Avenue to West Jensen Avenue	70	24	53	114	245
South Brawley Avenue from West Jensen Avenue to West North Avenue	68	15	32	69	148
South Marks Avenue from West Church Avenue to West Jensen Avenue	67	28	59	128	276
South Marks Avenue from West Jensen Avenue to West North Avenue	66	20	44	94	203
South West Avenue to West Church Avenue to West Jensen Avenue	56	12	25	54	117
South West Avenue from West Jensen Avenue to West North Avenue	62	10	21	45	96

Notes: dB = decibels; Ldn = Day-Night Average Sound Level

[1] This modeling was performed to evaluate the degree to which project-generated vehicle trips would result in a change in traffic noise levels, rather than precisely estimate the roadside noise levels.

Source: Modeled by Ascent Environmental 2017. Refer to Appendix B for detailed noise modeling input data and output results.

Table 3-12 Net Change Modeled Traffic Noise Levels along Truck Access Route under Existing-Plus-Project Conditions[1]

Roadway Segment	Net Change Ldn (dB)
South Cornelia Avenue from West Church Avenue to West Jensen Avenue	0.0
South Cornelia Avenue from West Jensen Avenue to Project Driveway	+0.6
West Jensen Avenue from Project Driveway to South Cornelia Avenue	+0.3
West Jensen Avenue from South Cornelia Avenue to South Brawley Avenue	+0.4
West Jensen Avenue from South Brawley Avenue to South Marks Avenue	+0.4
West Jensen Avenue from South Marks Avenue to South West Avenue	+0.3
West Jensen Avenue from South West Avenue to South Fruit Avenue	+0.3
South Brawley Avenue from West Church Avenue to West Jensen Avenue	0.0
South Brawley Avenue from West Jensen Avenue to West North Avenue	+0.1
South Marks Avenue from West Church Avenue to West Jensen Avenue	0.0
South Marks Avenue from West Jensen Avenue to West North Avenue	0.0
South West Avenue to West Church Avenue to West Jensen Avenue	+0.1
South West Avenue from West Jensen Avenue to West North Avenue	0.0

Notes: dB = decibels; L_{dn} = Day-Night Average Sound Level

[1] This modeling was performed to evaluate the project-related change in traffic noise levels, rather than precisely estimate the roadside noise levels.

Source: Modeled by Ascent Environmental 2017. Refer to Appendix B for detailed noise modeling input data and output results.

Project-generated stationary noise sources could exceed applicable noise standards and, thus, could result in a substantial increase in ambient noise levels at existing noise-sensitive receptors in the vicinity. As a result, this impact is considered *potentially significant*.

Mitigation Measure NOI-1: The project proponent shall hire a qualified acoustical specialist to prepare a noise minimization plan, which shall identify design strategies and noise attenuation features to reduce noise generated by the proposed project to below 45 dB L_{50} at the primary outdoor gathering area (i.e., yard associated with the house) of all residences in the vicinity of the project where project operational noise could result in excess noise levels. The noise minimization plan shall include (but shall not be limited to) a combination of the following measures (or other measures demonstrated to be equally effective) to reduce the effect of noise levels generated by on-site operational noise sources:

- Orient the building such that the building serves as a barrier protecting off-site receptors to noise generated by on-site operational equipment including fork lifts, man lifts, pickup trucks, front-end loaders, and delivery trucks. The typical sound level reduction a building could provide ranges from 12 dB with windows open to 27 dB with windows closed (EPA 1978: 11) and additional reduction is achievable if masonry exterior walls are used in the building's construction (California Department of Transportation 2002:7-37).

- Enclose the area where operational equipment would operate with one or more walls. Generally, a barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. Taller barriers provide increased noise reduction.

- Construct a sound barrier along the sides of the project site between the sensitive receptors and the facility. The sound barriers must be constructed of solid material (e.g., wood, brick, adobe, an earthen berm, or combination thereof). Scenic quality factors shall be taken into account during design and the barriers shall be designed to blend into the landscape on the project site, to the extent feasible. Generally, a barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. Taller barriers provide increased noise reduction.

Measures identified in the noise minimization plan shall be incorporated into the project design and identified on the site plan. The City shall verify that these measures are included in the site plan prior to approval of the final site plan.

Significance after Implementation of Mitigation Measure

Implementation of Mitigation Measure NOI-1 would incorporate one or more noise reduction measures detailed above into the final site plan and would result in a noise reduction of at least 10 dB, which is the reduction needed to comply with the County's exterior noise standards of 50 dB L_{50} during daytime, 45 dB L_{50} during nighttime, and 55 dB L_{dn}, or the County's exterior noise standards 45 dB L_{dn} at nearby residences. This reduces the impact to a less-than-significant level.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

Less-than-significant impact. Operation of the project would not result in any new long-term operational sources of ground vibration. Some ground vibration would be generated during project construction. Ground vibration generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. Construction-related ground vibration is normally associated with impact equipment such as jackhammers and the operation of some heavy-duty construction equipment, such as dozers and trucks. The effects of ground vibration may be unnoticeable at the lowest levels, result in low rumbling sounds and detectable vibrations at moderate levels, and high levels of vibration can cause sleep disturbance in places where people normally sleep or annoyance in buildings that are primarily used for daytime functions and sleeping.

Construction activities would require the use of heavy-duty off-road equipment such as dozers, graders, excavators, and various trucks (e.g., material and equipment haul trucks, water trucks). No pile driving or blasting would take place. Table 3-13 presents the levels of ground vibration that could be generated by the types of heavy-duty equipment that could be used during construction of the project.

Table 3-13 Representative Ground Vibration and Noise Levels for Construction Equipment

Equipment	PPV at 25 feet (in/sec)	Approximate L_v (VdB) at 25 feet
Small Dozer	0.003	58
Loaded Trucks	0.076	86
Large Dozer	0.089	87
Vibratory Roller (Compactor)	0.210	94

Notes: PPV = peak particle velocity; L_V = the root mean square velocity expressed in vibration decibels (VdB), assuming a crest factor of 4; VdB = vibration decibel

Source: FTA 2006.

As shown in Table 3-13, of the heavy-duty equipment that could be used during project construction the highest level of ground vibration would be generated by a vibratory roller. A vibratory roller operated within approximately 25 feet of an existing building or structure could expose that structure to levels of ground vibration that exceed California Department of Transportation's (Caltrans's) recommended level of 0.2 inches per second (in/sec) peak particle velocity (PPV) with respect to the prevention of structural damage. Also, a vibratory roller operated within 75 feet of a building could expose the building occupants to ground vibration levels that exceed the Federal Transit Administration's (FTA) maximum-acceptable vibration standard of 80 VdB with respect to human annoyance for residential uses. Because all construction activity would take place at least 1,200 feet from sensitive receptors, there would be no exceedance of Caltrans's recommended level of 0.2 in/sec PPV with respect to the prevention of structural damage and FTA's standard of 80 VdB with respect to human annoyance for residential uses. Therefore, the project would not expose of persons to excessive levels of groundborne vibration. This impact would be less than significant.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

Less-than-significant impact. As discussed under a) above, with implementation of mitigation measures new stationary sources would not expose existing off-site noise-sensitive receptors to noise levels that would exceed daytime or nighttime noise standards established in the County Noise Ordinance. Similarly, noise from project-related traffic along local roadways would not significantly increase noise levels in the project area because the increase in traffic would not result in a noise increase of 3 dB at sensitive receptor locations. Therefore, impact would be less than significant.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less-than-significant impact. As discussed under item a) above, the County Noise Ordinance (Chapter 8.40 of the County of Fresno Ordinance Code) exempts construction noise from noise standards provided that such work takes place between the hours of 6:00 a.m. to 9:00 p.m. on Monday through Friday, and 7:00 a.m. to 5:00 p.m. on Saturday and Sunday. Therefore, the construction-generated noise levels would not result in temporary or periodic increases in ambient noise levels at the nearest noise-sensitive receptor. This impact would be less than significant.

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?

No impact. Airports closest to the project site include: Fresno-Chandler Executive Airport, Turner Field Airport, Selma Airport, Quinn Airport, Del Rey Juice Airstrip, Sierra SKY Park Airport, Bland Field Airport, Du Bois Ranch Airport, San Joaquin Airport, and Fresno Yosemite International Airport. Fresno-Chandler Executive Airport, Selma Airport, Sierra SKY Park Airport, and Fresno Yosemite International Airport have adopted Land Use Compatibility Plans intended to protect the general welfare of the inhabitants within the vicinity of these airports. The nearest airport to the project site is the Fresno-Chandler Executive Airport, located 3.5 miles to the east. At this distance, low-flying aircraft performing take-offs and landings at Fresno-Chandler Executive Airport would not affect the noise environment at the project site. There are no private airstrips located within the project vicinity. Because of the distance of the project site from the nearest airport, the project would not expose people residing or working in the area to excessive noise levels from aircraft operations. Furthermore, the project would not result in the placement of new noise-sensitive receptors. There would be no impact related to noise exposure from aircraft activity.

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?

No impact. See item e) above.

3.13 POPULATION AND HOUSING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. 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 homes, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.13.1 Environmental Setting

According to U.S. Census Bureau, the city's population as of the 2010 census was 494,664 (U.S. Census Bureau 2010). Most of the residential population is over 2 miles from the project site, along the San Juaquin River corridor and in the neighborhoods surrounding downtown. The City's General Plan focuses on infill growth in activity centers, downtown, and along the City's Bus Rapid Transit corridors with the primary goal of creating livable, and complete neighborhoods (City of Fresno, 2014a:3-6).

Data shows that after the year 2000, the number of employees residing in Fresno County exceeded the number of jobs available. Therefore, employees who lived in Fresno County tended to travel outside the County to their place of employment. The City's General Plan focuses on improving economic growth through encouraging mixed-uses and higher intensities in developed areas (City of Fresno, 2014a:3-3).

3.13.2 Discussion

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)?

Less-than-significant impact. The project includes the construction of a relocated and expanded industrial rendering facility. The facility is moving from its current location within the southeastern portion of the city to an incorporated island of City-owned property that is west of the city proper and surrounded by unincorporated agricultural land. The project site is currently designated as Public Facility and would be redesignated to Heavy Industrial to accommodate the proposed relocated rendering facility. The project does not include the construction of residential housing, extend roads, or expand service infrastructure. Therefore, the project is not expected to result in any direct population growth or any substantial indirect population growth. Construction would be short-term and is not expected to result in construction employees relocating to the project vicinity due to this short duration. The project would provide approximately 23 new employment positions in addition to the current employees, bringing the total to 70 employees. It is anticipated that the new employees would most likely reside locally (within the city or county). Therefore, the project would have less-than-significant impacts on population growth.

b, c) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?

Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No impact. The project would not remove any existing homes or otherwise displace people. Therefore, the project would have no impact on displacement of homes or people.

3.14 PUBLIC SERVICES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. Public Services. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

3.14.1 Environmental Setting

The project site is served by the City of Fresno Fire Department which has 19 fire stations and 66 daily firefighters within the City. The department's target time to respond to calls is 4 minutes (City of Fresno, 2014b:5-13.3). The closest fire station is located approximately 6 miles north, at 2510 North Polk. The station is staffed with a crew of three firefighters and an engine (City of Fresno, 2017).

The project site is located approximately 6 miles west from the closest Fresno Police Department station at 1211 Fresno Street. The site is also located approximately ½ mile north of the Fresno Police Department Regional Training Center. Additionally, the project site is located within Patrol Area 2 of the Fresno County Sheriff's office. There are four Patrol Training Officers assigned to the Patrol Area and all entry-level field deputies are assigned here during their training phase. Five detectives are assigned to Areas 2 and 4 and handle armed robbery and property crime investigations (Fresno County Sheriff, 2017). The Area 2 Sheriff's Department office is located at 5717 E. Shields Avenue, which is approximately 15 miles east of the project site (City of Fresno, 2014b:5.13-2).

The project site is located within the Central Unified School District which serves the northwestern and western areas of Fresno. However, the project is an industrial project and would not result in the addition of new students (City of Fresno, 2014b:5.13-8).

The city contains over 4,000 acres of open space and maintains approximately 1,617 acres of open space and nearly 230,000 square feet of building space dedicated to recreational and educational purposes. The City is currently exceeding its target standard of 3 acres of parkland per resident (City of Fresno, 2014b:5.13-8-10). The closest public park to the project site is Kearney Park which is approximately 4.6 miles northeast.

3.14.2 Discussion

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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:

Fire protection?

Less-than-significant impact. All site plans and building designs would be reviewed by the City Fire Department to verify that the project would comply with City fire code and other standards; therefore, the project would include appropriately designed fire suppression facilities (i.e., sprinklers, extinguishers, fire hydrants) and adequate emergency access. The project site is currently vacant and located between the existing RWRF and an electrical substation. As these facilities currently require fire protection service, addition of the proposed industrial facility to the area does not expand the City Fire Department's service area.

Because of staffing reductions and other cuts since 2009, the City of Fresno Fire Department currently does not meet target response times. The City's level of service is below average compared to similar-sized metropolitan cities. As described above and in the General Plan MEIR on pages 5.13-23 and 5.13-24, additional staff, equipment, and facilities would be required to provide adequate levels of fire service and improve response times. In compliance with Section 12-4.901 of the Fresno Municipal Code, development impact fees are being collected from new development for the construction of capital fire facilities. The project would be required to deposit a Fire Service Fee with the City prior to occupancy of the facility. Payment of the required fees would provide funding to supplement staff and equipment to improve response times and would minimize impacts to fire protection services. This impact would be less than significant.

Police protection?

Less-than-significant impact. Similar to the fire service issue described above, the City of Fresno anticipates that build-out associated with the General Plan would require additional officers, equipment and facilities. As described in the General Plan MEIR on pages 5.13-27 and 5.13-28, additional staff, equipment, and facilities would be required to ensure adequate levels of police protection. In accordance with Section 12-4.801 of the Fresno Municipal Code, development impact fees are being collected from new development for the construction and acquisition of capital facilities and staff. The project would be required to deposit a Police Service Fee with the City prior to occupancy of the facility. Payment of the required fees would provide funding to supplement staff and equipment and reduce impacts to police protection services. This impact would be less than significant.

Schools?

Parks?

Other public facilities?

Less-than-significant impact. The project includes moving an existing industrial use to a part of the city that includes fewer sensitive uses. The project would not include any additional housing and, although the project includes an expansion of the facility's operation, the addition of 23 employees would not result in population growth that would substantially increase demand for public services, such as schools and parks. The impact is less than significant.

3.15 RECREATION

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. Recreation. Would the project:				
a) 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) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☒	☐

3.15.1 Environmental Setting

The City's park system contains several classes of park space, including trails, regional parks, neighborhood parks, educational facilities, dual-use ponding basins, etc. The City of Fresno has 4,019 acres of existing open space (City of Fresno, 2014b:5.13-8).

The nearest recreation facility is Kearney Park, which is an historic home site with open space. The park is approximately 1.5 miles to the northwest of the project site.

3.15.2 Discussion

a) 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?

Less-than-significant impact. The project would not include any additional housing and, although the project includes an expansion of the facility's operation, the addition of 23 employees would likely be drawn from the local population and would not result in population growth that would substantially increase demand for parks. Because the project is non-residential, it is not required to provide recreation facilities. Due to the project's rural location, employees would not be expected to regularly use city or county park facilities.

Therefore, the project would not substantially increase demand for or use of existing parks. The project would result in a less-than-significant impact related the deterioration of existing recreational facilities.

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

Less-than-significant impact. The project does not include recreational facilities, and as described in a) above, would not increase demand for park facilities such that new or expanded park facilities would be necessary. Therefore, the project would result in a less-than-significant impact related to the construction or expansion of recreational facilities.

3.16 TRANSPORTATION/TRAFFIC

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. Transportation/Traffic. Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐
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 air 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 regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐

3.16.1 Introduction

The following section is based on a traffic impact study prepared by Fehr & Peers. The full traffic impact study is attached to this IS as Appendix D. The following traffic analysis evaluates the potential impacts to the transportation system associated with the proposed relocation of the rendering facility from its current location on Belgravia Avenue to a new location on about 40 acres near the RWRF. The impact analysis examines the roadway, transit, bicycle, pedestrian, rail, and aviation components of the transportation system.

This traffic analysis includes the following scenarios:

- Existing Conditions Analysis. The existing and existing plus project analyses are used to identify impacts directly related to the development of the project. Existing roadway operations were analyzed using roadway geometrics as observed in Spring 2017 and traffic volumes obtained in May 2017.
- Cumulative Conditions Analysis. The Cumulative Conditions scenario analyzes the project's effects on transportation when viewed in connection with the effects of reasonably foreseeable future projects. Outside of the City of Fresno sphere-of-influence (SOI), the analysis uses the Fresno Council of Governments (Fresno COG) 2035 population and employment forecasts as land use inputs for future development in the region. The analysis also includes reasonably foreseeable roadway network changes consistent with the City of Fresno General Plan.

STUDY INTERSECTIONS

Traffic operations at the study intersections were analyzed using procedures and methodologies contained in the Highway Capacity Manual (HCM), Transportation Research Board, 2010. These methodologies were applied using Synchro software package (Version 9), developed by Trafficware. Table 3-14 displays the delay range associated with each LOS category for signalized and unsignalized intersections based on the HCM.

Table 3-14 Intersection Level of Service Criteria

Level of Service	Average Control Delay [seconds/vehicle]		Description
	Signalized	Stop Controlled	
A	< 10.0	< 10.0	Very low delay. At signalized intersections, most vehicles do not stop.
B	10.1 to 20.0	10.1 to 15.0	Generally good progression of vehicles. Slight delays.
C	>20.1 to 35.0	>15.1 to 25.0	Fair progression. At signalized intersections, increased number of stopped vehicles.
D	>35.1 to 55.0	>25.1 to 35.0	Noticeable congestion. At signalized intersections, large portion of vehicles stopped.
E	>55.1 to 80.0	>35.1 to 50.0	Poor progression. High delays and frequent cycle failure.
F	>80.0	>50.0	Oversaturation. Forced flow. Extensive queuing.

Source: Highway Capacity Manual (Transportation Research Board 2010)

The HCM methodology determines the level of service (LOS) at signalized intersections by comparing the average control delay (i.e., delay resulting from initial deceleration, queue move-up time, time actually stopped, and final acceleration) per vehicle at the intersection to the established thresholds. The LOS for traffic signal controlled and all-way stop controlled intersections is based on the average control delay for the entire intersection. For side-street stop-controlled intersections, the LOS is evaluated separately for each individual movement with delay reported for the critical (i.e., worst case) turning movement.

STUDY ROADWAY SEGMENTS

Roadway segment traffic operations was conducted using the roadway segment analysis methodology applied for the City's General Plan update. Traffic volumes on the study roadway segments are used to determine the overall usage and congestion. Note that the roadway segment analysis is based on traffic counts taken at a single location, which was intended to be representative of the entire segment. A link connects two intersections; a segment is a series of links. The segments used in this analysis were developed based on where a series of links had common physical and traffic conditions. Typically, intersection operations control the perception of drivers on a roadway facility, since drivers experience delay at intersections.

Traffic operations on the study roadway segments were measured using a qualitative measure called level of service (LOS). LOS is a general measure of traffic operating conditions whereby a letter grade, from A (the best) to F (the worst), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving, as well as speed, travel time, traffic interruptions, and freedom to maneuver. The LOS grades are generally defined as follows:

- LOS A represents free-flow travel with an excellent level of comfort and convenience and the freedom to maneuver.
- LOS B has stable operating conditions, but the presence of other road users causes a noticeable, though slight, reduction in comfort, convenience, and maneuvering freedom.
- LOS C has stable operating conditions, but the operation of individual users is substantially affected by the interaction with others in the traffic stream.
- LOS D represents high-density, but stable flow. Users experience severe restriction in speed and freedom to maneuver, with poor levels of comfort and convenience.
- LOS E represents operating conditions at or near capacity. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver is difficult with users experiencing frustration and poor comfort and convenience. Unstable operation is frequent, and minor disturbances in traffic flow can cause breakdown conditions.
- LOS F is used to define forced or breakdown conditions. This condition exists wherever the volume of traffic exceeds the capacity of the roadway. Long queues can form behind these bottleneck points with queued traffic traveling in a stop-and-go fashion.

The LOS was calculated for each study roadway segment to evaluate the quality of traffic conditions. LOS was determined by comparing traffic volumes for each roadway segments, incorporating roadway functional classification, and number of travel lanes, presence of two-way left-turn lanes with peak hour LOS capacity thresholds. These thresholds are shown in Table 3-15 and were calculated based on the methodology contained in the HCM (Transportation Research Board 2010). The HCM methodology is the prevailing measurement standard used throughout the United States and is recommended for use in the City of Fresno *Traffic Impact Study Report Guidelines* (2009). In addition to LOS, the ratio of volume-to-capacity is also provided for information purposes. This is to provide the reader with a general sense of how close the peak hour traffic volume on a subject roadway segment is to the assigned capacity of the roadway. A volume-to-capacity ratio of 1.00 would signify a roadway at capacity.

Table 3-15 Roadway Functional Class and Peak Hour LOS Thresholds

Functional Class	Median	Lanes	Peak Hour Level of Service Capacity Thresholds				
			A	B	C	D	E
Freeway	N/A[1]	4	2,720	4,460	6,630	7,720	8,630
		3+Aux2	2,360	3,860	5,640	6,730	7,530
		3	2,000	3,270	4,660	5,740	6,430
		2+Aux	1,650	2,700	3,850	4,760	5,340
		2	1,300	2,130	3,050	3,790	4,260
State Expressway	Divided	6	2,410	3,960	5,730	7,450	8,450
		4	1,610	2,650	3,810	4,960	5,630
		2	810	1,340	1,890	2,470	2,810

Table 3-15 Roadway Functional Class and Peak Hour LOS Thresholds

Functional Class	Median	Lanes	Peak Hour Level of Service Capacity Thresholds				
			A	B	C	D	E
City Expressway	Raised Median	6			1,860	6,170	6,520
		5			1,520	5,110	5,430
		4			1,180	4,050	4,340
		2			520	1,910	2,160
Super Arterial	Raised Median	6				4,910	6,240
		5				4,040	5,195
		4				3,170	4,150
Arterial	Raised Median	8			2,120	7,070	7,490
		6			1,560	5,270	5,610
		5			1,280	4,370	4,670
		4			1,000	3,470	3,730
		3			720	2,555	2,795
		2			440	1,640	1,860
	TWLTL	4			940	3,290	3,550
		2			420	1,550	1,760
	Undivided	4			770	2,740	2,980
		2			340	1,270	1,480
Collector	TWLTL	4			940	3,290	3,550
		2			420	1,550	1,760
	Undivided	4			770	2,740	2,980
		2			340	1,270	1,480
One-Way	Undivided	3		1,960	2,240	2,430	2,610
		2		1,250	1,490	1,620	1,740
		1		550	740	800	870
Rural State Highway	Undivided	2	310	570	1,020	1,730	2,470
Rural Arterial	Divided	4			1,950	3,580	3,780
	Undivided	2			570	1,230	1,310
Rural Collector/Local	Undivided	2			700	930	1,000

Notes:

[1] N/A – Not applicable for operational class
[2] Aux – Auxiliary Lane
– LOS is not achievable because of type of facility.

TWTL = two-way left-turn lane

Source: Fehr & Peers 2017

3.16.2 Regulatory Setting

This section summarizes the transportation policies, laws, and regulations that apply to the project. This information provides context for the impact discussion related to the project's consistency with applicable regulatory conditions. Further, this study identifies impacts to traffic operations by comparing roadway LOS analysis results against LOS policies set forth by the City of Fresno.

Senate Bill 743

On September 27, 2013, Governor Brown signed Senate Bill 743 (SB 743), which made several changes to the California Environmental Quality Act (CEQA) for project located in areas served by transit. The changes direct the Governor's Office of Planning and Research (OPR) to develop a new approach for analyzing the transportation impacts under CEQA, which may eliminate vehicle delay and level of service as CEQA impacts for many parts of California. SB 743 also creates a new exemption for certain projects that are consistent with a Specific Plan and, eliminates the need to evaluate aesthetic and parking impacts of a project, in some circumstances. The guidelines will likely go into effect in late 2017/early 2018 after the Natural Resource Agency completes its rulemaking process, unless OPR elects to allow an opt-in period of one to two years.

City of Fresno

The City of Fresno provides for the mobility of people and goods within the city.

City of Fresno General Plan

The City of Fresno adopted the Fresno General Plan in December 2014 as an update to the previous 2002 Fresno General Plan. The Fresno General Plan serves as the community's guide for the continued development, enhancement, and revitalization of the Fresno metropolitan area.

The General Plan includes the following policies related to transportation and circulation that are relevant to this analysis:

- MT-2-i: Transportation Impact Studies. Require a Transportation Impact Study (currently named Traffic Impact Study) to assess the impacts of new development projects on existing and planned streets for projects meeting one or more of the following criteria, unless it is determined by the City Traffic Engineer that the project site and surrounding area already has appropriate multi-modal infrastructure improvements.
  - When a project includes a General Plan amendment that changes the General Plan Land Use Designation.
  - When the project will substantially change the off-site transportation system (auto, transit, bike or pedestrian) or connection to the system, as determined by the City Traffic Engineer.
  - Transportation impact criteria are tiered based on a project's location within the City's Sphere of Influence. This is to assist with areas being incentivized for development. The four zones, as defined on Figure MT-4, are listed below. The following criteria apply:
    - Traffic Impact Zone I (TIZ-I): TIZ-I represents the Downtown Planning Area. Maintain a peak hour LOS standard of F or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 200 or more peak hour new vehicle trips.
    - Traffic Impact Zone II (TIZ-II): TIZ-II generally represents areas of the City currently built up and wanting to encourage infill development. Maintain a peak hour LOS standard of E or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 200 or more peak hour new vehicle trips.

- Traffic Impact Zone III (TIZ-III): TIZ-III generally represents areas near or outside the City Limits but within the SOI as of December 31, 2012. Maintain a peak hour LOS standard of D or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 100 or more peak hour new vehicle trips.

- Traffic Impact Zone IV (TIZ-IV): TIZ-IV represents the southern employment areas within and planned by the City. Maintain a peak hour LOS standard of E or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 200 or more peak hour new vehicle trips.

City of Fresno Traffic Impact Study Report Guidelines

The City of Fresno's Traffic Impact Study Report Guidelines establish general procedures and requirements for the preparation of traffic impact studies associated with development within the city. The guidelines are intended to be a checklist to ensure regular study items are not missed, but are not intended to be prescriptive to the point of eliminating professional judgment.

The guidelines include the preferred traffic analysis methodologies, significance criteria, and documentation requirements. This study is conducted using the preferred analysis methodologies and significance criteria as outlined in the guidelines.

City of Fresno Active Transportation plan

The City of Fresno Active Transportation Plan (ATP) is a comprehensive guide outlining the vision of active transportation in the City of Fresno, and a roadmap for achieving that vision.

County of Fresno

County of Fresno 2000 General Plan

The County of Fresno 2000 General Plan includes the following policy related to transportation and circulation that are relevant to this analysis:

- Policy TR-A.2: The County shall plan and design its roadway system in a manner that strives to meet LOS D on urban roadways within the spheres of influence of the cities of Fresno and Clovis and LOS C on all other roadways in the county.

3.16.3 Environmental Setting

The following describes the existing travel characteristics and the condition of the roadway, transit, bicycle and pedestrian systems, goods movement, and aviation in the study area. The traffic analysis uses the existing conditions as the baseline to measure the potential impacts of project.

TRAVEL CHARACTERISTICS

The City of Fresno is the fifth-largest city in California with a population of 494,664 in 2010 (U.S. Census Bureau 2010). Fresno County has a population of 940,220 people making it the tenth-largest county in the state and is expected to reach 1.1 million people by 2020 (City of Fresno 2012). Located in the California's San Joaquin Valley, Fresno is equidistance from the major population centers in Northern and Southern California with easy access to the California Central Coast and Sierra Nevada.

The 2000-2001 California Household Travel Survey provides information on residents' travel patterns including the purpose and method of travel in Fresno County. For convenience, travel survey responses are grouped into the following three general categories:

- Home-Based Work. Trips may begin or end at a residence and represent travel between a residence and place of work.

- Home-Based Other. Trips may begin or end at a residence and include school trips, shopping trips, or trips for recreation.

- Non-Home-Based. Trips do not begin or end at a residence. These trips would include a trip from work to a restaurant during lunch

According to the 2000-2001 California Household Travel Survey, Home-Based Work trips account for 20 percent of trips. In general, Home-Based Work trips occur during the morning and evening commute periods and are predominately made by automobile. There is less flexibility in the departure and arrival time for work trips, due to traditional work schedules. Other trip purposes account for about 80 percent of travel and are more evenly distributed throughout the day.

Most residents traveled from home to work by automobile (about 98 percent) with about 15 percent of those being shared ride (i.e., carpool) trips. Shared ride, transit, walk, and bike trips were significantly higher for non-work trips (Home-Based Other and Non-Home-Based purposes).

The average weekday person trip length for Home-Based Work was about 20 minutes compared to Home-Based Other trips (15 minutes), and Non-Home-Based trips (16 minutes). On average, non-work trips are about 30 percent shorter than work trips and have a higher percentage of transit walk and bike use. This is reasonable given trip purpose, trip scheduling flexibility, and proximity of trip origin and trip destination.

The 2000-2001 California Household Travel Survey also shows that about 12 percent of Fresno County households did not have access to a vehicle and therefore are dependent on transit, walking, and bicycling for mobility.

ROADWAY NETWORK

The roadway network in the city is generally a traditional grid-based network of north/south and east/west streets. Nearly every major street in the Fresno metropolitan area is regularly spaced at half-mile intervals. The grid system provides high levels of accessibility (i.e., travel choices) for travelers. The study facilities are listed below:

Intersections

- Jensen Avenue/Cornelia Avenue
- Jensen Avenue/Brawley Avenue
- Jensen Avenue/Marks Avenue
- Jensen Avenue/West Avenue

Roadway Segments

- Jensen Avenue – Project Access to Cornelia Avenue
- Jensen Avenue – Cornelia Avenue to Brawley Avenue
- Jensen Avenue – Brawley Avenue to Marks Avenue
- Jensen Avenue – Marks Avenue to West Avenue
- Jensen Avenue – West Avenue to Fruit Avenue
- Cornelia Avenue – Church Avenue to Jensen Avenue
- Cornelia Avenue – Jensen Avenue to North Avenue
- Brawley Avenue – Church Avenue to Jensen Avenue
- Brawley Avenue – Jensen Avenue to North Avenue
- Marks Avenue – Church Avenue to Jensen Avenue
- Marks Avenue – Jensen Avenue to North Avenue
- West Avenue – Church Avenue to Jensen Avenue
- West Avenue – Jensen Avenue to North Avenue

Roadway Characteristics

All of the study roadways outlined above are two lanes. Except for Jensen Avenue, which is classified as an arterial, all of the other study roadways are collectors with 55 miles per hour posted speed limits. Jensen Avenue has striped and paved shoulders, while Cornelia Avenue, Brawley Avenue, Marks Avenue, and West Avenue do not. All of the study intersections have side-street stop control with Jensen Avenue being the uncontrolled facility.

TRAFFIC OPERATIONS

Table 3-16 summarizes existing AM and PM peak hour LOS for the study intersections. As shown, all of the study intersections will operate acceptably at LOS C or better during both the AM and PM peak hours.

Table 3-16 Peak Hour Intersection Level of Service – Existing Conditions

Intersection	Traffic Control	LOS / Delay (seconds)	
		AM	PM
1. Jensen Avenue/Cornelia Avenue	SSSC	A (B) / 3 (12)	A (B) / 4 (14)
2. Jensen Avenue/Brawley Avenue	SSSC	A (B) / 4 (12)	A (B) / 2 (13)
3. Jensen Avenue/Marks Avenue	SSSC	A (B) / 4 (14)	A (C) / 5 (16)
4. Jensen Avenue/West Avenue	SSSC	A (B) / 1 (12)	A (B) / 1 (13)

Notes: SSSC = side-street stop control

Source: Fehr & Peers 2017

The AM and PM peak hour intersection turning movement traffic volumes used for the analysis presented in Table 3-16 are included in the technical appendix.

Table 3-17 summarizes existing conditions AM and PM peak hour LOS for the study roadways. As shown, all of the study roadways will operate at LOS D or better during both the AM and PM peak hours. The County roadway segments, which includes Cornelia Avenue and Brawley Avenue, will operate acceptably at LOS C.

Table 3-17 Peak Hour Roadway Segment Level of Service – Existing Conditions

Intersection		Volume		Lanes	Existing			
		AM	PM		AM		PM	
					VC	LOS	VC	LOS
Jensen Avenue	Project Access to Cornelia Avenue	257	337	2	0.17	C	0.23	C
	Cornelia Avenue to Brawley Avenue	268	373	2	0.18	C	0.25	D
	Brawley Avenue to Marks Avenue	427	468	2	0.29	D	0.32	D
	Marks Avenue to West Avenue	405	483	2	0.27	D	0.33	D
	West Avenue to Fruit Avenue	412	499	2	0.28	D	0.34	D
Cornelia Avenue	Church Avenue to Jensen Avenue	84	112	2	0.06	C	0.08	C
	Jensen Avenue to North Avenue	83	119	2	0.06	C	0.08	C
Brawley Avenue	Church Avenue to Jensen Avenue	93	83	2	0.06	C	0.06	C
	Jensen Avenue to North Avenue	71	39	2	0.05	C	0.03	C
Marks Avenue	Church Avenue to Jensen Avenue	168	201	2	0.11	C	0.14	C
	Jensen Avenue to North Avenue	96	127	2	0.06	C	0.09	C

Table 3-17 Peak Hour Roadway Segment Level of Service – Existing Conditions

Intersection		Volume		Lanes	Existing			
					AM		PM	
		AM	PM		VC	LOS	VC	LOS
West Avenue	Church Avenue to Jensen Avenue	44	55	2	0.03	C	0.04	C
	Jensen Avenue to North Avenue	25	41	2	0.02	C	0.03	C

Notes: SSSC = side-street stop control

Source: Fehr & Peers 2017

Compared to the intersection analysis results, the roadway segment analysis results in more conservative (i.e., on the high side) LOS, given that drivers perception of travel and delay while traveling along the study corridor are heavily influenced by conditions experience at the study intersections.

PUBLIC TRANSPORTATION

Public transportation in the city consists of the following services and facilities:

- Public bus service
- Express bus service
- Demand-response paratransit
- Passenger rail service

Fresno Area Express (FAX) is the predominant transit provider in the city. FAX runs 20 routes and provides over 17,000,000 annual passenger boardings, averaging about 41,000 passenger trips per day. The entire FAX system runs about 1,000 bus operations per day. Ridership trends in recent years have shown an increase in the number of people using transit, which may be attributable to poor economic conditions and the rising cost of travel.

Handy Ride is a demand-response service for seniors and persons with disabilities, as required by the Americans with Disabilities Act. This paratransit service serves up to 12,500 eligible individuals in the FAX service area and provided about 240,000 passenger rides in fiscal year 2010.

The Fresno County Rural Transit Agency (FCRTA) and Amtrak also provide services for regional travel outside of the Fresno-Clovis Metropolitan Area. FCRTA provides service to many of the unincorporated communities in Fresno County such as Coalinga and Mendota (FCRTA 2012). The San Joaquin Line is one of Amtrak's passenger rail services with connections between the San Joaquin Valley, the Sacramento Valley, the San Francisco Bay Area, and Los Angeles. Greyhound provides similar (more frequent) bus service to these regions.

BICYCLE AND PEDESTRIAN CIRCULATION

The city is generally flat, which provides a favorable environment for bicycling and walking as a mode of transportation. The City of Fresno ATP, which was completed in October 2016, provides comprehensive guidance regarding the City of Fresno's bicycle and pedestrian circulation system.

Except for an uncontrolled pedestrian crossing on the east leg of the Jensen Avenue/Valentine Avenue intersection, there are no designated bicycle and pedestrian facilities at the study intersections, which is consistent with the land use in the study area. A Class II bike lane is planned on Jensen Avenue and a Class I bike path is planned on Marks Avenue. Sidewalks are planned on Jensen Avenue and West Avenue.

In addition, the study area has a low bicycle and pedestrian index, as documented in the ATP. This is an indication of low-level trips being made by walking and biking and is consistent with the intensity of land use in the study area.

AVIATION

The City of Fresno manages the Fresno Yosemite International Airport (FYI). The airport is located in northeast Fresno just southwest of Clovis in between Highways 168 and 180. There are two runways, each of which is 7,205 feet long and 100 feet wide. There are 174 aircraft based at FYI with an average of 371 daily aircraft operations in 2012. In 2011, the two runways served about 1.2 million passengers and airport officials expect that number to grow in the future. There are also two other general aviation airports (i.e., Fresno-Chandler Executive Airport and Sierra Sky Park) and four heliports, including McCarthy Ranch, Community Regional Medical Center, Valley Medical Center, and PG&E Service Center in the city (AirNav 2012). The closest airport, Fresno-Chandler Executive airport, is located 3.5 miles northeast of the project site.

3.16.4 Discussion

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Less than significant with mitigation incorporated. The following discussion focuses on potential conflicts with automobile-related plans and policies. See the response under question “f” below for a discussion related to other modes of transportation, including mass-transit, bicycle, and pedestrian. For this analysis, the following City policy is used as the threshold of significance. (The City’s standard is used because Jensen Avenue, which would serve as the project’s truck route, is a City road, even though it extends through unincorporated County land.)

City of Fresno
The project is located in TIZ III as defied by Policy MT-2-1 of the City of Fresno General Plan. Therefore, the project would cause a significant impact to the roadway system if it would result in the following conditions:

- Cause a roadway segment operating at LOS D or better to operate at LOS E or worse

Trip Generation

Table 3-18 summarizes daily, AM peak hour, and PM peak hour trip generation for the project. Due to the unique characteristics of the project, Fehr & Peers estimated trip generation based on the Darling Ingredients Inc. Operational Statement. As shown in Table 5, the project is expected to generate about 273 trips per day with 36 trips occurring in the AM peak hour and 28 trips occurring in the PM peak hour. Truck trips are expected to represent about 55 percent of daily vehicle trips, 36 percent of AM peak hour trips, and 28 percent of PM peak hour trips. Note that accessory trips, such as those associated with visitors and employees taking off-site lunch breaks, are relatively few in number and typically occur outside of the peak hour and are therefore not included in the trip generation estimation.

Table 3-18 Project Employee and Truck Trip Generation

User	Quantity[1]		Vehicle Occupancy [Persons/Vehicle][2]	Vehicles per Day	Trip Generation							
					Daily[3]	Peak Hour[4]					
						AM			PM		
	Trucks per Day	Employees				Total	In	Out	Total	In	Out
Employee		70	1.14	61	123	23	17	6	21	9	12
Trucks	75		1.00	75	150	13	7	6	8	5	3
			Total	136	273	36	24	12	28	14	15

Notes:

[1] Source: Darling Ingredients Inc. Operation Statement

[2] 2000/2001 California Statewide Travel Survey - Average vehicle occupancy for Home-Based-Work trips.

[3] Daily Vehicle trips were developed by multiplying total vehicles by two to account for vehicles entering and exiting the project.

[4] Percent of daily vehicles and directional distribution occurring in AM and PM peak hours based on the Manufacturing land use category (ITE 140) from Trip Generation Manual, Institute of Transportation Engineers, 9th Edition. The percent of daily truck trips and directional distribution occurring in the AM and PM peak hours based on the Fontana Truck Trip Generation Study.

Source: Fehr & Peers 2017

Trip Distribution

Table 3-19 summarizes the expected distribution of project trips. As shown, the distribution is expected to be different for employees and trucks. All trucks will use Jensen Avenue to access the project. However, employees will not be restricted and will likely use other routes to access the project, based on the origin of their trip. The distribution of employee trips was developed based on existing counts and the output for the modified version of the Fresno COG travel forecasting model developed for the City of Fresno General Plan.

Table 3-19 Project Trip Distribution

Roadway	Travel To/From Each Roadway							
	Percent of Employees				Percent of Trucks			
	North	South	East	West	North	South	East	West
Jensen Avenue	-	-	98[2]	-	-	-	100	100[3]
Cornelia Avenue	1	100 / 1[1]	-	-	-	-	-	-
Brawley Avenue	1	1	-	-	-	-	-	-
Marks Avenue	2	2			-	-	-	-
West Avenue	1	1	-	-	-	-	-	-

Notes:

[1] 100 percent of employee trips will use Cornelia Avenue and the project access. 1 percent of employee tips are forecast to use Cornelia Avenue south of the project access.

[2] Represents the percentage of employee trips just east of Jensen Avenue.

[3] Represents truck trips between the project access and Cornelia Avenue.

Source: Fehr & Peers 2017

Traffic Forecasts

Traffic volume forecasts for the existing and cumulative conditions scenarios were developed by adding the project trip generation from Table 3-18 to the existing traffic counts and cumulative no project traffic volume forecasts, using the trip distribution for employee and truck trips shown in Table 3-19. The cumulative traffic volume forecasts were developed using the modified version of the Fresno COG regional travel demand forecasting (TDF) model developed for the City of Fresno General Plan Update. All traffic volume forecasts were adjusted, using the difference method, to account for the difference between existing counts and the base year model forecasts. In the study area, the General Plan includes widening of Jensen Avenue east of Marks Avenue from two to four lanes and widening of Marks Avenue from two to four lanes north of Jensen Avenue.

The AM and PM peak hour intersection turning movement forecasts for the Existing Plus Project and Cumulative Plus Project scenarios are included in the appendix. The AM and PM peak hour roadway segment traffic volume forecasts are presented below.

Traffic Operations

Intersection and roadway segment traffic operation are presented below for existing and cumulative conditions with the addition of project trips.

Existing Plus Project Analysis

Table 3-20 summarizes existing conditions AM and PM peak hour LOS for the study intersections. As shown, all of the study intersection will operate acceptably at LOS C or better during both the AM and PM peak hours with the addition of project trips.

Table 3-20 Peak Hour Intersection Level of Service – Existing Plus Project Conditions

Intersection	Traffic Control	LOS / Delay (seconds) [1]			
		Existing Condition		Existing Plus Project Condition	
		AM	PM	AM	PM
1. Jensen Avenue/Cornelia Avenue	SSSC	A (B) / 3 (12)	A (B) / 4 (14)	A (B) / 4 (12)	A (B) / 4 (15)
2. Jensen Avenue/Brawley Avenue	SSSC	A (B) / 4 (12)	A (B) / 2 (13)	A (B) / 3 (13)	A (B) / 2 (13)
3. Jensen Avenue/Marks Avenue	SSSC	A (B) / 4 (14)	A (C) / 5 (16)	A (C) / 4 (15)	A (C) / 5 (17)
4. Jensen Avenue/West Avenue	SSSC	A (B) / 1 (12)	A (B) / 1 (13)	A (B) / 1 (12)	A (B) / 1 (14)

Notes: SSSC = side-street stop control

[1]For side-street stop controlled intersections, the delay and LOS for the most-delayed individual movement is shown in parentheses next to the average intersection delay and LOS. All results are rounded to the nearest second.

Source: Fehr & Peers 2017

Table 3-21 summarizes existing plus project conditions AM and PM peak hour LOS for the study roadways. As shown, all of the study roadways would operate at LOS D or better during both the AM and PM peak hours. The County roadway segments, which includes Cornelia Avenue and Brawley Avenue, would operate acceptably at LOS C. The addition of project trips would not change the LOS of the study roadway segments, compared to existing conditions.

Compared to the intersection analysis results, the roadway segment analysis results in more conservative (i.e., on the high side) LOS, given that drivers perception of travel and delay while traveling along the study corridor are heavily influenced by conditions experience at the study intersections.

Table 3-21 Peak Hour Roadway Segment Level of Service – Existing Plus Project Conditions

Intersection		Volume				Lanes	Existing Conditions				Existing Plus Project Conditions			
		Existing Conditions		Existing Plus Project Conditions			AM		PM		AM		PM	
		AM	PM	AM	PM		VC	LOS	VC	LOS	VC	LOS	VC	LOS
Jensen Avenue	Project Access to Cornelia Avenue	257	337	288	360	2	0.17	C	0.23	C	0.19	C	0.24	D
	Cornelia Avenue to Brawley Avenue	268	373	323	413	2	0.18	C	0.25	D	0.22	C	0.28	D
	Brawley Avenue to Marks Avenue	427	468	481	507	2	0.29	D	0.32	D	0.32	D	0.34	D
	Marks Avenue to West Avenue	405	483	457	521	2	0.27	D	0.33	D	0.31	D	0.35	D
	West Avenue to Fruit Avenue	412	499	462	536	2	0.28	D	0.34	D	0.31	D	0.36	D
Cornelia Avenue	Church Avenue to Jensen Avenue	84	112	85	112	2	0.06	C	0.08	C	0.06	C	0.08	C
	Jensen Avenue to North Avenue	83	119	108	137	2	0.06	C	0.08	C	0.07	C	0.09	C
Brawley Avenue	Church Avenue to Jensen Avenue	93	83	94	83	2	0.06	C	0.06	C	0.06	C	0.06	C
	Jensen Avenue to North Avenue	71	39	72	39	2	0.05	C	0.03	C	0.05	C	0.03	C
Marks Avenue	Church Avenue to Jensen Avenue	168	201	169	202	2	0.11	C	0.14	C	0.11	C	0.14	C
	Jensen Avenue to North Avenue	96	127	97	128	2	0.06	C	0.09	C	0.07	C	0.09	C
West Avenue	Church Avenue to Jensen Avenue	44	55	45	55	2	0.03	C	0.04	C	0.03	C	0.04	C
	Jensen Avenue to North Avenue	25	41	26	41	2	0.02	C	0.03	C	0.02	C	0.03	C

Source: Fehr & Peers 2017

Cumulative Analysis

Table 3-22 summarizes cumulative condition AM and PM peak hour LOS for the study intersections. As shown, all study intersections are forecast to operate unacceptably (i.e., LOS E or F) during the PM peak hour under cumulative conditions. In the AM peak hour, the Marks Avenue and West Avenue intersections would operate at LOS F. The addition of project traffic would worsen operations at these intersections. Poor operation at this intersection is due to planned growth in the study area. The analysis assumes the planned widening of Jensen Avenue and Marks Avenue, but not specific improvements at the intersections.

Table 3-22 Peak Hour Intersection Level of Service – Cumulative Plus Project Conditions

Intersection	Traffic Control	LOS / Delay (seconds) [1]			
		Cumulative Condition		Cumulative Plus Project Condition	
		AM	PM	AM	PM
1. Jensen Avenue/Cornelia Avenue	SSSC	A (C) / 7 (23)	**A (F) / 10 (60)**	A (D) / 8 (27)	**B (F) / 12 (72)**
2. Jensen Avenue/Brawley Avenue	SSSC	A (C) / 4 (21)	**A (E) / 7 (46)**	A (C) / 5 (23)	**A (F) / 7 (52)**
3. Jensen Avenue/Marks Avenue	SSSC	**F (F) / >180 (>180)**	**F (F) / >180 (>180)**	**F (F) / >180 (>180)**	**F (F) / >180 (>180)**
4. Jensen Avenue/West Avenue	SSSC	**F (F) / >180 (>180)**	**F (F) / >180 (>180)**	**F (F) / >180 (>180)**	**F (F) / >180 (>180)**

Notes: SSSC = side-street stop control, **Bold** indicates unacceptable operations

[1]For side-street stop controlled intersections, the delay and LOS for the most-delayed individual movement is shown in parentheses next to the average intersection delay and LOS. All results are rounded to the nearest second.

Source: Fehr & Peers 2017

Table 3-23 summarizes cumulative condition AM and PM peak hour LOS for the study roadways. As shown, all of the study roadways would operate at LOS D or better during both the AM and PM peak hours. The County roadway segments, which includes Cornelia Avenue and Brawley Avenue, would operate acceptably at LOS C. The addition of project trips would not change the LOS of the study roadway segments, compared to existing conditions.

Table 3-23 Peak Hour Roadway Segment Level of Service – Cumulative Plus Project Conditions

Intersection		Volume				Lanes	Cumulative Conditions				Cumulative Plus Project Conditions			
		Cumulative		Cumulative Plus Project			AM		PM		AM		PM	
		AM	PM	AM	PM		VC	LOS	VC	LOS	VC	LOS	VC	LOS
Jensen Avenue	Project Access to Cornelia Avenue	460	660	490	680	2	0.11	C	0.23	C	0.11	C	0.23	C
	Cornelia Avenue to Brawley Avenue	580	980	630	1,020	2	0.06	C	0.13	C	0.07	C	0.14	C
	Brawley Avenue to Marks Avenue	670	950	730	990	2	0.31	D	0.45	D	0.33	D	0.46	D
	Marks Avenue to West Avenue	1,800	1,990	1,850	2,030	4	0.39	D	0.66	D	0.43	D	0.69	D
	West Avenue to Fruit Avenue	1,620	1,900	1,670	1,940	4	0.45	D	0.64	D	0.49	D	0.67	D
Cornelia Avenue	Church Avenue to Jensen Avenue	170	340	170	340	2	0.48	D	0.53	D	0.50	D	0.54	D
	Jensen Avenue to North Avenue	90	190	110	200	2	0.43	D	0.51	D	0.45	D	0.52	D
Brawley Avenue	Church Avenue to Jensen Avenue	150	260	150	260	2	0.10	C	0.18	C	0.10	C	0.18	C
	Jensen Avenue to North Avenue	80	60	80	60	2	0.05	C	0.04	C	0.05	C	0.04	C
Marks Avenue	Church Avenue to Jensen Avenue	1,070	1,150	1,070	1,150	4	0.29	D	0.31	D	0.29	D	0.31	D
	Jensen Avenue to North Avenue	620	730	620	730	2	0.42	D	0.49	D	0.42	D	0.49	D
West Avenue	Church Avenue to Jensen Avenue	430	580	430	580	2	0.29	D	0.39	D	0.29	D	0.39	D
	Jensen Avenue to North Avenue	500	600	500	600	2	0.34	D	0.41	D	0.34	D	0.41	D

Notes: **Bold** indicates unacceptable operations

Source: Fehr & Peers 2017

Compared to the intersection analysis results, the roadway segment analysis results in better LOS. Unacceptable operation of the study intersections is due to delay experienced by driver accessing Jensen Avenue from the side streets. These results indicate that improved traffic control is needed, but not additional capacity on the roadways (i.e., beyond what is planned).

As outlined above, the addition of project trips would worsen unacceptable operations under cumulative conditions. This would be a *potentially significant* impact.

Mitigation Measure TRAF-1: The project proponent shall be responsible for the project's proportional share of the improvements identified below. At the discretion of the City of Fresno, the project proponent shall implement one (or a combination of) the following: 1. Pay project's fair share of traffic impact fees; 2. Pay a fair-share ad-hoc fee; or 3. Construct the improvement with reimbursement or fee credits. Implementation of the following mitigation would result in acceptable intersection operations:

Jensen Avenue/Cornelia Avenue

- Install all-way stop control.

Jensen Avenue/Brawley Avenue

- Install all-way stop control.

Jensen Avenue/Marks Avenue

- Install traffic signal control with protected left-turn phasing and the following lane configurations:
  - One left-turn and a shared through/right-turn lane on the northbound approach;
  - One left-turn lane, one through lane, and one right-turn lane on the southbound approach;

- One left-turn and a shared through/right-turn lane on the eastbound approach; and
- One left-turn lane, one through lane, and one right-turn lane on the westbound approach.

The improvements outlined above shall be coordinated with the planned widening of Jensen Avenue and Marks Avenue, which would include lane transitions through the intersection.

Jensen Avenue/West Avenue

- Install traffic signal control with protected left-turn phasing and the following lane configurations:
  - One left-turn and a shared through/right-turn lane on the northbound approach;
  - One left-turn and a shared through/right-turn lane on the southbound approach;
  - One left-turn lane, one through lane, and a shared through/right-turn lane on the eastbound approach; and
  - One left-turn lane, one through lane, and a shared through/right-turn lane on the westbound approach.

The improvements outlined above shall be coordinated with the planned widening of Jensen Avenue and Marks Avenue, which would include lane transitions through the intersection.

Significance after Implementation of Mitigation Measure

Table 3-24 summarizes intersection operations under cumulative conditions with implementation of mitigation measure TRAF-1. As shown, implementation of the mitigation measures reduces project-related impacts to cumulative intersection level of service to a less-than-significant level.

Table 3-24 Peak Hour Intersection Level of Service – Cumulative Plus Project Conditions (Mitigated)

Intersection	Traffic Control	LOS / Delay (seconds) [1]			
		Cumulative Plus Project Condition		Cumulative Plus Project Condition (Mitigated)	
		AM	PM	AM	PM
1. Jensen Avenue/Cornelia Avenue	SSSC	A (D) / 8 (27)	**B (F) / 12 (72)**	B / 13	D / 31
2. Jensen Avenue/Brawley Avenue	SSSC	A (C) / 5 (23)	**A (F) / 7 (52)**	B / 14	C / 24
3. Jensen Avenue/Marks Avenue	Signal	**F (F) / >180 (>180)**	**F (F) / >180 (>180)**	D / 44	D / 36
4. Jensen Avenue/West Avenue	Signal	**F (F) / >180 (>180)**	**F (F) / >180 (>180)**	C / 26	C / 30

Notes: SSSC = side-street stop control, **Bold** indicates unacceptable operations

[1]For side-street stop controlled intersections, the delay and LOS for the most-delayed individual movement is shown in parentheses next to the average intersection delay and LOS. All results are rounded to the nearest second.

Source: Fehr & Peers 2017

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?

Less-than-significant impact. Please see the discussion under “a” above for an evaluation related to roadway and intersection level of service standards. Regarding other congestion management standards, the passage of California Assembly Bill 2419 in 1996 allowed counties to “opt out” of the California Congestion Management Program if a majority of local governments elected to exempt themselves from California’s congestion management plans. On September 25, 1997, the Fresno COG Policy Board rescinded the Fresno

County Congestion Management Program at the request of the local member agencies. Therefore, this impact criteria is not applicable and this impact is less than significant.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

Less-than-significant impact. The closest airport, Fresno Chandler Executive airport, is located 3.5 miles northeast of the project site. The project includes large equipment, including two new 60-foot protein storage silos. Due to the significant distance of the project site to the nearest airport, these structures are not tall enough to affect air traffic. The project is an industrial use and would not substantially increase demand for air travel. Therefore, the project would not result in any safety risks due to altered air traffic patterns. The impact is less than significant.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less-than-significant impact. Implementation of the project would not adversely affect study roadway or intersection operation, including the project site driveway, based on established significance criteria. In addition, the mitigation discussed under “a” above would improve operations for non-project traffic under cumulative conditions. The project includes separate access points for employees/visitors and trucks; therefore, the ingress/egress is designed to avoid conflicts between truck and employee vehicle traffic. Furthermore, final site design would require review and approval by the City Public Works department, which would verify that all access points, driveways, and parking areas meet City standards. This impact would be less than significant.

e) Result in inadequate emergency access?

Less-than-significant impact. As mentioned above, the project includes two access points, one access on Jensen Avenue for trucks only, and one access on Cornelia Avenue for employees and visitors. This design promotes appropriate emergency access. Furthermore, final site design would require review and approval by the City Public Works department, which would verify that all access points, driveways, and parking areas meet City standards. This impact would be less than significant.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Less-than-significant impact. The City of Fresno *Traffic Impact Study Report Guidelines* do not currently have thresholds for impacts on transit, bicycle, and pedestrian facilities. For purposes of this analysis, the project would cause a significant impact to the transit system, bicycle network, and/or pedestrian facilities if it would:

- disrupt or interfere with existing or planned public transit services or facilities;
- create an inconsistency with policies concerning transit systems set forth in the City of Fresno General Plan or other applicable adopted policy document;
- disrupt or interfere with existing or planned bicycle/pedestrian facilities;
- result in unsafe conditions for pedestrians, including unsafe pedestrian/bicycle or pedestrian/vehicle conflicts;
- result in unsafe conditions for bicycles, including unsafe bicycle/pedestrian or bicycle/vehicle conflicts; or

- create an inconsistency with policies related to bicycle or pedestrian systems set forth in the City of Fresno General Plan, the City of Fresno ATP, or other applicable adopted policy document;

As described above under "Environmental Setting," the project vicinity has almost no existing or planned bicycle and pedestrian facilities, which is consistent with the rural agricultural setting. As indicated in the City's Active Transportation Plan, the vicinity has low bicycle and pedestrian index, which indicates a low level of trips being made by walking and biking. Given the remote location of the project site, it is not likely that employees would walk or bicycle to work. Therefore, the project would not disrupt existing or planned bicycle or pedestrian facilities or create any policy inconsistencies related to bicycle- or pedestrian-related policies.

In addition, no bus lines currently serve the project vicinity, and none are planned for the vicinity; therefore, relocation of the proposed rendering plant would not place additional demand on transit and would not conflict with transit policies for the area. The project would result in a less-than-significant impact.

3.17 TRIBAL CULTURAL RESOURCES

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII.	**Tribal Cultural Resources. Would the project:**				
a)	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:				
	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), or	☐	☐	☒	☐
	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 Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☒	☐

3.17.1 Environmental Setting

Assembly Bill (AB) 52, signed by Governor Edmund G. Brown, Jr., in September 2014, established a new class of resources under CEQA: "tribal cultural resources" (TCRs). AB 52, as provided in PRC Sections 21080.3.1, 21080.3.2, and 21082.3, requires that lead agencies undertaking CEQA review must, upon written request of a California Native American Tribe, begin consultation once the lead agency determines that the application for the project is complete, prior to the issuance of a Notice of Preparation (NOP) of an environmental impact report (EIR) or notice of intent to adopt a negative declaration or mitigated negative declaration.

AB 52 applies to those projects for which a lead agency had issued a NOP of an EIR or notice of intent to adopt a negative declaration or mitigated negative declaration on or after July 1, 2015. Therefore, the requirements of AB 52 apply and the City of Fresno has initiated consultation with Tribes that have requested consultation.

3.17.2 Discussion

a) 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:

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)? or

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?

Less than significant impact. In compliance with AB 52, the City of Fresno sent letters to 16 Native American Tribes on June 8, 2017. No requests for consultation were received in response. No known tribal cultural resources are present in the project site vicinity. Mitigation measures are included under section 3.5 “Cultural Resources” that require appropriate response if human remains or other potential archaeological resources are uncovered during project construction. Therefore, impacts related to the implementation of the project would be less than significant.

3.18 UTILITIES AND SERVICE SYSTEMS

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII.	**Utilities and Service Systems. Would the project:**				
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?	☐	☐	☒	☐

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII.	**Utilities and Service Systems. Would the project:**				
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?	☐	☐	☒	☐

3.18.1 Environmental Setting

The City of Fresno Department of Public Utilities provides potable water to most of the city. Fresno's primary source of potable water is groundwater stored in an aquifer. However, since 2004, the City has been operating a surface water treatment facility which provides a portion of the City's water. The addition of the facility has reduced the percentage of total water demand provided by groundwater to approximately 75 percent in 2015. Also in 2015, the City began operating its new T-3 Water Storage and modular Surface Water Treatment Facility. In March 2016, the City began construction on a new surface water treatment facility in southeast Fresno and large diameter water mains that will service approximately one-half of the City. The City has also secured surface water supplies from the Fresno Irrigation District (FID) via the Kings Water entitlement and from the U.S. Bureau of Reclamation for water from the San Joaquin River. The City has an aggregate of about 133,000 service connections and between the years of 2006 and 2015 provided an average of 145,900 acre-feet of potable water annually (City of Fresno, 2015).

The City lies within the Kings Sub-basin, which is part of the larger San Joaquin Valley Groundwater Basin, and is classified as 'critically overdrafted.' Groundwater levels in the Fresno area have declined from less than 0.5 feet per year in the southwest portion of downtown, to 1.5 feet per year for northern and southern portions of town, to a maximum of 3.0 feet per year in the northeastern area adjacent to the City of Clovis since 1990 (City of Fresno 2015). In the past 80 years, the water level has decreased from 30 feet below ground surface to more than 128 feet below ground surface, according to 2009 data provided by the City (City of Fresno, 2014b:5.15-2).

The City of Fresno owns and maintains most of the wastewater collection systems that convey wastewater to two processing facilities it also owns. The City's wastewater collection system consists of more than 1,380 miles of gravity flow pipelines, ranging in size from 4 inches to 84 inches in diameter, and ranging in age from new to more than 100 years old. The RWRF which is adjacent to the project site provides a majority of the wastewater treatment for the City. The facility received and treated approximately 64.5 million gallons per day (MGD) with the permitted capacity to treat up to 88.0 MGD as a maximum monthly average flow. The quantity of wastewater received and treated by the RWRF has been declining since 2006 (City of Fresno, 2014b:5.15-7).

The RWRF discharges effluent to an array of percolation basins, where it percolates through the underlying soil strata and into the groundwater beneath the basin. In addition, some of the effluent is recycled by direct delivery to nearby farmland where it is used for restricted irrigation for feed/fodder and fiber crops, or recycled for irrigation by delivery to the FID canal system. The use of the RWRF percolation basins for effluent disposal has resulted in a groundwater mound beneath the site, and the local groundwater level in that area is higher than it would otherwise be without the addition of the effluent. The diversion and/or extraction of RWRF effluent for beneficial recycled water uses such as irrigation, rather than effluent disposal via the percolation basins, reduces related groundwater mounding and effluent-related effects on background groundwater quality (City of Fresno, 2014b:5.15-8).

Stormwater collection and disposal, and flood control for the City of Fresno, City of Clovis, and the unincorporated areas within the City of Fresno's sphere of influence are provided by the FMFCD. The District has organized the metropolitan area into watersheds that are delineated along topographic boundaries and are limited in size to between 200 acres to 600 acres. The service is provided through the combination of surface drainage improvements that direct runoff to storm drainage inlets, which collect the runoff and convey the runoff to underground pipeline collection systems. The collection systems convey the stormwater to disposal facilities, which in most cases are excavated, unlined basins. Stormwater is discharged to the San Joaquin River (City of Fresno, 2014b:5.15-11).

Fresno diverts most of its solid waste away from landfills and into recycling and composting programs. In 2009, Fresno was ranked highest in the state among larger cities by the California Integrated Waste Management Board for diverting 71 percent of its solid waste. A Council resolution commits the City to a Zero Waste goal by the year 2025. Garbage disposed of in the City of Fresno is taken to the American Avenue Landfill located approximately six miles southwest of Kerman. American Avenue Landfill is owned and operated by Fresno County and has a remaining capacity of 29,358,535 cubic yards, with an estimated closure date of August 31, 2031 (City of Fresno, 2014b:5.15-13).

3.18.2 Discussion

a, b, e) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

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?

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?

Less-than-significant impact. The existing Darling Ingredients Inc. facility is a rendering, recycling, and recovery operation that collects and processes raw material (primarily beef fat, bone, and offal) into bone meal and purified fat that can be beneficially used to make animal feed, oleo chemicals (e.g., soaps, cosmetics), fuel (e.g., biodiesel), and lubricants. Remaining condensable materials (mainly steam and water-soluble odorous chemical compounds) are transferred to the city wastewater collection and treatment system. The new facility would operate in the same fashion as the existing facility and would construct four total buildings: a rendering facility, a truck shop, a maintenance shop, and an office building with a total floor area of approximately 44,600 sf.

In compliance with the RWQCB's Waste Discharge Requirement Order for the Regional Facility, Order No 5-01-254 established via Resolution No. R5-2002-0254- A01, all wastewater generated at the Darling facility (a portion of which would be stormwater) would pass through a primary treatment system before being discharged to the City's wastewater collection and treatment system. This type of pretreatment is capable of removing gross solids and organic matter, in addition to fat, oil, and grease. Certain levels of nutrients and soluble organic matter would be discharged to the City's wastewater collection and treatment system and would typically contain ammonia and BOD_5 (See Table 2-2); however, the discharge would be compliant with the City's sewer ordinance. Treated non-potable water from the RWRF would be used for irrigation. The project would generate up to 350,000 gallons/day (0.35 MGD) wastewater flow (See Table 2-2 in the Project Description), which is up to twice the current level of wastewater generation. According to the General Plan MEIR, the RWRF has a rated wastewater treatment capacity of 80 MGD and a permitted (through RWQCB) dry weather flow capacity of 94 MGD. The RWRF currently has an average dry weather flow of 68 MGD (Fresno 2014b:5.5-18). Therefore, the RWRF operates below capacity and currently has capacity to treat the project's 0.35 MGD. It should be noted that the wastewater generated by the General Plan's post-2025 buildout would substantially exceed the RWRF's wastewater treatment capacity. The General Plan includes policies and the MEIR includes mitigation measures that require increase in wastewater treatment capacity prior to approving development after year 2025. The MEIR concludes that implementation of these policies and mitigation measures would reduce the impact (both individually and cumulatively) to a less-than-significant level. Therefore, implementation of the project would result less-than-significant impacts with regard to wastewater treatment requirements and facilities.

b) 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?

No impact. The proposed Darling Ingredients Inc. facility would manage stormwater quality through a SWPPP in accordance with the requirements of Section B of NPDES General Permit No. CAS000001 for the discharge of stormwater associated with industrial activities, excluding construction activities. The project would add approximately 10 acres of impervious surface to the site. Stormwater from these areas would sheet flow into grassy areas, which would function as bio filters to remove sediment from stormwater. The project would not drain into a formal municipal drainage system; therefore, the project would result in no impact to existing storm drainage facilities. It should be noted that implementation of HYD-1 would require a drainage plan to reduce peak runoff rates either to the existing runoff rate or a rate that complies with City and County standards, which minimizes potential impacts related to off-site flooding.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Less-than-significant impact. The estimated demand for potable water would be 75,000 gpd, which would be supplied by a proposed off-site well located just west of the project site. Although relatively shallow monitoring wells (under 200 feet) in the vicinity show elevated levels of Nitrate during some months (as high as 22 milligrams per liter [mg/L], which exceeds the 10 mg/L maximum contaminant level [MCL]), the increased groundwater depths of the proposed well (600 feet) may have lower Nitrate levels. As described in Section 2, "Project Description," the City would conduct groundwater quality testing during drilling and, if any regulated groundwater constituents exceed MCLs, would install well-head treatment and establish a regular monitoring program. The project would also use recycled water from the RWRF for landscaping. The project would not use municipal water and, therefore, would not substantially affect municipal water supply. This impact is less than significant. Project-related impacts to groundwater levels are discussed in Section 3.9 Hydrology and Water Quality.

f, g) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Comply with federal, state, and local statutes and regulations related to solid waste?

Less-than-significant impact. The nearest waste disposal site is American Avenue Landfill, which is approximately 18 miles west of the project site. As of July 2005, the landfill had a remaining capacity of over 29 million cubic yards. Operation of the landfill is expected to remain available until the end of 2031

(Calrecycle 2017). The project would be required to comply with all federal, State, and local regulations related to the disposal of waste related to the operation of the project and would not exceed capacity of the landfill. Although the rendering plant involves operational expansion, it is not anticipated to generate substantial solid waste above current solid waste generation levels. This is because, while there may a slight increase in solid waste, the increased efficiency and recent technology being incorporated into the new facility allows for new uses for product residuals. This would be a less-than-significant impact.

3.19 MANDATORY FINDINGS OF SIGNIFICANCE

	ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII.	**Mandatory Findings of Significance.**				
a)	Does the project have the potential to substantially 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 an endangered, rare, or threatened species, 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?	☐	☐	☒	☐

Authority: Public Resources Code Sections 21083, 21083.5.

Reference: Government Code Sections 65088.4.
Public Resources Code Sections 21080, 21083.5, 21095; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109; *San Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656.

3.19.1 Discussion

a) Does the project have the potential to substantially 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 an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?

Less-than-significant impact. As described above in Section 3.4 Biological Resources, the project site is currently used for agriculture. While the site has the potential to host species identified as a candidate, sensitive, or special-status species, the loss of substantial habitat is not anticipated because the site is already substantially disturbed. It is likely that the site is used by some species for foraging, but unlikely that development of the site would result in substantial impacts to individual species. Mitigation has been included that would require site-specific surveys to be performed prior to construction in order to determine the presence of special-status species, and incorporate measures to avoid or minimize direct or incidental take. This would result in a less-than-significant impact with mitigation incorporated.

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.)

Less-than-significant impact. The project includes moving an existing use away from a more urbanized area in the City to a rural location near the RWRF. Although the project does include expansion of the current operation, the project is primarily moving an existing facility and would not substantially contribute to any regional cumulative impacts. Furthermore, the project-related impacts are all less-than-significant after implementation of mitigation measures; therefore, the project's contribution would be further minimized. Due to the site's rural location, very little development is anticipated to occur in the vicinity; therefore, the project would not combine with other projects in the vicinity to result in or contribute to cumulative impacts. The project's potential contribution to significant cumulative impacts would not be considerable and this impact would be less than significant.

c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

Less-than-significant impact. As discussed above in Section 3.8 Hazards and Hazardous Materials, the project would involve use and transport of hazardous materials, but would comply with existing regulations, which would minimize impacts to humans. The project would also implement mitigation measures to further minimize potential adverse effects on humans. Therefore, the project would not directly or indirectly cause substantial adverse effects on human beings. This impact is considered to be less than significant.

4 REFERENCES

Chapter 1, Introduction

No references were used.

Chapter 2, Project Description

City of Fresno. 2016. *City of Fresno Active Transportation Plan, Draft*.

Darling. *See* Darling Ingredients, Inc.

Darling Ingredients, Inc. 2017. *Darling Operational Statement*.

Chapter 3, Environmental Checklist

City of Fresno. 2014a. *City of Fresno General Plan*. Available at: https://www.fresno.gov/darm/general-plan-development-code/.

______. 2014b. *City of Fresno General Plan Master EIR*. City of Fresno. Available at: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2016/11/Sec-05-01-Aesthetics-Fresno-MEIR.pdf

Aesthetics

Caltrans. *See* California Department of Transportation.

California Department of Transportation. 2017. California Scenic Highway Mapping System. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/. Accessed: February 13, 2017.

Agriculture

California Department of Conservation. 2015. Fresno County Important Farmland 2015. Farmland Mapping and Monitoring Program, 1:100,000 Scale. Sacramento: California Department of Conservation, Division of Land Resource Protection. Accessed: February 27, 2017.

Air Quality

CARB. *See* California Air Resources Board.

California Air Resources Board. 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. California Environmental Protection Agency. Sacramento, CA.

______. 2015. Area Designations Maps/State and National. Available at: http://www.arb.ca.gov/desig/adm/adm.htm. Accessed September 24, 2015

E. McLaughlin. 2017 (May 5). Email communication with Eric McLaughlin of the San Joaquin Valley Air Pollution Control District and Dimitri Antoniou of Ascent Environmental.

Office of Environmental Health Hazard Assessment. 2012. *Technical Support Document for Exposure Assessment and Stochastic Analysis.* Sacramento, CA.

San Joaquin Valley Air Pollution Control District. 2015 (March, 19). *Guidance for Assessing and Mitigating Air Quality Impacts*. Fresno, California. Available at: http://valleyair.org/transportation/ceqa_idx.htm. Accessed: May 31, 2017.

SJVAPCD. *See* San Joaquin Valley Air Pollution Control District.

Biology

Anderson, D.A., J. Dinsdale, and R. Schlorff. 2007. *California Swainson's hawk inventory: 2005-2006; Final Report*. Prepared for the California Department of Fish and Game Resource Assessment Program and UC Davis Wildlife Health Center.

California Department of Fish and Wildlife. 2012 (May). *Staff Report on Burrowing Owl Mitigation*. State of California Natural Resources Agency. Sacramento, CA.

California Native Plant Society, Rare Plant Program. 2017. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Sacramento, CA. Available at: http://www.rareplants.cnps.org. Accessed May 25, 2017.

California Natural Diversity Database. 2017 (April). RareFind 5 (Commercial Version): An Internet Application for the Use of the California Department of Fish and Game's Natural Diversity Database. Biogeographic Data Branch, California Department of Fish and Game, Sacramento, CA. Accessed May 25, 2017.

CDFW. *See* California Department of Fish and Wildlife.

City of Fresno. 2014. *General Plan and Development Code Update Master Environmental Impact Report*. Prepared by FirstCarbon Solutions. Fresno, CA 93721.

______. 2017. City of Fresno Municipal Code. Chapter 13—Sidewalks, Streets, Parkways, and Underground Utility Districts. Available at: https://library.municode.com/ca/fresno/codes/code_of_ordinances?nodeId=MUCOCHFRCA_CH13SISTPAUNUTDI. Accessed June 14, 2017.

CNDDB. *See* California Natural Diversity Database.

CNPS. *See* California Native Plant Society.

Schuford, W. D., and Gardali, T, editors. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. *Studies of Western Birds 1*. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

U.S. Fish and Wildlife Service. 2012 (June). *Giant Garter Snake (*Thamnophis gigas*) 5-year Review: Summary and Evaluation*. Sacramento Fish and Wildlife Office, Sacramento, CA.

______. 2017. Official Species List for the Fresno Industrial Project. Consultation Code: 08ESMF00-2017-SLI-2170, Event Code: 08ESMF00-2017-E-05604. Letter obtained May 25, 2017. Sacramento Fish and Wildlife Office, Sacramento, CA.

Cultural Resources

City of Fresno. 2014a. *General Plan*- Ch. 8: Historic and Cultural Resources Element. Location: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2016/11/GP8HistoricResources.pdf. Accessed: February 27, 2017.

______. 2014b. *Master Environmental EIR*. Ch. 5.5- Cultural Resources. Location: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2016/11/Sec-05-05-Cultural-Resources-MEIR.pdf. Accessed: February 27, 2017.

Geology and Soils

California Department of Conservation. 2016b. Fault Activity Map of California. Available at: http://maps.conservation.ca.gov/cgs/fam/. Accessed June 14, 2017.

Fresno Irrigation. 2014. *Fresno Area-Regional Groundwater Management Plan*. Annual Report. Depth to Water in Wells (Spring 2014). Figure 4. Available at: http://www.fresnoirrigation.com/index.php?dl=601. Accessed: October 2016.

NRCS. *See* U.S. Department of Agriculture, Natural Resources Conservation Service

U.S. Department of Agriculture. 2003. Soil Series- Pachappa Series. Available at: https://soilseries.sc.egov.usda.gov/OSD_Docs/P/PACHAPPA.html. Accessed: June 2017.

______. 2015. Soil Series- Greenfield Series. Available at: https://soilseries.sc.egov.usda.gov/OSD_Docs/G/GREENFIELD.html. Accessed: June 2017.

U.S. Department of Agriculture, Natural Resources Conservation Service, 2017, Web Soil Survey. Available at: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed June 6, 2017.

Hazards and Hazardous Materials

California Department of Forestry and Fire Protection. 2007 (September 21). Fresno County Draft Fire Hazard Severity Zone Map in LRA. Available at: http://frap.fire.ca.gov/webdata/maps/fresno/fhszl06_1_map.10.pdf. Accessed March 2017.

California Department of Toxic Substances Control. 2016. Envirostor Database. Available at: http://www.envirostor.dtsc.ca.gov/public/. Accessed March 4, 2017.

DTSC. *See* California Department of Toxic Substances Control.

State Water Resources Control Board. 2015. Geotracker Database. Available at: http://geotracker.waterboards.ca.gov/. Accessed March 4, 2017.

U.S. Environmental Protection Agency. 2016. Enviromapper Database. Available at: http://www2.epa.gov/emefdata/em4ef.home. Accessed March 4, 2017.

Hydrology and Water Quality

EPA. *See* U.S. Environmental Protection Agency.

Federal Emergency Management Agency, 2009. Flood Map Service Center. Panel 06019C2085H- Effective 2/18/2009. Available at: http://map1.msc.fema.gov/idms/IntraView.cgi?ROT=0&O_X=11573&O_Y=7713&O_ZM=0.206764&O_SX=1168&O_SY=534&O_DPI=400&O_TH=14016859&O_EN=14190577&O_PG=1&O_MP=1&CT=0&DI=0&WD=14400&HT=10350&JX=1307&JY=595&MPT=0&MPS=0&ACT=0&KEY=13859539&ITEM=1&ZOOM_FIT.x=1. Accessed: March 6, 2017.

Intergovernmental Panel on Climate Change. 2007 (February). *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the IPCC. Geneva, Switzerland.

U.S. Environmental Protection Agency. 2017. Environmental Protection Agency Website NPDES Permit Basics Page. Available at: https://www.epa.gov/npdes/npdes-permit-basics. Accessed May 31, 2017.

Mineral Resources

California Department of Conservation 1986. Mineral Resource Zone Maps. Available at: ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sr/SR_158/SR-158_Plate2.pdf. Accessed June 1, 2017.

Noise

California Department of Transportation. 2013 (January). *Technical Noise Supplement to the Traffic Noise Analys*is Protocol. Division of Environmental Analysis. Sacramento, CA.

Caltrans. *See* California Department of Transportation.

County of Fresno. 1978. County of Fresno Municipal Code. Available at: https://library.municode.com/ca/fresno_county/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.40NOCO. Accessed: June 12, 2017.

______. 2000. *Fresno County General Plan.* Available at: http://www.co.fresno.ca.us/DepartmentPage.aspx?id=68048. Accessed: June 12, 2017.

______. 2014. *Fresno General Plan.* Available at: https://www.fresno.gov/darm/wp-content/uploads/sites/10/2016/11/consolidatedGP.pdf. Accessed: June 8, 2017.

Egan, M. David. 2007. *Architectural Acoustic*s. J. Ross Publishing. Fort Lauderdale, FL.

Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*. Washington, D.C.

Fehr & Peers. 2017. *Rendering Plant Relocation Project Transportation Impact Analysis*

FTA. *See* Federal Transit Administration.

Population and Housing

US Census Bureau 2010. Fact Finder Database City of Fresno Demographic Profile. Available at: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF. Accessed June 10, 2017.

Public Services

City of Fresno. 2017. *Fire Department Station Locations.* Available at: https://www.fresno.gov/fire/station-locations/. Accessed: March 7, 2017.

Fresno County Sheriff's Office, 2017. *Area 2- Description*. Available at: http://www.fresnosheriff.org/area-2.html. Accessed: March 7, 2017.

Transportation/Traffic

AirNav. *See* AirNav.com.

AirNav.com. 2012. Available at: http://www.airnav.com/. Accessed: 2012.

California Department of Transportation. 2002. *Guide for the Preparation of Traffic Impact Studies*.

Caltrans. *See* California Department of Transportation.

City of Fontana. 2003. *Truck Trip Generation Study*.

City of Fresno. 2009. *Traffic Impact Study Report Guidelines*

______. 2010. *City of Fresno Bicycle, Pedestrian, and Trails Master Plan*.

______. 2012. Demographic Characteristics. Available at: http://www.fresno.gov/Government/DepartmentDirectory/OldDCR/SiteSelection/Demographic+Characteristics.htm. Accessed: 2012.

______. 2014. *Fresno General Plan*.

______. 2016. *City of Fresno Active Transportation Plan, Draft*.

FCRTA. *See* Fresno County Rural Transit Agency.

Fehr & Peers. 2017 (June). *Traffic Impact Study for the Rendering Plant Relocation Project*.

Fresno County Rural Transit Agency. 2012. Available at: http://www.ruraltransit.org/. Accessed: 2012.

Institute of Traffic Engineers. 2012. *Trip Generation Manual*, 9th ed.

Transportation Research Board. 2000. *Highway Capacity Manual*.

______. 2010. *HCM 2010: Highway Capacity Manual*.

U.S. Census Bureau. 2010. Fact Finder Database City of Fresno Demographic Profile. Available at: https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=CF. Accessed June 10, 2017.

______. 2014 (March 3). American FactFinder; generated by David Robinson; using American FactFinder; Available at: http://factfinder2.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t.

Utilities

California Department of Resources Recovery and Recycling. 2017. Solid Waste Facility Listings database. Available at: http://www.calrecycle.ca.gov/SWFacilities/Directory/10-AA-0009/Detail/. Accessed March 2017.

City of Fresno, 2015. *Urban Water Management Plan*. Available at: https://wuedata.water.ca.gov/public/uwmp_attachments/2174955070/City%20of%20Fresno%202015%20UWMP_adopted.pdf. Accessed June, 2017.

This page intentionally left blank.

5 LIST OF PREPARERS

LEAD AGENCY

City of Fresno

Jennifer Clark .... Director, Development and Resource Management
Mike Sanchez, AICP, MCRP.......... Assistant Director, Development and Resource Management

ENVIRONMENTAL CONSULTANT

Ascent Environmental, Inc.

Sydney Coatsworth, AICP .... Principal-in-Charge
Mike Parker, AICP .... Project Manager/Senior Environmental Planner
Kelly Bray .... Environmental Planner
Marianne Lowenthal.......... Environmental Planner
Elizabeth Boyd .... Environmental Planner
Dimitri Antoniou, AICP .... Air Quality, GHG, and Noise Specialist
Samantha Wang .... Air Quality, GHG, and Noise Specialist
Hannah Kornfeld .... Air Quality, GHG, and Noise Specialist
Honey Walters.......... Principal Air Quality and Noise Specialist
Tammie Beyerl .... Senior Biologist
Alta Cunningham .... Cultural Resources Specialist
Gayiety Lane .... Document Preparation
Phi Ngo .... GIS Specialist
Corey Alling.......... Graphics Specialist

TRAFFIC CONSULTANT

Fehr & Peers

David Robinson, PE .... Principal

This page intentionally left blank.

Appendix A

Odor Control Plan

ODOR CONTROL AND IMPACTS EVALUATION

of

DARLING INTERNATIONAL INC.

795 West Belgravia Road
Fresno, California

Submitted to

City of Fresno
Planning and Development Department
2600 Fresno Street
Fresno, California

Prepared By

Insight Environmental Consultants

5500 Ming Avenue, Suite 360
Bakersfield, CA 93309

July 2009

(FINAL)

EXECUTIVE SUMMARY

In February 2009, the City of Fresno Planning and Development Department retained Insight Environmental Consultants, Inc. to review the Darling International facility located at 795 West Belgravia Road in Fresno, California. Insight's directed evaluation was to evaluate and provide recommendations related to Darling's current operations as compared to industry standards and best practices in relation to public nuisances, odor generation and control, traffic impacts, timely processing of materials, onsite material storage, offsite shipping, operating schedules, noise and routing. Additionally, Insight was to evaluate recent facility improvements relative to air quality impacts and the resulting impacts to the surrounding area. Specifically, the City endeavored to ascertain the efficacy and operational condition of all venting and/or odor reduction equipment and verify Darling's claim that existing equipment is "state of the art" and is installed, maintained and used to its fullest potential.

This document contains the results of Insight's investigation into Darling's current operational practices taken into consideration with the existing plant design, odor control equipment and operational constraints as identified through exhaustive research into current rendering industry design and operational practices and a thorough on-site review of as-built design features and operating practices at the Darling West Belgravia Rendering Plant. Insight's review and assessment was conducted on several levels. First, a historical examination of rendering operational practices throughout the United States was conducted to determine the most current industry control technology and comparisons to Darlings operations were completed. Second, a review of the compliance history of the facility was completed to isolate the operational and physical aspects of the operation in order to determine the genesis of these compliance issues. Third, a detailed review of the regulatory restrictions placed on the facility through facility and equipment permits was conducted to ascertain the compliance status of the facility with each permitted operating condition. Finally, a physical inspection of the facility was conducted with the full cooperation of the Darling management team along with Fresno Building Code Enforcement personnel as well as the enforcement division of the San Joaquin Valley Air Pollution Control District. Subsequent to the field inspection, a joint meeting was held on July 14, 2009 with City of Fresno Planning Department personnel, Darling operations and corporate management, Darling's Public Relations consultant and legal staff representing both parties. This meeting was held to review the report and discuss any errors and/or omissions. Edits and clarifications were made as a result of this meeting based upon independent review and consideration of Insight representatives.

As a result of Insight's review and investigation, a number of design changes, regulatory modifications and operational practice recommendations are made herein that will further reduce community impacts and enhance the current and future operation of the existing plant. While area impacts from odorous compounds are a "subjective" judgment, implementation of the recommendations contained herein are based on current industry standards, regulatory requirements and sound scientific and engineering principles. Adherence to these recommendations is expected to reduce current adverse impacts and enhance future operation of the Darling West Belgravia Rendering Plant.

TABLE OF CONTENTS

EXECUTIVE SUMMARY ii

1 INTRODUCTION 1
- 1.1 Scope of This Analysis 1
- 1.2 Land Use and Development History 2

2 DESCRIPTION OF EXISTING FACILITY 6
- 2.1 Description of Rendering Operations 6
- 2.2 Physical Layout and Operation 8
- 2.3 Odor Abatement and Control Equipment 12
- 2.4 Facility Wind Conditions 15

3 APPLICABLE REGULATORY AND INDUSTRY STANDARDS 18
- 3.1 San Joaquin Valley Air Pollution Control District Permits 18
- 3.2 City of Fresno Municipal Code 21
- 3.3 Industry Operational and Odor Control Standards and Best Practices 22

4 COMPLIANCE HISTORY 25
- 4.1 City of Fresno Code Enforcement 27
- 4.2 San Joaquin Valley Air Pollution Control District Violations 30
- 4.3 Fresno City Council Action 31

5 FACILITY SITE INSPECTION 32
- 5.1 Inspection Setting 32
- 5.2 Operating Conditions 32
- 5.3 Recordkeeping and Documentation 34
- 5.4 Inspection Findings 36

6 RECOMMENDED ACTIONS 37
- 6.1 Permit Modifications 37
- 6.2 Operational / Physical Modifications 38
- 6.3 Recordkeeping and Documentation Modifications 41

7 CONCLUSIONS 44

8 DISCLAIMER 45

9 REFERENCES 45

List of Tables v

List of Figures v

List of Attachments v

LIST OF TABLES

Table	Title
1	Fresno Weather Data
2	San Joaquin Valley Air Pollution Control District Permits to Operate
3	Code Enforcement Monitoring Results
4	San Joaquin Valley Air Pollution Control District Notices of Violation 1999-2009
5	Compliance Records Requested From Darling International

LIST OF FIGURES

Figure	Title
1	Location Map
2	City of Fresno Community Plan Boundary Map
3	City of Fresno 2025 General Plan Land Use and Circulation Map
4	Typical Continuous Dry Rendering Process Diagram
5	Darling International West Belgravia Plant Layout
6	Annual Windrose – Fresno, California

LIST OF ATTACMENTS

	Title
A	Edison Community Plan
B	Description of a Continuous Rendering System
C	Darling International – Internal Memorandum to Drivers – 5/11/2008
D	San Joaquin Valley APCD – Permits to Operate
E	Darling International – Odor Control Plan - West Belgravia Facility
F	RADOX Material Safety Data Sheet
G	USDA Publication – Effect of a Packed Bed Scrubber Using Radox Catalyst on the Emission of Odors and Volatile Organic Compounds From a Commercial Poultry Rendering Plant
H	San Joaquin Valley APCD Initial Study and Proposed Mitigated Negative Declaration – Fresno Upgrades Project
I	Yorke Engineering, LLC Correspondence – 5/8/2007
J	City of Fresno Municipal Code, Chapter 10 – Article 6
K	Sacramento Municipal AQMD Draft CEQA Guide – Section 7

L	City of Fresno – Code Enforcement History Report – Darling Facility
M	San Joaquin Valley APCD Historical Documentation File – Darling International Fresno Facility
N	San Joaquin Valley APCD Internal Memorandum – 3/19/2008 Air Sampling Data Results
O	San Joaquin Valley APCD – Notices of Violation
P	Site Inspection Photographs
Q	Darling International – Fresno Facility Compliance Records

1 INTRODUCTION

1.1 Scope of This Analysis

In February 2009, the City of Fresno Planning and Development Department (Fresno) retained Insight Environmental Consultants, Inc. (Insight) to review the Darling International, Inc. facility (Darling or Darling Facility) located at 795 West Belgravia Road in Fresno, California (**Figure 1**). Insight's directed evaluation was to evaluate and provide recommendations related to Darling's current operations as compared to industry standards and best practices in relation to public nuisances, odor generation and control, traffic impacts, timely processing of materials, onsite material storage, offsite shipping, operating schedules, noise and routing. Additionally, Insight was to evaluate recent facility improvements relative to air quality impacts and the resulting impacts to the surrounding area. Specifically, the City endeavored to ascertain the efficacy and operational condition of all venting and/or odor reduction equipment and verify Darling's claim that existing equipment is "state of the art" and is installed, maintained and used to its fullest potential. The evaluation was required to assist Fresno and Darling in resolving public nuisance issues that have been attributed to Darling's West Belgravia Facility since continued growth within the City has resulted in residential development in close proximity to the plant. Finally, the evaluation was to assist the City in evaluating Darling's proposal to increase the daily raw material process rate.

The Darling West Belgravia Facility is located within the city limits of Fresno (**Figure 1**) and is also noted to be the entirety of Assessor's Parcel Number 477-054-12. The property lies within an existing, and relatively old, industrial area of western Fresno.

FIGURE 1: Location Map

1.2 Land Use and Development History

The City of Fresno is divided into nine *Community Plan* areas which were updated during the adoption of the *2025 Fresno General Plan*. The plans are tailored to the specialized needs and concerns of the identifiable *Community Plan* areas and provide and discuss existing conditions (i.e. trends, planning issues, etc.), while also providing recommendations and/or guidelines that act as blueprints for the relative plan area.

Unlike the *General Plan* or *Community Plans* which act as blueprints for relatively large geographic areas, *Specific Plans* focus on neighborhoods that contain certain characteristics that are deemed desirable or reflect a certain planning trend. It should be noted that only a small portion of the city is located within a *Specific Plan* area, although all areas are within a *Community Plan*. In addition, several of the *Specific Plans* have *Plan Advisory Committees* that review entitlements within the plan area.

The Darling West Belgravia Facility is located within the Edison Community Plan (**Figure 2**) which is part of the City of Fresno General Plan and is referred to as the

"Fruit-Church Industrial Area.[1] The Industrial Section of the Edison Community Plan is provided in **Attachment A**. According to the Edison Community Plan:

> *"The Community is bounded on three sides by planned industrial concentrations. Generally it is not possible to enter the community from any other portion of the city without crossing an industrial corridor. The appearance of such industrial uses are often unappealing, thus creating a negative image of the Edison community. In most cases the commitments to industrial uses or facilities cannot be changed, but their adverse impacts may be minimized by development of strict performance standards, proper site design, and the application of available measures to buffer and separate incompatible land uses."*[2]

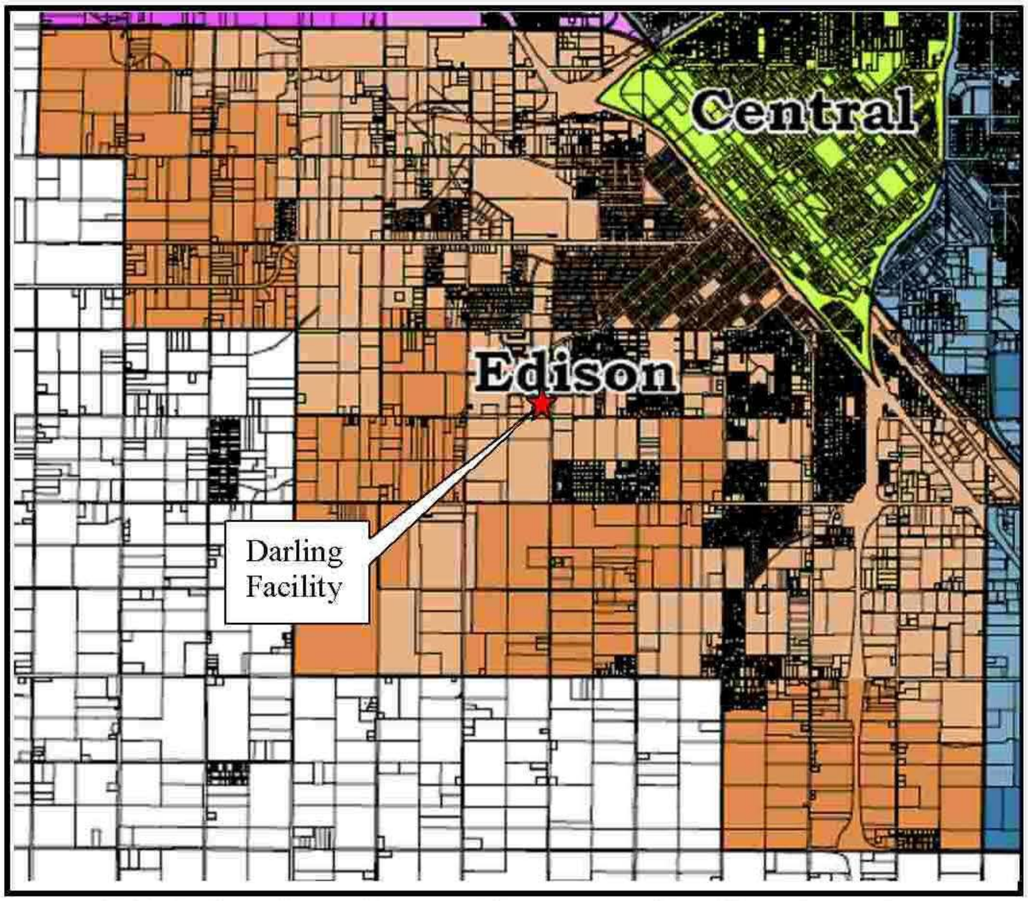


FIGURE 2 - City of Fresno Community Plan Boundary Map

Subsequent to the Edison Community Plan, the stated policy of the Fruit-Church Redevelopment Project was the "retainment-containment" of existing M-3 industrial uses and its intended establishment of desired buffer areas.[3]

Based on the facility's location, the Edison Community Plan acknowledged the existence of this and other industrial-type operations within certain areas of the Plan.

[1] Edison Community Plan, page 42
[2] Edison Community Plan, page 42

The Plan also acknowledged the inherent issues present when trying to co-mingle industrial and residential development and recommended that appropriate buffer zones be maintained to provide sufficient transition within the community from industrial to residential (or non-industrial) areas. The current *City of Fresno 2025 General Plan*, which incorporates the *Edison Community Plan*, depicts the industrial zone and buffered area in and around the Darling facility (**Figure 3**).

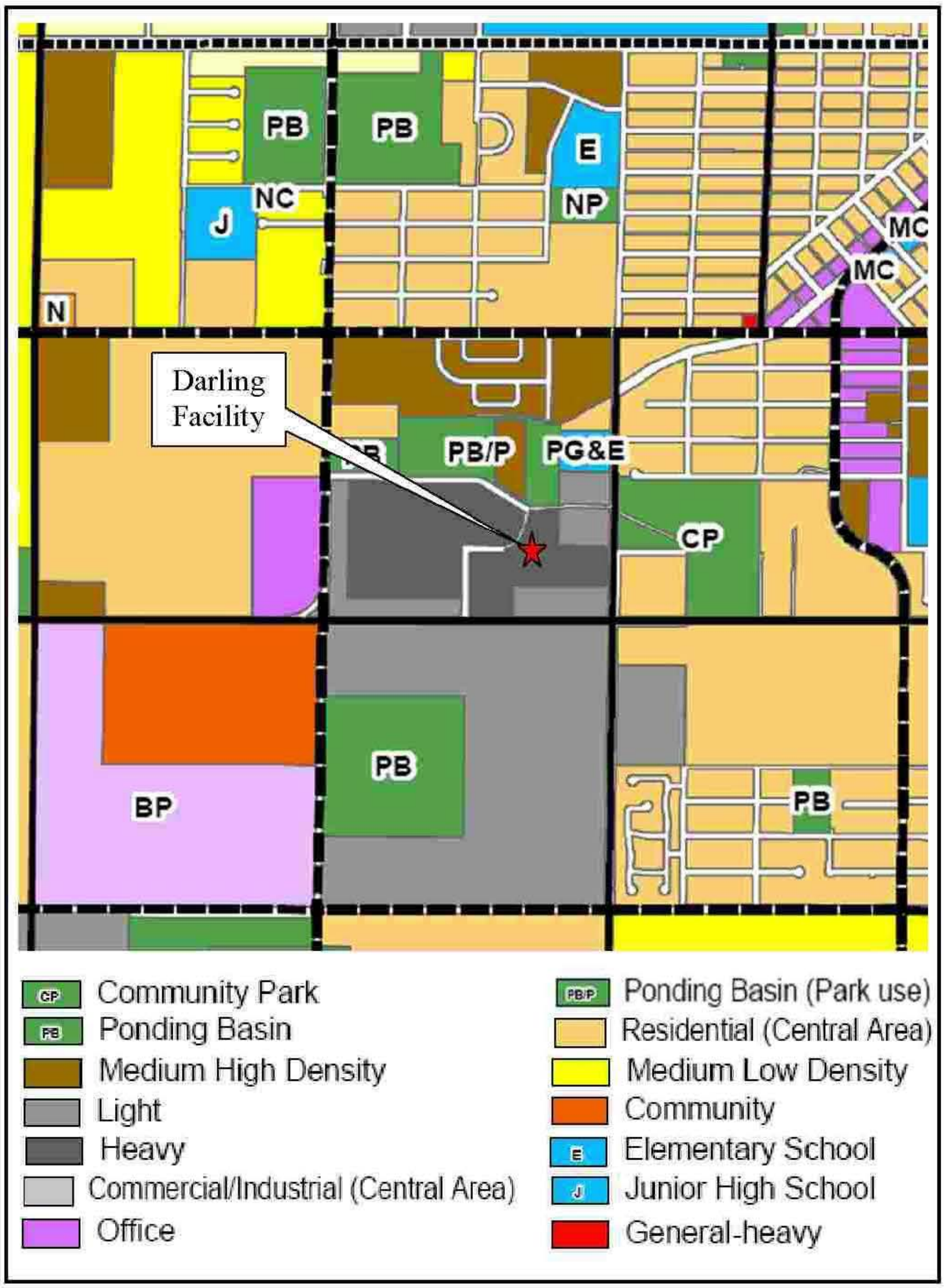


FIGURE 3 – City of Fresno 2025 General Plan Land Use and Circulation Map

[3] Memorandum of George Kerber, Director of Planning and Inspection Department, dated June 15, 1978.

Many cities vary in their planning requirements and practices in determining and maintaining an appropriate degree of separation between incompatible uses. In areas that are new to development, this is much easier than areas where historical land uses are competing against new development or urban sprawl.

The facility was constructed and operated in 1956 by Sierra Rendering primarily as a beef "packing" (slaughter) operation with limited rendering operations. In May 1965 Peterson Manufacturing purchased what was, by then, a fully operational rendering plant. In January 1987, Darling-Delaware Company (now known as Darling International, Inc.) purchased the plant. The Darling West Belgravia Facility was annexed by the City of Fresno in 1971. Fresno's *2025 General Plan* currently provides a minimal buffer zone around the facility (see **Figure 3**). The facility's major sources of raw materials are Cargill, Harris Ranch Beef, Foster Farms and Zacky Farms. Over the course of the last 53 years, as with many San Joaquin Valley cities, development slowly surrounded the Fruit-Church Industrial Area to the extent that as of the date of this analysis, residential neighborhoods are within one-quarter mile of the Darling West Belgravia Facility. Currently, the facility employs 38 people including the General Manager who is also responsible for Darling's Turlock Facility.

The facility is currently allowed to process as much as 850,000 pounds of material daily.[4] If these materials were not recycled (i.e., rendered) they would have to be disposed of in landfills, incinerated, buried or composted. As this would add a significant burden to California's already-over-burdened landfills, the State of California and U.S. Food and Drug Administration recognize the critical roll the rendering industry serves in protecting public health and safety. Raw materials that are not processed at rendering facilities decompose very quickly and can easily become a source of pests, disease and nuisance. Processing this material in a controlled environment significantly reduces to potential for adverse health and safety impacts in the community served by these operations.

[4] San Joaquin Valley Air Pollution Control District Permit No. C-406-1-2, Condition 1.

2 DESCRIPTION OF EXISTING FACILITY

2.1 Description of Rendering Operations

The Darling West Belgravia Facility is a rendering, recycling and recovery operation that collects and processes raw material (primarily beef fat, bone and offal) into bone meal and purified fat that can be beneficially used to make animal feed, oleo chemicals (soaps, cosmetics, etc.) as well as fuel (biodiesel) and lubricants.

As much as "*one-third to one-half of each animal produced for meat, milk, eggs and fiber is not consumed by humans.*"[5] The remaining raw materials are processed through a rendering operation that recycles these materials into many useful products. As of 2006, roughly 54 billion pounds of inedible animal tissues were being generated annually within the United States.[6]

The rendering process basically consists of the application of heat to the raw material to separate fats and proteins and to destroy microbial populations that could pose a threat to public health and safety. This process begins when material received for rendering is received from transport trucks to the receiving area inside the Main Processing Building. The raw material is sized to a uniform particle size and fed into a 62,000 pound per hour capacity continuous cooker from a metering bin. The cooker is an "agitated" vessel that is heated to between 250°F and 280°F which evaporates moisture and separates fat from protein and bone. The Discharge Conveyer which separates liquid fat from solids discharges fats and solids to a Drainer Conveyer. These solids are combined with solids from the Settling Tank and sent through a series of centrifuges and screw presses to further reduce the solids' fat content. Solids that bypass the Screw Presses are recycled back to the Cooker. After several additional levels of liquid/solids separation is completed the clarified fat is removed for further processing or storage and the solids are discharged into Pressed Cake and processed into meal which is then stored in Silos. Water vapor is sent through an air-

[5] Meeker, David L, 2006. *Essential Rendering*, Kirby Lithographic Company, Inc., Arlington, Virginia, p.1
[6] Ibid, page 17.

cooled condenser from which trapped particles are returned to the Cooker and the water vapor is sent through a Cooled Condenser (Cooling Tower).

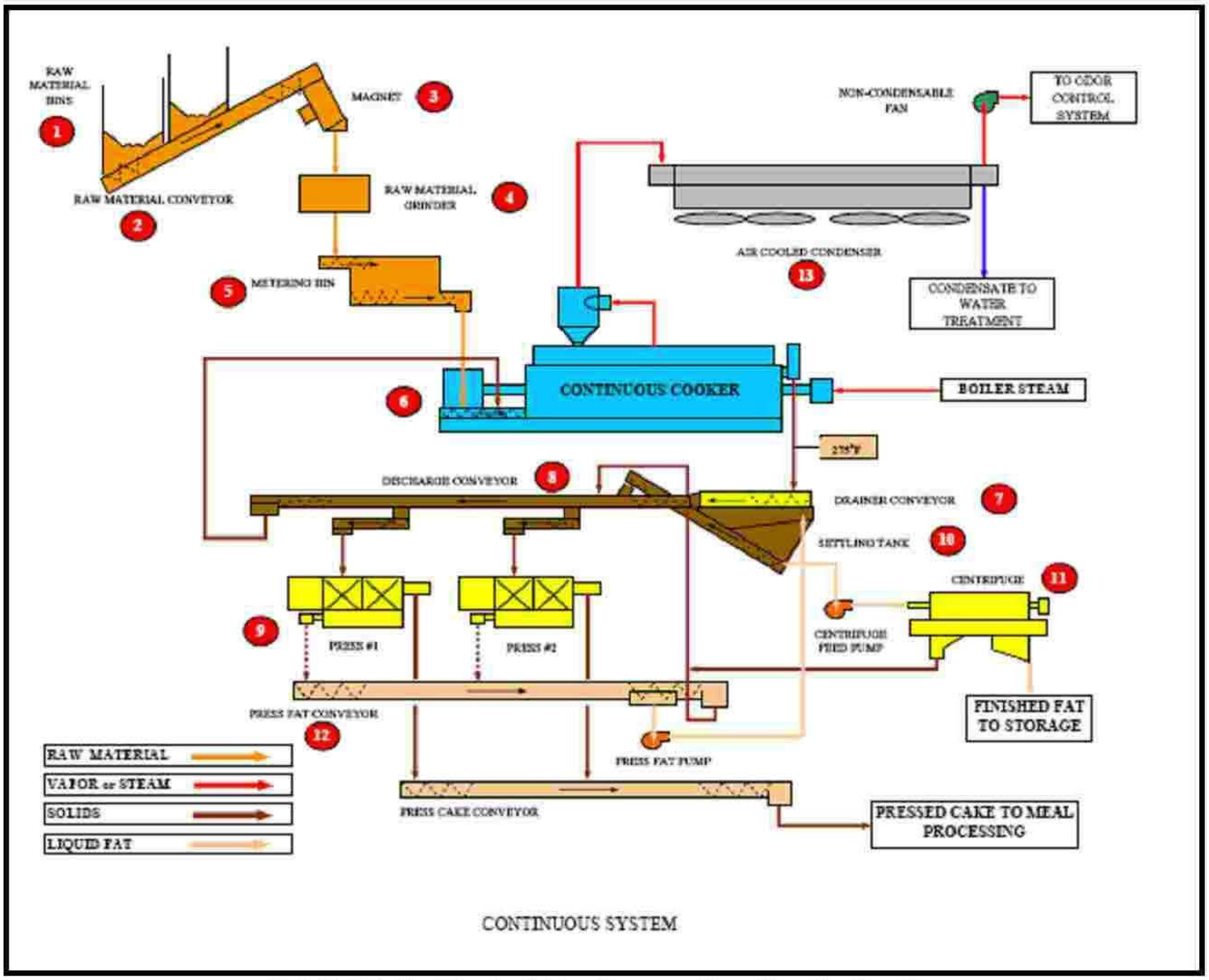


FIGURE 4 – Typical Continuous Dry Rendering Process
(Source: Darling International, Inc.)

Odorous gases that are generated throughout the cooking and separation processes are collected by a ductwork system and transported with the non-condensable gases from the Condenser to the Thermal Oxidizer for destruction. Remaining condensables are processed to the city sewer. Emissions from fired equipment within the facility are controlled and reduced to regulated levels, as required by San Joaquin Valley Air Pollution Control District (SJVAPCD) permit conditions. Fugitive emissions from processing equipment are controlled by the Odor Control and Abatement System by being drawn into the system by the scrubber fans. The Odor Control and Abatement System is permitted under SJVAPCD Permit No. C-406-1-2. **Attachment B** provides a written description of the process described above and which is depicted above in **Figure 4**.

2.2 Physical Layout and Operation

The Darling West Belgravia Facility is located at the northern side of the parcel and is entered through a gate located at the northwestern corner of the property (see **Figure 5**). Offices are located south of the processing facilities and are modular office trailers. The portion of the parcel located north of the office is paved with asphalt with concrete in areas where additional structural support is required. The area west and south of the office is unpaved and consists of dirt and loose gravel. Cleaned truck/trailer combinations, a grease gathering truck, emergency response trailer and employee vehicles are located within this unpaved portion of the property. The structures related to Darling's rendering activities consist of the following:

Main Processing Building – This structure is the largest building on the property. It consists of the Raw Material Receiving Area, Primary Wastewater Treatment Equipment, Raw Material Bin, Cooker, Centrifuge, Presses, Meal Room, Thermal Oxidizer, Boiler and Shop Area.

Meal Silos – Two meal silos are located adjacent to and south of the Meal Room. Processed meal is transferred to the silos and held for shipping.

Meal Loadout – Located south of the Meal Silos, the Meal Loadout is equipped with two doors to allow trucks to pull through to load the processed meal into trucks for offsite delivery.

Fat Storage Tanks – Eleven Fat Storage Tanks are located adjacent to and south of the Raw Material Receiving Room at the west end of the Main Building. These tanks store processed fat rendered through the heat process.

Condensers – A large condenser unit is located south of the Fat Storage Tanks and is used to condense liquids from the steam generated through the heating process.

Fan Towers (Packed Tower Wet Scrubbers) – Two Fan Towers are located on the property and are key components in the Odor Control System. One 100,000 Cubic Feet Per Minute (CFM) Fan Tower is located at the northeast corner of the Main Processing Building. The second is a 75,000 CFM Fan Tower located west of the Meal Silos. These fans create a negative air pressure on the Main Processing

Building, Meal Room and Loadout Building by pulling air in from all openings and venting the air

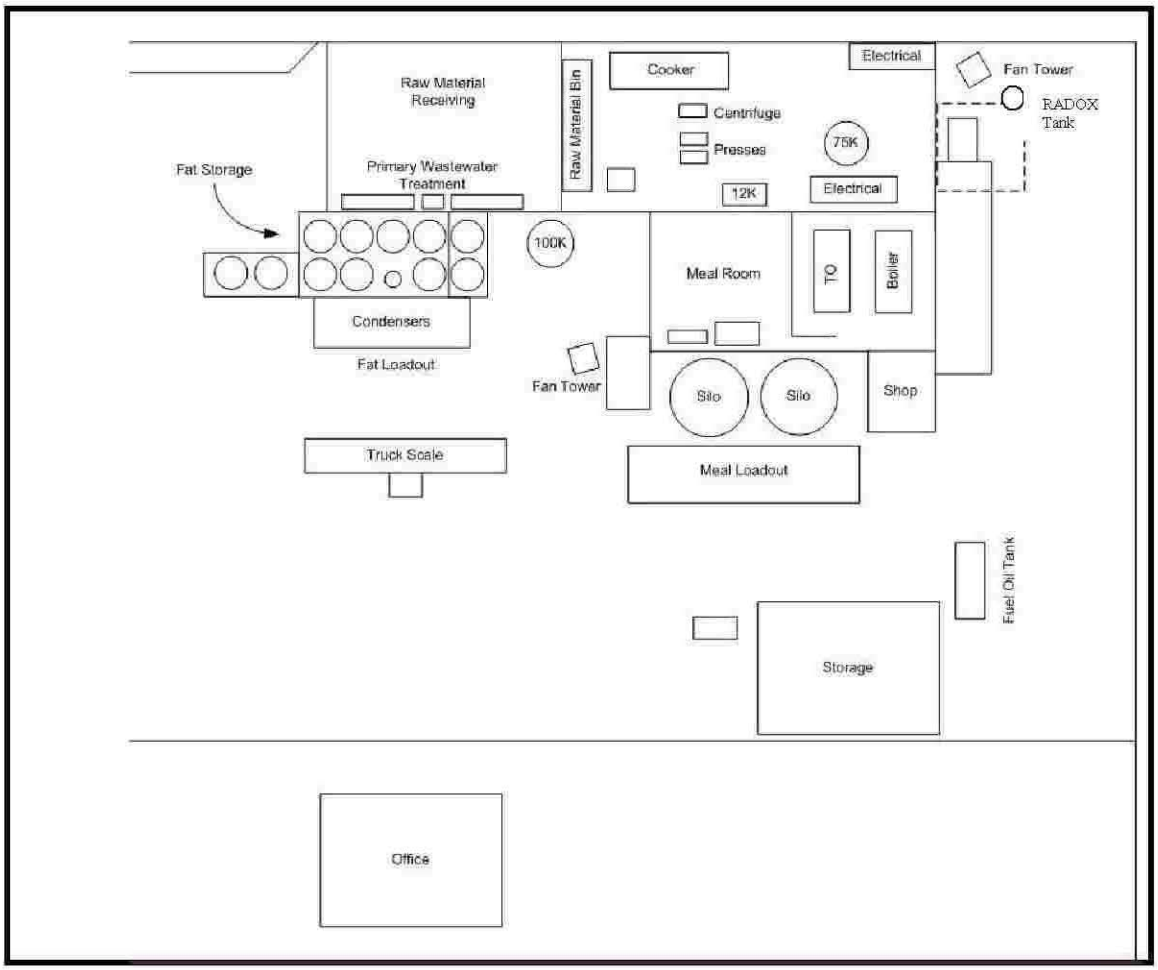


FIGURE 5 – Darling International West Belgravia Plant Layout

from the building through the Odor Abatement and Control Equipment. This system is designed to retain all odors generated within the Main Processing Building for processing through the wet scrubbers that utilize RADOX to scrub malodorous emissions generated through the rendering process.

<u>Truck Scale</u> – Located south of the Condensers, the Truck Scale is used to verify load weights for each truck delivering raw material to the facility.

<u>45K Storage Tank</u> – This tank is used to store water to collect wastewater for flow equalization to the plant's primary wastewater treatment system.

At the time the plant was originally constructed, the only form of odor abatement/control consisted of the distance from the plant to the nearest receptor. By today's standards, the plant had no active odor abatement or control devices. The operation provides rendering services to the meat-packing industry, commercial and industrial food service industry and the restaurant industry.

Operational Process:

Raw Material Delivery

Raw material arrives via Darling International and contract delivery trucks through the northwest gate. Deliveries range from 25 to 33 trucks per day. All trucks are to be covered and all liquid contents are to be fully contained within the trailer. Required California Highway Patrol vehicle inspections are conducted on a 90-day cycle for all trucks. Darling also maintains a dedicated emergency response trailer that can be dispatched to off-site locations in the event of a spill or accident.

Truck traffic to and from the facility is specifically routed to reduce impacts to neighboring areas. Effective May 11, 2008, Darling instituted specific routes in and out of the facility and that restricted trucks from Church Avenue, Walnut Avenue, Fresno Street, West Avenue, Ventura Avenue and all surface streets in neighborhoods that are in the vicinity of the plant (see **Attachment C**). Drivers who disobey this directive are subject to disciplinary action up to, and including, termination.[7]

The following steps describe Darling's current truck receiving and handling procedures for raw material being delivered to the facility, as observed during the facility audit:

Step 1: Trucks proceed to the Truck Scale where they are weighed to determine the volume of raw material being delivered.

Step 2: Receiving Door(s) is (are) opened to receive the truck(s).

Step 3: Delivery trucks are backed into the Main Processing Building through the Receiving Doors at the west end of the building.

Step 4: Raw Material is unloaded (dumped) onto the floor of the receiving area.

Step 5: The empty truck is rinsed and cleaned of all raw materials after which a final rinsate of water and deodorizing chemical (i.e., Pinesol®) is

[7] Darling International Internal Memorandum to Truck Drivers dated 5/11/08.

sprayed throughout the trailer. Trailer wheels are rinsed of all raw materials.

Step 6: The empty truck is removed from the Main Processing building and temporarily parked west of the office to await dispatch.

Condition 16 of SJVAPCD Permit to Operate C-406-1-2 requires that "*Delivery trucks shall be unloaded within 2 hours of entering the property.*" This condition is to ensure compliance with the SJVAPCD's Nuisance Rule (Rule 4102) to ensure that odors from the raw material in the trucks is not allowed to remain outside the Main Processing Building long enough to pose an odor nuisance to the surrounding area. Darling maintains truck delivery records that indicate that the facility operates, generally in compliance with this permit condition (see **Attachment Q**). Compliance with this condition was further enhanced when Darling expanded the capacity of their Turlock facility which enabled trucks in route to the facility to be re-routed if the facility was either near daily capacity or experiencing operational difficulties. The Fresno facility reportedly no longer holds trucks in queue for unloading but processes them from the scale to the receiving area promptly. Additional discussion regarding recordkeeping and compliance efforts is contained in Section 5.3 of this report.

Raw Material Handling

Section 2.1 above describes the basic rendering process and the odor control processes that are utilized in standard rendering operations. The Darling facility only differs from **FIGURE 4** in that there are two Packed-Tower Wet Scrubbers that utilize a chemical reagent to scrub the odorous compounds from the fugitive vapors collected from the processing equipment and buildings. During the process, the raw material is ground and then introduced into a cooker where water is evaporated off as the material is dehydrated. The remaining material consists mainly of fat (tallow) and protein. Heat input for the cooker is provided by a natural gas-fired boiler. Although the boiler is also permitted to allow firing on yellow-grease, due to economic considerations, the facility was not using this fuel source at the time of the inspection. The fat and tallow from the cooker is separated and stored in one of eight storage tanks. The resulting cooked material (crax) is pressed to remove any further tallow, and the remaining product is ground into a meal consistency (meat and bone meal), and then stored in silos to cool.

Condition 22 of SJVAPCD Permit to Operate C-406-1-2 requires that "*Except during periods of equipment breakdown as determined by the District under Rule 1100, all material received shall be processed within 24 hours of receipt. Each delivery of material shall be monitored to ensure that processing is performed within this time limit.*" Compliance is based on records maintained by Darling. This is discussed further in Section 5.3.

Finished Product Shipping

Clarified tallow or fat is shipped in liquid form by trucks loaded directly from various storage tanks. Bone and meat meal is loaded from the Meal Storage Silos and shipped by truck. The rectangular building has doors at both ends. Doors are to remain closed during loading operations. Trucks enter from one end, close the entrance door, load and open the exit door to move the truck out.

2.3 Odor Abatement and Control Equipment

Rendering operations deal with animal parts, blood and bone; therefore, the most prevalent issue is odors that emanate from the recycling and processing of these materials. The Facility's Odor Abatement and Control Equipment is described in and required by SJVAPCD Permit to Operate C-406-1-2 (see **Attachment D**). The facility *Odor Control Plan* (see **Attachment E**) is required under Condition 11 of the Permit to Operate as well. Odors at the facility are controlled by:

1. Proper Material Handling Procedures
2. Vapor Control Procedures
3. Vapor Collection, Filtration and Destruction

Each of these methods is designed to work together to control, contain and eliminate foul odors *before* they leave the facility. The three primary components of the Odor Abatement and Control System are:

a. <u>Negative Air Pressure</u>

Negative air pressure on the Main Processing Building is maintained through the continuous use of two Packed-Tower Wet Scrubbers (see below) equipped with large air displacement fans (one 75,000 CFM fan and one 100,000 CFM fan) which, through connected ductwork systems, collect the air from the various rooms within the building such that lower atmospheric pressure is maintained inside the building which causes outside air to flow into the building and prohibits inside air from escaping outside. In practice, this system prohibits odors generated within the building from being released. Condition 35 of SJVAPCD Permit to Operate C-406-1-2 requires that "*the main processing building doors, meal building doors, and meal load out doors shall remain closed except during actual entry or exit of trucks or personnel or in case of emergency.*" Condition 36 of the same permit states that "*Openings to the processing building shall be controlled so the building remains under negative pressure at all times except as otherwise allowed in this permit.*"

b. <u>Wet Scrubbers</u>

Two Packed-Tower Wet Scrubbers are permitted under SJVAPCD Permit to Operate No. C-406-1-2. These units are cylindrical towers that contain packed material (media). Water containing chemical oxidants is circulated through each unit by a recirculating pump. When the water droplets make contact with the gathered air from the Main Processing Building a chemical change occurs that removes the odorous compounds from the circulated air. These scrubbers originally used a chlorine-based chemical oxidant. In 2007 the facility was authorized by the SJVAPCD to allow the use of RADOX®, a stronger chemical oxidant (see **Attachment F**). The use of RADOX® is recognized by the United States Department of Agriculture (USDA) as an effective odor treatment additive to reduce odorous compounds.[8] **Attachment G** provides the USDA RADOX® Study that supports of the use of RADOX® as a very effective means of reducing malodorous constituents. According to Darling, system emissions can be "fine-tuned" by adjusting the amount of

RADOX® being circulated in the system. While the amount of RADOX® consumed each year at the facility was disclosed to Insight during the course of this analysis, such information is considered proprietary by Darling, and is not provided herein. Annual volumes consumed since the facility changed from a chlorine-based chemical oxidant to RADOX® was verified in the course of this analysis.

Each scrubber is equipped with "sniffer" tubes at ground level. These devices allow Darling personnel as well as SJVAPCD inspectors to determine whether the odors, if any, that are being emitted at the scrubber exhaust points.

Condition 24 of SJVAPCD Permit to Operate C-406-1-2 requires that "*Scrubbers and scrubber recycle tanks shall be drained and thoroughly cleaned at least once per week. Scrubber liquids shall be disposed of in a manner to prevent a release which may constitute a nuisance odor.*" Scrubbers are drained to collection pits located within the Main Processing Building, where the liquids are treated before discharge to the city water treatment system.

c. Thermal Oxidizer

Concentrated odorous gas compounds are collected from the process presses, cooker, condenser and centrifuge, processed through a 12,000 cfm venturi scrubber to remove large particulate matter and to cool the gas stream after which it is sent to a Thermal Oxidizer (TO). The TO utilizes high temperature (`1,200°F) to oxidize the odorous compounds.

Should the TO experience a breakdown, vapors are routed from the Venturi Scrubber to the wet scrubbers or operations are shutdown. To route the vapors to the scrubber, ductwork must be manually placed and connected using a forklift. This operation requires from 30 to 60 minutes and remains an operational issue for the facility to resolve in the future.

[8] *From the USDA study Effect Of A Packed-Bed Scrubber Using Radox Catalyst On The Emission of Odors And Volatile Organic Compounds From A Commercial Poultry Rendering Plant by Zahn et al., 2002*

2.4 Facility Wind Conditions

As the primary focus of concern at the Darling facility is off-site odor-related impacts, it is important to consider facility wind conditions as they are the primary factor that transports odors off-site.

Localized air quality can be greatly affected by elevation and topography. For the majority of the San Joaquin Valley, air movement through and out of the basin is restricted by the hills and mountains surrounding it. Although marine air generally flows into the basin from the San Joaquin River Delta, the Coast Range hinders wind access into the SJVAB from the west, the Tehachapi Mountains prevent the southerly passage of airflow, and the Sierra Nevada Mountains are a significant barrier to the east. These topographic features result in weak airflow in the valley, which becomes blocked vertically by high barometric pressure over the SJVAB known as inversions. Most of the surrounding mountains are above the normal height of the summer inversion layer (San Joaquin Valley Unified Air Pollution Control District 2002).

Wind speed and direction play an important role in the dispersion and transport of air pollutants. Wind speed and direction data indicate that during the summer, winds usually originate at the north end of the SJVAB and flow in a south/southeasterly direction through the Tehachapi Pass into the Southeast Desert Air Basin. Wind speed and direction data indicate that during the winter, winds occasionally originate from the south end of the SJVAB and flow in a north/northwesterly direction. Also, during winter, the SJVAB experiences light, variable winds, typically less than 10 miles per hour (see Figure 4.3-1). Low wind speeds, combined with low inversion layers in the winter, create a climate that is not conducive to dispersion of the malodorous compounds.

The SJVAB enjoys an inland Mediterranean climate, averaging more than 260 sunny days per year. The valley floor is characterized by warm, dry summers and cooler winters. Average daily temperatures in the basin range from 44.6°F in January to 76.7°F in July. Summer highs often exceed 100°F, averaging in the low 90s in the northern valley and high 90s to the south. Maximum temperatures of 90°F or greater occur about 88 days per year. Although the SJVAB enjoys a high percentage of sunshine, a reduction in sunshine occurs during December and January because of fog and intermittent stormy weather. Temperatures of 32°F and below occur about 22 days per year. Nearly 90 percent of the annual precipitation falls in the 6 months between November and April. Over the 60-year period from 1948 to 2008 (the most recent data available), the average annual precipitation was 10.84 inches (see **Table 1**). Elevated temperature plays an important role in dispersion of malodorous compounds. During hot summer days, wind speeds in the valley are typically low and often non-existent. On such days emissions tend to be concentrated around their source and can reach higher levels than normal since they are not being dispersed by the wind.

TABLE 1 - Fresno Weather Data

Period of Record Monthly Climate Summary for the Period 7/01/1948 to 12/31/08													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Maximum Temp (F)	54.4	61.5	67.0	74.5	83.5	91.7	98.2	96.3	90.5	79.7	65.3	54.6	76.5
Average Minimum Temp (F)	37.5	40.6	43.8	47.9	54.3	60.4	65.6	63.9	59.4	51.0	42.4	37.2	50.3
Average Total Precip.(in.)	2.13	1.89	1.89	1.01	0.37	0.14	0.01	0.01	0.16	0.51	1.14	1.58	10.84
Average Snowfall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0
Percent of possible observations for period of record: Max. Temp.: 100% Min. Temp.: 100% Precipitation: 100% Snowfall: 91.2% Snow Depth: 91.3%													

Source: Western Regional Climate Center, http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca3257

According to SJVAPCD and Code Enforcement documentation, most odor complaints in the area of the Darling facility and the Foster Farms facility tend to occur on warmer days and nights when such weather conditions are present.

As noted above, wind speed and direction determines where impacts occur when odorous compounds are transported off-site. As shown in **Figure 6**, the prevailing wind direction is from the northwest, typically placing the anticipated off-site impacts southeast of the facility. Once odorous molecules have been emitted, dispersion is the most reasonable means of control and mitigation. This is why, as discussed further in **Section 3.3** of this analysis, a development "buffer zone" can afford further protection from off-site impacts.

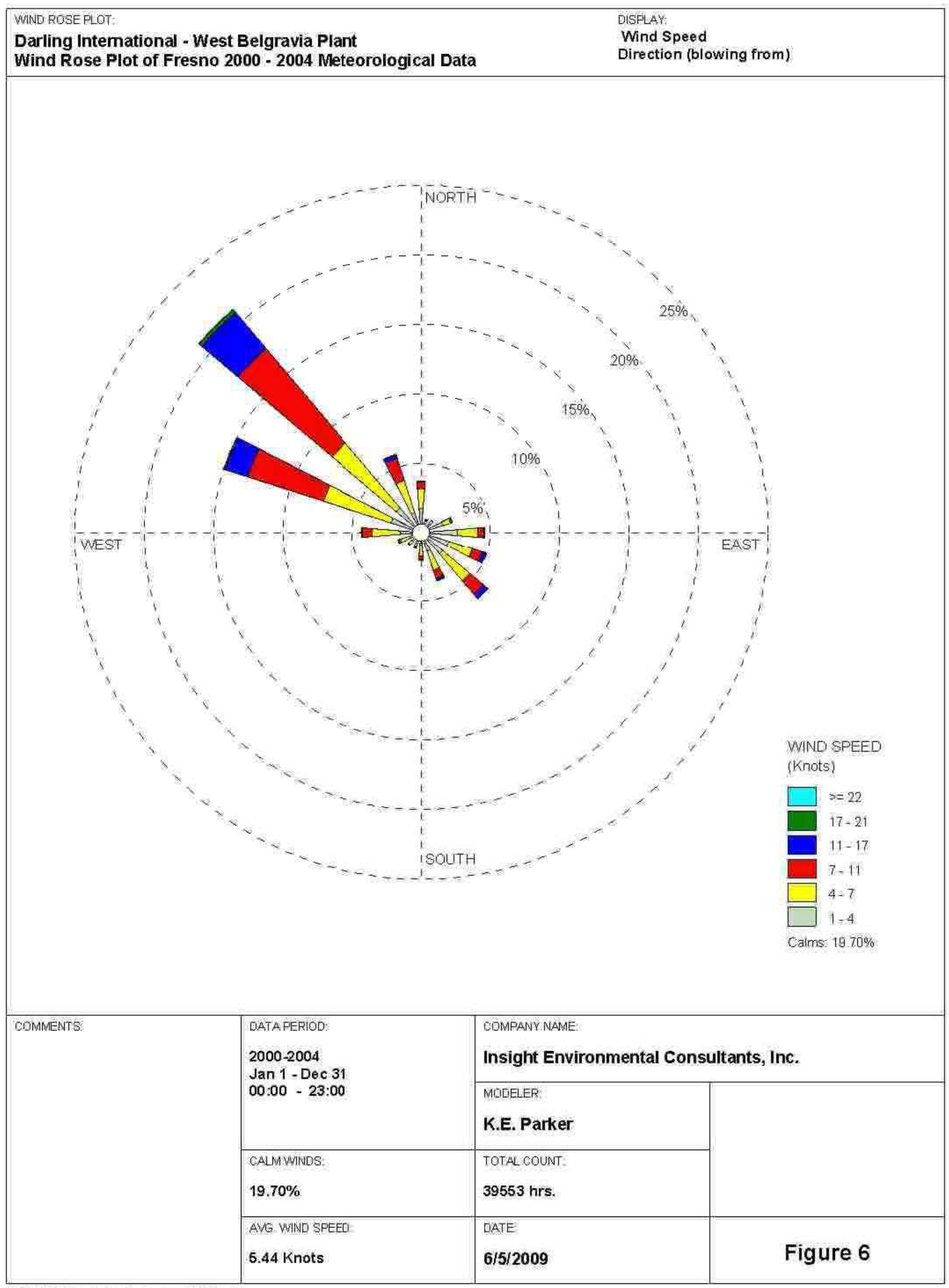


FIGURE 6 – Annual Windrose – Fresno, California

3.0 APPLICABLE REGULATORY AND INDUSTRY STANDARDS

Rendering operations such as Darling's West Belgravia Facility are regulated by a number of agencies within the United States. The primary regulating agency is the U.S. Department of Agriculture (USDA) which regulated the handling and treatment of the recycled raw material as it can quickly become a public health hazard. Also of paramount importance is the elimination and control of bovine spongiform encephalopathy (BSE) or "Mad Cow Disease". While the impacts of BSE and the requirements of the USDA are far-reaching throughout the rendering industry, the primary focus of this analysis remains to be the control of odor from the facility and the potential nuisance impacts that uncontrolled odorous emissions may have in the vicinity of the facility. For the purposes of this review, Insight considered three primary aspects of regulatory and design control of odors related to the Darling facility:

- Emissions from the facility as permitted by the SJVAPCD and compliance with related permit conditions;
- Compliance with the City of Fresno Municipal Code – control of Public Nuisance (i.e., odor); and
- Industry design and operational standards relative to controlling odorous emissions and impacts from rendering operations.

3.1 San Joaquin Valley Air Pollution Control District Permits

Based on the requirements of the San Joaquin Valley Air Pollution Control District (SJVAPCD), Darling is required to permit several pieces of equipment that are an integral part of their operation. Permits are required to control criteria pollutant emissions (NOx, SOx, CO, ROG and PM) and to ensure that the facility does not violate SJVAPCD's Nuisance Rule (Rule 4102). When an applicant applies for a permit, the SJVAPCD evaluates the proposed equipment to determine if it is capable of operating in compliance with applicable rules. The evaluation also includes a review of the operational aspects of the equipment as it relates to the facility. Each permit contains conditions that are designed to ensure that the equipment is operated as designed based on information supplied by the applicant and as verified by the SJVAPCD. Compliance is assured through source testing, monitoring, recordkeeping and reporting. Permit conditions require the applicant to document compliance by recording certain aspects of equipment operations that ensure the equipment is being operated as described in the permit application. SJVAPCD inspectors review these permit conditions and records on a regular basis to determine whether or not a facility is operating in compliance with every permit condition. If a condition is being violated, a Notice of Violation is issued. The facility must then immediately correct the violation and is usually assessed a monetary penalty as well. Failure to comply with permit conditions can result in significant fines, cease and desist orders, shutdown of the facility and imprisonment. **Table 2** provides a listing of current Permits to Operate that govern air quality impacts from the facility.

TABLE 2 – San Joaquin Valley APCD Permits to Operate

Permit Number	Equipment Description
C-406-1-2	Animal Rendering Operation including a Raw Material receiving operation equipped with a Receiving Area, Surge Bin, Processing Equipment, Meal Grinding Area and Wastewater Treatment System with Two Flow Equalization Tanks served by One 100,000 CFM Packed-Tower Wet Scrubber and One 75,000 CFM Packed-Tower Wet Scrubber (75,000 CFM Packed-Tower Wet Scrubber shared with C-0406-4) [Limits raw material process rate to 850,000 pounds per day]
C-406-2-2	Animal Rendering Operation equipped with an Atlas-Stord TST-2264 Cooker, Tallow Work Tank, Roto-Shear Fat Drainer, Presses, Screws, Centrifuge and Condenser served by a 12,000 CFM Venturi Scrubber and an 18 MMBTU/HR Natural Gas-Fired Thermal Oxidizer with an associated 350 HP Heat Recovery Steam Boiler
C-406-4-3	Meal Product Storage and Loadout Operation with a CRAX Receiving Operation and Four Enclosed Storage Loadout Bins all served by a Packed-Tower Scrubber (Shared with Permit C-406-1), Eight Tallow and Yellow Grease Loadout Tanks, and Two Meat and Bone Meal Storage Silos
Note: See **Attachment D** for copies of each permit.	

Compliance with the various restrictive and recordkeeping conditions on each of the SJVAPCD's permits is designed to ensure that the facility operates in compliance with SJVAPCD Rules and Regulations, California Clean Air Act and the federal Clean Air Act. Each modification undertaken by Darling at the facility that results in a change to existing emissions and/or emissions control equipment is reviewed by the SJVAPCD through the permit-modification process to ensure that any change in emissions levels is allowed under current rules and that all appropriate control measures are installed and operational.

Proposed Facility Modifications

Currently the facility is permitted to process up to 850,000 pounds of raw material on a daily basis. In 2007 Darling filed an application with the SJVAPCD to add a boiler, modify the condensing system and increase the daily raw material processing rate to 1,510,560 pounds. In the application, Darling contended that this modification would reduce or eliminate the need to re-route material received in excess of the current daily limit which, at the time, was resulting in fugitive emissions from delivery trucks in queue while awaiting re-routing instructions. Darling also contended that the modifications would allow more efficient processing such that raw material received would have less time to degrade and pose an odor problem.

Insight obtained copies of the SJVAPCD Permit Modification Application Engineering Review (see **Attachment H**) associated with the boiler and condensing system modification and daily processing rate increase. During the application evaluation process, the SJVAPCD requested additional information from Darling relative to the design capacity of the odor-treatment system that collects vapors discharged from the existing and proposed cookers. This was to ascertain whether or not the existing odor-treatment system was sufficiently designed to handle the additional vapors created with the addition of the proposed boiler. An engineering evaluation of the odor-treatment system capacity conducted on behalf of Darling by Yorke Engineering, LLC (see **Attachment I**) found that "*The leftover air leaving the condenser, typically in a range of 500 – 1,000 cfm* [cubic feet per minute] *(which is largely dependent on ambient air temperature) is delivered to a venturi scrubber and thermal oxidizer designed to treat 12,000 cfm of incoming air. This treatment capacity exceeds the volume of air generated by the condenser and other potentially odorous sources supported by the venturi and thermal oxidizer.*" The Yorke report goes on to state that "*By re-establishing the correct cooker capacity* [with installation of the proposed boiler] *the potential for nuisance odors will be reduced…*"

The SJVAPCD evaluation concluded that, with the addition of several operational conditions, "*Compliance with all applicable rules and regulations is expected.*"[9] The SJVAPCD also concluded that the proposed increase in the daily processing rate would not pose an adverse impact to the air basin or area and, in fact, may reduce potential chances of nuisance violations by alleviating the potential for re-load and transfer from the facility of raw material received in excess of the original processing rate.

During the public review period for this application opposition to the modification and to the plant, in general, were noted. Resulting examination by the City of Fresno called into question the legal right of Darling to operate a rendering plant at the current location. Subsequently, the SJVAPCD suspended review of the permit modification application and lists the project review cycle as "incomplete" until this issue is resolved. The issue of land rights is not under the scope of this analysis.

Section 4 of this analysis covers facility compliance with SJVAPCD Rules and Regulations.

3.2 City of Fresno Municipal Code

The City of Fresno Municipal Code contains two articles that are the primary focus of compliance issues for the Darling facility. Article 4 deals with Solid Waste and Recycling Facilities and Article 6 deals with Public Nuisance. For the purposes of this analysis, these two articles were the primary focus. Other portions of the Code dealing with land use, planning, zoning and permits may apply to the facility, however, these were not the primary focus of the analysis as their application to the facility was not within the project Scope of Work as defined by the City of Fresno.

Chapter 10, Article 6 – Public Nuisance Abatement

Article 6 (see **Attachment J**) is designed to "*safeguard, remedy and prevent the decay and deterioration of our community by elimination of public nuisances.*"[10] Over the past several years, according to the City of Fresno, various allegations

[9] SJVAPCD Boiler Application Review, Section IX, page 29, August 28, 2007

[10] Municipal Code and Charter of Fresno, California, Chapter 10, Article 6, Section 10-602(g).

have been made by neighboring community groups that property values and living conditions in areas around the Darling facility have declined based on the presence of their operation and based on occasional impacts from operational odors. As a result of these complaints, the City has the authority to cite the facility for operating under any conditions that may be determined to cause further "decay and deterioration" of the community. Although Article 6 does not specifically define issues relative to the Darling facility operation as a specific "public nuisance", Section 10-605(n) covers "*Any public nuisance known at common law…*" of which "odor" that impacts neighboring property has been held to pose a public nuisance. As such, Article 6 may also be enforced by the City of Fresno to encourage containment of operational odors.

3.3 Industry Operational and Odor Control Standards and Best Practices

The re-use and recycling of raw animal materials has been going on for thousands of years. In the mid-1850's the rendering industry became an important source of soap which was a by-product of tallow. As the generation of quantities of raw material occurred close to population centers, the rendering industry became an integral part of any successful and growing economy and culture. When landfill conservation wasn't a major concern, much of the raw materials generated by society were simply buried with relatively small portions used to provide useful by-products through the rendering process. As these facilities grew and as the need to conserve landfills became more important, rendering facilities expanded and continued to improve the process of recovering and recycling even more of the raw material. As cities grew towards these plants they were forced to control raw material supplies, equipment emissions and resulting process odors.

As one of the largest rendering plant operators in the world, Darling operates plants in other locations that are quite new and designed to control emissions and odor impacts with the best technology developed to-date. They also operate many plants, such as the Fresno facility, that were acquired over the years and that were constructed over 50 years ago. The basic components of the Fresno facility were constructed in 1953 with minimum emissions and odor controls.

Over the course of the last 50 years, a number of innovations have been discovered and implemented by the rendering industry to improve the recycling and recovery process, improve the quality of the final product and to reduce impacts to the environment. Additionally, stringent emissions controls have been required by local air quality control districts in order to achieve "attainment" status with the U.S. Clean Air Act and local air quality regulations. Based on documentation from the SJVAPCD, the Fresno facility has been using various forms of odor control and abatement technology since the 1970's when vapor controls were installed to condense, recirculate and control odorous components from the cooking process. With inclusion of chlorine-use packed scrubber towers and physical operational controls, less odorous operations were common. In the ensuing years, the odor abatement and control equipment at the Fresno facility have been modified a number of times and new equipment and methodologies have been added to further lessen the possibility for off-site impacts.

Currently, the most widely recognized and used methods of controlling odorous compounds from rendering operations in the United States[11] are:

- Water Vapor Condensation- Containment of high strength water vapor and condensation results in more accurate control of odorous compounds generated through the cooking process (used by Darling);
- Wastewater Treatment Systems - Wastewater produces methane through the anaerobic digestion process that can be used in the boiler system and retained within the system (Darling's waste water is sent to the municipal sewer system from which it is treated. This eliminates on-site treatment and the potential for odorous emissions);
- Covering Raw Material Bins – Offers containment of potential odors from trucking and receiving operations (used by Darling);
- Air Scrubbing – Filtration of process and building air to remove odorous compounds (used by Darling);
- Incineration of Odors – Use of Thermal Oxidizers to eliminate odorous compounds (used by Darling);

[11] Meeker, David L, 2006. *Essential Rendering*, Kirby Lithographic Company, Inc., Arlington, Virginia, pp.48-51.

- Biofilter – Used to filter processing room air to remove odorous compounds (this is equivalent to air scrubbing which Darling utilizes);
- Waste Heat Incinerator Boiler – A form of heat recovery that contains odorous compounds generated through the cooking process and can eliminate wastewater discharge in certain operations. (Darling asserts that use of their current two-step control system consisting of the Thermox and condensation control equipment is equivalent to this method). The Waste Heat Incinerator method captures up to 100% of the odorous compounds while Darling's two-step method captures approximately 99% of the odorous compounds making them essentially equal.
- Publicly Owned Treatment Works (POTW) – Waste treatment systems operated by municipalities (i.e., sewer treatment plants) that handle discharged wastewater (used by Darling).

Uses of these types of odor control methods are considered "best practices" in the rendering industry within the United States and Europe. Currently, the Darling facility uses all but three of the above measures.

As a comparative measure to the various rendering industry standards noted above, the San Joaquin Valley Air Pollution Control District cites the Sacramento Metropolitan Air Quality Management District's (SMAQMD) Draft CEQA Guide[12] (May 2009) (see **Attachment K**) as the most up-to-date technology and design-based methods of odor control and reduction. SMAQMD identifies the most current and effective in-practice mitigation measures to reduce the release of odors from rendering plants as:

- Multi-stage wet scrubber on the facility process exhaust (used by Darling);
- Biofilters in facility process exhaust (this is equivalent to air scrubbing which Darling utilizes);
- Venturi scrubbers or similar technology to remove particulate matter from facility process exhaust prior to treatment by scrubbers and biofilters (used by Darling);
- Boiler incinerators to treat facility process exhaust (equivalent to use of the

[12] Telephone conversation with Georgia Stewart (SJVAPCD) on May 12, 2009.

Thermox system used by Darling);

- Direct flame incineration or catalytic incineration to treat facility process exhaust (used by Darling);
- Negative pressure within the rendering facility to minimize the release of fugitive odor emissions (used by Darling);
- Chemical coagulation and Dissolved Air Floatation (DAF) to remove proteins, fats and oils from facility wastewater (used by Darling);
- Activated Sludge Treatment to remove dissolved fraction of waterborne pollutants (this is conducted indirectly through use of the city waste treatment system); and
- Development Buffer Zone around rendering facilities of at least 4 miles to ensure that maximum aerial dilution of any odors is allowed before impacting sensitive receptors.

Of these recommended, in-practice odor control methods, the Darling facility currently utilizes five of the nine listed SMAQMD odor control methods.

Based on the various forms of mechanical and process odor-control technologies proven-effective, available and in-use throughout the rendering industry, it appears that the basic systems used to gather, control and eliminate odorous compounds from the Darling can be considered "best technology" and "state-of-the-art".

While these technologies are the same or similar to those being used throughout the industry, each of these systems can be easily defeated by operating conditions and/or human intervention. In addition, the most effective technology – distance, in the form of a "Buffer Zone", is not possible for the facility as sensitive receptors in the form of residential developments, schools and parks have been constructed in close proximity to the facility.

4.0 COMPLIANCE HISTORY

In the course of Insight's evaluation, we determined that a historical review of the facility's compliance history was necessary to establish compliance activities and patterns, and to review corrective and/or enforcement measures taken by various regulatory authorities to ensure compliance with regulatory conditions by the facility. Based on the established use of best known and "state-of-the-art" odor control equipment at the facility, compliance issues imposed on the facility are regulated and enforced by permit condition and municipal code. Equipment breakdowns and non-compliant activities involving this equipment will usually result in a reaction (complaint) from nearby residents and a corresponding response by either one or both of the responsible agencies – City of Fresno Code Enforcement or the SJVAPCD.

Requests for historical compliance records were made from each agency, as well as from Darling, and a review was conducted of the provided information and data.

Code Enforcement provided a detailed Case History Report covering facility reviews, inspections, field reconnaissance and enforcement activities from January 7, 2008 through February 25, 2009 (**see Attachment L**). Details of these actions are discussed below.

SJVAPCD provided records of current and past Permits to Operate and Authorities to Construct, records of annual source test results, annual inspection reports, records of Notices of Violations, annual emissions inventory data, variance determinations, nuisance complaint investigation documentation and various forms of correspondence concerning the facility dating from December 1972, when the facility was operated by Peterson Manufacturing, to the present (due to the volume of documents, **Attachment M** provides all considered SJVAPCD records in electronic format as provided by the SJVAPCD). The result of Insight's review of these records is provided further in this section.

Odor Complaint History

For the purposes of this analysis, a 14-month compliance history period (January 7, 2008 through February 25, 2009) was reviewed. As documented in **Attachment L**, the City of Fresno Code Enforcement Department conducted an intense period of area reconnaissance and facility inspections during this time. Code Enforcement personnel were present in the vicinity of the facility and responded to public complaints received. Also during this period a multi-agency joint inspection was conducted at the facility. Separate from these two efforts during the same period, the SJVAPCD conducted an annual compliance inspection of the facility. Additionally, review of this time period covers seasonal and operational changes at the facility location, and provides a reasonable time frame to examine odor (and other) complaints received by the City of Fresno and SJVAPCD.

4.1 City of Fresno Code Enforcement

Multi-Agency Inspection

On January 29, 2008, a multi-agency inspection of the Darling facility was conducted as requested by the City of Fresno Planning and Code Enforcement Departments. Participating agencies included Code Enforcement, Building Inspection, Fire Prevention, Environmental Control, City of Fresno Wastewater, and the SJVAPCD. Also present were representatives from Darling operations and management as well as their "outside" legal counsel. While there were a small number of minor issues noted during the inspection, no significant odor-related operational or technical issues were noted.

Air Sample Analyses

During the Multi-Agency Inspection and on two other dates,[13] the SJVAPCD obtained and analyzed four air samples from various locations (see **Attachment N**) in an attempt to differentiate odor constituents between the Darling facility and the nearby Foster Farms facility to determine which, if any, could be specifically identifiable in the neighborhood sample. Samples from the residential area at Arthur and Grove Avenues were also obtained. These samples were analyzed by SJVAPCD staff "*using a Pulsed Flame Photometric Detector for sulfur gas analyses, and a Saturn 2000 Mass Spectrometer for hydrocarbon analyses.*"[14] (see **Attachment O**). Samples obtained within the Darling facility were from the raw material receiving area and from the RADOX Packed Tower Scrubber sample tube. The results of the analyses indicated that the hydrogen sulfide (a known odorous compound) was detected at the Darling facility at 0.3 parts per billion (ppb) and 0.05 ppb and at the neighborhood sample at 0.2 ppb. At 0.2 ppb, hydrogen sulfide is below detectable thresholds for humans. The SJVAPCD verified that there was no odor present at the location where the sample was taken. The SJVAPCD concluded that "*The sulfur scans produced the most interesting results, whereas the*

[13] SJVAPCD Internal Memorandum from J. Copp to M. Carrera dated March 19, 2008.
[14] Ibid

hydrocarbon scans appear to characterize our regional air pollution more than specific sample locations. The hydrocarbon scans showed concentrations of acetone dioxane, toluene, and benzene but did not offer an obvious chemical fingerprint of the sample locations."[15]

Facility Monitoring

Starting on February 6, 2008 and continuing through December 17, 2008, Code Enforcement monitored the facility and neighboring residential areas as often as daily and at least weekly for truck movement and routing as well as odors present at or near the facility and within the neighborhoods (see **Attachment L**). Code Enforcement monitored the facility as many as 112 times during this period. The results of the monitoring inspections are presented in **Table** 3 below.

TABLE 3 – Code Enforcement Monitoring Results

RESULTS	NUMBER OF TIMES FOUND	% OF TOTAL INSPECTIONS
No Odor at Facility	63	56%
Light Odor at Facility	42	37%
Bad Odor at Facility	3	3%
Light Odor at Neighborhood	4	4%
Bad Odor at Neighborhood	0	0%
TOTAL:	112	100%

Of the monitoring inspections noted above, Code Enforcement documented that the residential area historically impacted by odors emanating from the vicinity of the Darling facility was not impacted 96% of the time. In fact, of the three episodes when the odor in the area of the facility was rated as "bad" or worse, only one of these incidents correspond to an episode where "Light" Odor was detected within the neighborhood that resulted in a complaint being filed with the City by a resident.[16] An inspection in response to this complaint found a raw material receiving door and the large boiler room door open at the facility.

The City documented four public complaints (phone calls to the City) during this period and investigated each. Of the four complaints, two incidents (5/17/08 and

[15] Ibid

6/1/08) resulted in a formal action (complaints). The City filed the two complaints with the SJVAPCD for odors detected at the Darling facility where it was noted that several doors were open and "*Staff verified light smell at Habitat for Humanity neighborhood and intersection of Grove and Thorne Ave.*"[17]. In their complaint, the City also mentioned the Southgate Processing facility, which is near the Darling facility; although no specific details about their complaint regarding Southgate were noted. According to SJVAPCD, no complaints were filed from members of the public relative to this episode.

The third public complaint noted in Code Enforcement's Case History Report[18] was from a phone call from a resident on 7/29/08. Staff responded to the residence and noted that a "light odor' was detected at the complainant's residence, but that no odors could be detected elsewhere, and the odor could not, apparently, be attributed to the Darling facility. No further action was taken. According to SJVAPCD, no complaints were filed from members of the public relative to this episode.

A fourth public complaint was noted in Code Enforcement's Case History Report from a phone call from a resident on 2/25/09.[19] The caller noted strong odors emanating from the Darling facility. Staff conducted a field inspection and found light odors southeast of the facility and at the intersection of Jensen and Fruit Avenues. No further action was taken. According to SJVAPCD, no complaints were filed from members of the public relative to this episode.

Code Enforcement's intense monitoring efforts of Darling's operations, responses to public calls and identification of the presence of odors and their sources, related local area complaints and concerns documented activities at the facility through a full year of seasonal changes. This effort documented operational issues at the facility that may have resulted in the release of odorous compounds from the facility and may help develop corrective measures to ensure further reduction of such impacts in the future.

---

[16] City of Fresno Case History Report – Code Enforcement records dated 5/17/08 (see Attachment L, page 12).
[17] Ibid, page 13.
[18]Ibid, page 20).

4.2 San Joaquin Valley Air Pollution Control District Violations

A significant amount of SJVAPCD data was provided to Insight for this analysis through Darling International (see **Attachment M**). Documents relative to the Fresno facility from December 1972 through the most recent annual compliance inspection report were reviewed. The files revealed very few Notices of Violation for the facility. Of the documented violations, none were based on odor complaints. **Table 4** provides details from each of the NOVs. The NOVs are also provided in **Attachment O**.

TABLE 4 – Notices of Violation 1999 through 2009

NOV #	DATE ISSUED	VIOLATION
13875	7/28/2003	Exceeded meal storage limits
7438	11/8/2004	Spilled finished material, standing pools
29396	2/2/2006	Failure to conduct source test

Based on the data provided (see **Attachment M**) no other documented NOVs could be located. Mr. John Copp, Air Quality Inspector, SJVAPCD was interviewed[20] regarding compliance measures and efforts at the Darling Facility. Mr. Copp reviewed SJVAPCD files regarding the Darling facility and found that the last recorded complaints were received by the District on 6/28/07 and 9/07/07. No public complaints were located in the file for 2008 or through May 29, 2009. Mr. Copp indicated that, based on the results of compliance inspections conducted over the last several years, he believes the facility to be operating in compliance with current permit conditions. Mr. Copp stated that the facility has a great deal of control over odor emissions based on operating measures taken relative to raw material handling and building door operation. Mr. Copp also stated that with careful operation of the facility (raw material delivery and handling, maintaining door closure, maintenance of wastewater sumps, etc), the facility should be able to operate relatively "odor-free". He also stated that, as the facility is "mechanical", breakdowns and equipment failures cannot be eliminated, but can be reduced through planning and maintenance. Mr. Copp's primary concerns about the facility

[19] Ibid, page 27.
[20] On-site meeting on April 28, 2009 and telephone interview with John Copp, AQ Inspector, SJVAPCD, May 29, 2009.

were as follows:

- Airflow through the main processing building may allow large pockets of malodorous air to remain trapped and not be processed through the scrubbers. This malodorous air could then be ejected from the building when doors at both ends of the facility are opened allowing "flow-through" of ambient air.
- The facility is typically not operating on Sundays. Scrubbers are not operated at the facility until raw material is ready to be processed on Mondays. Early loads received are usually partially frozen so the facility may not operate the scrubbers until processing begins on un-frozen material.
- Much of the site is unpaved and portions of the paved site are in disrepair. Darling should consider repairing the paved areas and paving the unpaved areas.

4.3 Fresno City Council Action

Based on written testimony presented to the Fresno City Council in August 2008, "*numerous reports of animal carcasses, and blood products*" had been had been spilled from delivery trucks on public streets and intersections near and around the facility.[21] According to this written testimony, in 2008 "*the San Joaquin Air Pollution Board received 300 written complaints from the West Fresno community documenting the occurrences.*"[22] In the course of this analysis, this claim could not be corroborated, however the records provided by SJVAPCD provided documentation of written and telephone complaints submitted to the SJVAPCD as well as the California Air Resources Board by nearby residents since at least 1972. A number of these correspondences stated that many of the submitters were long-time residents of the area with a long history of concern regarding the facility.

[21] Letter from *Concerned Citizens of West Fresno* to Fresno City Council dated August 15, 2008.

[22] Ibid

5.0 FACILITY SITE INSPECTION

On April 28, 2009, Insight conducted an inspection and operational review of the Darling facility. Also present during the inspection were the following representatives:

- City of Fresno Code Enforcement
  - Mr. Richard Salinas, Senior Neighborhood Standards Specialist
  - Mr. Chris Montelongo, Neighborhood Standards Specialist II;
- San Joaquin Valley Air Pollution Control District
  - Mr. John Copp, Air Quality Inspector;
- Darling International
  - Mr. William McMurtry, Vice President of Environmental Affairs;
  - Mr. James Roth, General Manager;
  - Jeffrey Reid, Attorney at Law, McCormick Barstow LLP (outside legal counsel)

Following a presentation and briefing by Darling personnel on the company and facility, a physical review and inspection of all operations at the facility was conducted.

5.1 Inspection Setting

On the day of the inspection weather conditions were clear and sunny with an ambient temperature of approximately 75°F with light winds from the northwest ranging from approximately 1 to 5 miles per hour. Traffic in the area was observed to be light.

5.2 Operating Conditions

The facility was in full operation. During the inspection raw material delivery trucks were being weighed, unloaded, rinsed, parked and dispatched. The facility was grinding, cooking and processing raw material, fat, meat, meat meal and bone meal. No material (finished product) was shipped during the inspection so this part of the operation was not observed. All odor control and abatement equipment was fully operational and operating as permitted by the SJVAPCD.

Negative Air Pressure

The main processing building was under negative air pressure. Negative air pressure was maintained with one receiving door open during delivery. Darling personnel demonstrated the air-flow from outside to inside with an anemometer. Documentation (photographs) of the externally viewable operating conditions is provided in **Attachment P**.[23] Other doors with access to the main processing building were closed and marked with signage stating "NOTICE – KEEP THIS DOOR CLOSED". During the inspection the large bay door to the Boiler Room was found open. According to Mr. James Roth (Facility Manager), this door is left in the open position when the odor control and abatement system is operational to provide "make-up" air to the boiler. Between the Boiler Room and the main processing building there are two standard-sized doors. When opened, these doors demonstrated that a negative air pressure was being held on the main processing building with the Boiler Room bay door open.

The bay door of the Meal Room does not fully close and seal at the bottom and is identified in Photo 6 of **Attachment P**. This did not cause the negative air system to fail, but puts an unnecessary drain on the system. Darling has stated that gaps such as found in this door do not compromise the integrity of the negative air system and, in fact, assist in supplying sufficient make-up air for the negative air system. The negative air system should be capable of compensating for open doors but make-up air should be provided by louvered openings in the building that are designed to allow in-flow and restrict out-flow if the system is not operating – not from gaps in mis-aligned doors. In discussions subsequent to the facility inspection Darling indicated that they would evaluate and consider installing mechanical louvers to accomplish this.

<u>Odor Control and Abatement System</u>

The facility's odor control and abatement system was fully operational. Scrubber sniffing tubes were operational and were checked for adverse odors. Odor noted during the inspection was similar to "dog food". Light odors were observed on the premises with occasional odors emanating from the nearby Foster Farms Plant. Prior to entering the site, the Insight inspection team canvassed the nearby area

[23] Photographs taken of the interior operations are not provided herein as they are considered "proprietary" by

including the intersection of Church and Fruit Avenues. Light odors similar to those from the sniffing tubes were noted occasionally, but were not steady or overbearing.

5.3 Recordkeeping and Documentation

A request for records was made by Insight to Darling to verify compliance with various operating and recordkeeping conditions noted on the facilities SJVAPCD permits to operate. Records were requested based on random dates and dates around complaint episodes and process upset episodes. **Table 5** provides a partial list of records requested and utilized during our evaluation.

TABLE 5 – Compliance Records Requested From Darling International

SOURCE	DOCUMENT	REPORTING PERIOD
SJVAPCD Permit C-406-1-2 Condition 1	Daily volume of raw material received	July 6 – 13, 2008 March 22 – 28, 2009 April 6 – 12, 2009
SJVAPCD Permit C-406-1-2 Condition 16	Truck Scale Records - Delivery Truck Driver Time Sign-In / Sign-Out Log	April 6 – 12, 2009
SJVAPCD Permit C-406-1-2 Condition 24	Scrubber and Scrubber Re-cycle Tank Records to demonstrate weekly service.	April 2009
SJVAPCD Permit C-406-1-2 Condition 32	pH Monitor Calibration Records (Log) with Date. Time, Corrective Actions.	April 2009
SJVAPCD Permit C-406-1-2 Condition 40	Daily record of wind speed, wind direction and ambient temperature.	July 6 – 13, 2008 April 6 – 12, 2009
SJVAPCD Permit C-406-2-2 Condition 18	Weekly Fuel Consumption Records	January 19 – 25, 2009 February 16-22, 2009 March 23 – 29, 2009

Attachment Q provides copies of the bulk of records provided by Darling in response to Insight's request.[24] Records supplied by Darling were reviewed to determine if they adequately demonstrated compliance with the permitted conditions. Subsequent to the original records review, Darling provided additional clarification on their recordkeeping system and documentation. Portions of the

Darling International in that they depict configuration and design of the processing equipment.

records provided are not included in Attachment Q as they are considered proprietary by Darling as they provide detailed information about their product volumes and process information that competitors may find useful.

Daily Process Limit

Review of records to establish that the raw material daily process limit was not being exceeded was conducted in the course of our review. Darling's recordkeeping of daily deliveries, shipments and process rates should be maintained to clearly demonstrate compliance with the daily limit. The recordkeeping system in use at the time of the facility inspection did not clearly demonstrate compliance and, in fact, on two occasions, of the dates requested, appeared to document that the daily limit may have been exceeded. It remains incumbent on Darling to ensure that their recordkeeping practices and documentation is accurate, clear and easily discernable. Portions of these records are excluded from this report as they document volumes attributable to specific raw material suppliers which is considered "proprietary" information by Darling.

Truck Scale Records

Truck scale records provided for review clearly demonstrated that trucks were cycled through the facility within the two-hour limit. During the allowed time, trucks are to be weighed, dumped and cleaned. The longest turnaround time for a truck was 1 hour and 47 minutes. Weight of raw material loads being delivered was provided on the "Raw Material Inspection GMP" form but could not be readily matched with Route Control Tickets and weigh tickets. This system of tracking raw material weight in (to the facility) is, by Darling's admission "confusing". Revision of this system is, according to Darling, underway. Additional documentation and clarification was provided by Darling after the July 14, 2009 meeting with the City. As of the date of this report, Darling continues efforts to clarify their recordkeeping system. According to Mr. John Copp, of the SJVAPCD, this issue has not been thoroughly reviewed by SJVAPCD in their annual inspections.

Scrubber Service Records

---

[24] Records provided for review that are deemed "proprietary" by Darling International are not included.

Darling's Weekly Control Equipment Maintenance Form was provided for the period requested. These records are, by SJVAPCD permit condition, required to demonstrate that the scrubbers are being maintained and serviced on a regular basis. They are to document that 1) the work was done, 2) describe what work was done, 3) disclose who completed the work and 4) note any resulting corrections or repairs required. Darling had completed the forms for this period, and demonstrated compliance with these permit conditions.

Calibration and Maintenance Records

Darling provided their records of daily calibrations, repairs and maintenance for the pH probes located in the scrubber towers. These records include dates and actions taken but are incomplete based on permit condition requirements. For example, these records don't provide any information on equipment calibration details or service completed on the probes. Without this information it is impossible to determine if the probes were properly calibrated based on manufacturer requirements or what, if any, adjustments were required to bring the probes into compliance with equipment reporting standards. In order to demonstrate compliance with the permit condition, these records need to be improved to provide the additional information.

Meteorological Data Records

Darling provided most of the data requested although two days of data was missing. This is not viewed as a critical issue and was attributed to a facility computer malfunction. This is not viewed as a significant issue in the course of our review.

Weekly Fuel Consumption Records

All requested weekly fuel consumption data was provided by Darling. This data demonstrated compliance with the facility's applicable permit condition.

5.4 Inspection Findings

Physical inspection of any facility can only provide a snapshot of how operations are going at that moment. In this instance, on April 28, 2009, the Darling facility was found to be operating generally in compliance with applicable permit conditions and standards set by Darling's Odor Control Plan. General findings of the inspection, which are expanded upon in **Section 6**, are as follows:

- Modifications to the physical plant should be undertaken to enhance compliance with existing permit conditions and to ensure that the facility operates as odor-free as possible.
- Additional mechanical controls should be evaluated to ensure that doors at both ends of the facility remain closed during operation and especially when the Odor Control and Abatement System in not in operation.
- Darling should explore the availability and cost-effectiveness of emerging technologies that provide real-time detection and quantification of specified odorous compounds to serve as an early warning system by notifying facility operators and management when an odor episode may be occurring.
- Recordkeeping should be reviewed and improved to demonstrate full compliance with all SJVAPCD permit conditions. Compliance with these conditions will further enhance the facility's ability to operate in as odor-free an environment as possible.

6.0 RECOMMENDED ACTIONS

As discussed in the above Inspection Findings, there are a number of findings that the facility review and inspection team noted during this analysis. Based on these findings and observations, review of facility records, mechanical design, permit conditions and interviews with Darling, City of Fresno and SJVAPCD personnel, Insight has determined that a number of recommendations are in order.

6.1 Permit Modifications

Modification to Darling's SJVAPCD Permit to Operate should be considered to improve operational flexibility.

- SJVAPCD Permit to Operate C-406-1-2, Condition 22 requires that "*Except during periods of equipment breakdown as determined by the District under Rule 1100, all material received shall be processed within 24 hours of receipt.*" This condition should be modified to allow extension of the processing time when the causal breakdown is not air pollution control equipment that required District-approved relief from the specific permit condition. Scraping and reloading decaying material at 24 hours and removal from the controlled environment within the processing area could lead to noxious odors being emitted when the material is shipped off-site.

- An additional modification to allow an increase in the daily raw material limit with the addition of an additional boiler/cooker system should be considered. SJVAPCD's engineering evaluation of this proposal submitted in 2007 found that this could be accomplished with no increase in emissions and that odorous emissions would most likely be decreased since raw material received in excess of the current volume allowed would not require re-loading and shipment to another facility.

6.2 Operational / Physical Modifications

Several changes in operational procedures/methods should be considered by Darling based on observations made in the course of this analysis.

- <u>Ductwork Modifications</u> - During breakdown of the Thermal Oxidizer, vapors are routed to one of the wet scrubbers or operations are shutdown. Ductwork to a scrubber must be manually placed and connected with a forklift, which requires 30 to 60 minutes. Installation of permanent ductwork with a valve to re-route high intensity vapors to a scrubber or boiler should be evaluated to eliminate the possibility of a breakdown or shutdown. Darling has indicated that these modifications are not necessary on a regular basis; however, as the vapors are highly concentrated (very odorous) this modification could ensure that such vapors are readily contained. Darling must either complete this modification or provide justification as to why it is infeasible.
- <u>Boiler Room Modifications</u> - Current operations require the large Boiler Room door to be open for make-up air. It is recommended that Darling consider installation of permanent ducting to the roof or wall for make-up air. This would allow closure of all Boiler Room doors and reduce the potential for odor incursions from the Main Processing Building man-doors through the Boiler Room. From the public's perspective, an open door at the facility equates to "odor". Any door that Darling can keep closed reduces a potential source of odor and complaint. Darling must either complete this modification or provide justification as to why it is infeasible.

- Receiving Door Operation - Receiving doors have been observed to be open during raw material unloading and truck/trailer clean out (see **Attachment L**) in violation of SJVAPCD permit conditions and Darling's Odor Control Plan, Section 5.2 (see **Attachment E**). Jovan Refuerzo, Lead Air Quality Permitting Engineer for the SJVAPCD, confirmed that the District's intent in including conditions requiring doors to be closed when the plant is in operation "*except during actual entry or exit of trucks or personnel*" included all doors to the Main Processing Building, Meal Building and Meal Loadout facilities. This includes the large bay doors and all man-doors. Darling should require these doors to remain closed during such operations. A means to document compliance with this provision should be established, as recommended below.
- Negative Air Pressure Door Operation - The Main Processing Building and attached facilities (i.e., Boiler Room, Meal Loadout Room, etc.) utilize the "negative air" system as their primary odor control device. Based on facility design, there are doors located in various areas of the structures that are operated independently and not within sight of one another. All doors that depend on the negative air system (or have the potential to defeat the system) should be connected to a main "notification" panel that indicates their position to the operating manager such that he can immediately determine if a door can or should be closed to retain the negative air pressure on the building. Any override of this system should require documentation of management and the reason(s) why. Additionally, doors that cannot complete a seal must be repaired or altered to ensure the integrity of the system (see **Attachment P**, Photo 6).
- Meal Loadout Door Operation - Open meal loadout doors defeat the negative pressure created by the wet scrubbers. The Meal Loadout Room doors cannot be seen from the Raw Material Receiving area or the office and is frequently left open by non-company drivers. Darling should require these doors to remain closed, as stated in the Odor Control Plan (**Attachment E**).
- Odor Control and Abatement System Operation – Currently, plant operators do not run the facility Packed-Tower Scrubbers during the first several loads of raw material processing early in the day – especially Mondays when the plant has been shutdown for over 24 hours. This is because these loads are typically frozen or chilled material and contain little to no offal. Permit C-406-1-2

Condition 6 and Permit C-406-2-2, Condition 2 (see **Attachment D**) require the system to be in full operation whenever the plant is in operation. As the Permit to Operate's Equipment Description includes "Material Receiving" as part of the operation, receipt of these initial loads is conducted under the authorization of the Permit to Operate and is subject to all applicable conditions of approval. This practice is also in violation of Darling's Odor Control Plan, Section 5.1 (see **Attachment E**). All odor control systems should be operated whenever the rendering plant is in operation.

- Main Processing Building Internal Air Movement Study – As discussed in Section 4.2, due to facility building and interior equipment design, placement and use, airflow through the main processing building may allow pockets of malodorous air to remain trapped within the building and not be processed through the scrubbers. This malodorous air could then be ejected from the building when the doors at both ends of the facility are opened allowing "flow-through" of ambient air. A study of the interior of the building with the present equipment configuration should be conducted to determine if this is occurring and how it could be remedied (i.e. by inclusion of additional internal ducting, ventilation or minor equipment reconfigurations, etc.). These studies typically utilize very small volumes of smoke to visually follow the air flow through the structure and to identify areas that trap or inhibit air movement. If such a study has been conducted since the last time equipment was modified inside the building, Darling should provide documentation of the study and provide details and subsequent results of any corrective actions taken or modifications made.
- Facility Surfacing and Pavement – As discussed in Section 4.2, much of the facility is unpaved with some paved areas in need of minor repair. Although spills are washed down with water and raw material is removed to the processing facility when it has been dropped in the trafficked areas of the facility, residual material can remain embedded in the gravel and loose soil off of the paved portion of the site. As all material entering the site has the potential to create odors, it would be advantageous for the facility to be able to contain and control all runoff, at a minimum from the areas where delivery trucks operate or are parked. Improvements including paving of unpaved areas, repair of paved areas, collection guttering around the facility and a liquid/solid

material collection point for grounds wash down, maintenance and cleaning should be evaluated and considered.

- Odor Compound Speciation and Detection - Darling should explore the availability and cost-effectiveness of emerging technologies that provide real-time detection and quantification of specified odorous compounds to serve as an early warning system by notifying facility operators and management when an odor episode may be occurring.

6.3 Recordkeeping and Documentation Modifications

Recordkeeping should be reviewed and improved to demonstrate full compliance with all SJVAPCD permit conditions. Compliance with these conditions will further enhance the facility's ability to operate in as odor-free an environment as possible. The following changes are recommended:

- Odor Control Plan – The plan was prepared by Darling in compliance with their SJVAPCD Permit to Operate. The plan provides employees with a generalized explanation of the odor abatement and control systems utilized by the facility and also provides a reporting and response system for complaints received at the facility. The plan also requires that local and corporate management be aware of complaints received and resulting actions taken. The plan appears to be designed primarily as a complaint reporting and investigation mechanism. While this is partially the purpose of the SJVAPCD permit condition, the plan also should provide details on how Darling will control odors from the plant. Several improvements to the plan are recommended:
    - Reference specific recordkeeping documents (i.e., maintenance and inspection records) by name and include examples in an appendix.
    - Specify what the daily processing limit is and what types of materials may be processed at the plant.
    - Provide only forms specific to this operation and location. The current plan includes poultry, pork and fish on the Odor Complaint Report. The plant is restricted from several of these commodities. A plant-specific form may alleviate confusion or the possibility of a reporting error.

- Define the specific operating limits included in the SJVAPCD operating permits.
- Require pH level to be observed at least once per shift to ensure proper performance of the scrubbers and ductwork.
- As all employees are required to read and understand the plan, Darling should consider making it available in Spanish if appropriate.
- Require employees to acknowledge receipt and understanding of the requirements by endorsing a signature page that is maintained by Darling management.

- Emergency Odor Response Plan – Either as a part of the Odor Control Plan or as a "stand-alone" document, it is recommended that the facility develop an Emergency Odor Response Plan to describe the activities necessary to promptly control and eliminate excess odor emissions during unavoidable incidents. These activities include, but are not limited to:
  - Discussion of available excess capacity of the odor control scrubber system and oxidants.
  - Diversion of on-site raw materials to other facilities.
  - Refusal of off-site material in transit to the facility.
  - Establish the criteria for when to terminate processing.
  - Describe how unprocessed material will be handled inside the facility.
  - Provide detailed contact and position information regarding who can make such decisions on a local level.
- Daily Raw Material Received Records – As discussed under Section 5.3 of this analysis, Darling's recordkeeping of daily deliveries, shipments and process rates should be maintained to clearly demonstrate compliance with the daily limit. The current recordkeeping system does not clearly demonstrate compliance. Modifications to clarify these records should be made.
- Raw Material Receipt / Weight Tickets Recordkeeping – As discussed in Section 5.3 of this analysis, Darling's system of tracking raw material weights and truck weights to document volumes of raw materials received is inadequate. This documentation should provide:

  - Raw Material Weights for each truck off-loading at the facility.
  - Holding Time for each truck.
  - Sufficient detail to correlate all raw materials received to the daily raw material process limit.
  - Separate documentation for trucks received at the facility but not unloaded at the facility.

  Revisions to this system should be completed prior to any change in the facility's process limit.

- <u>Truck Scales</u> - Truck scales should be certified in order to be able to prove compliance with the facility's daily processing limit. Certification should be documented at least annually.
- <u>Scrubber Service Records</u> – Per Section 5.3 of this analysis, these records are, by SJVAPCD permit condition, required to demonstrate that the scrubbers are being maintained and serviced on a regular basis. They are to document that 1) the service work was completed, 2) describe what work was done, 3) disclose who completed the work and 4) note any resulting corrections or repairs required. Changes to the reporting form to include all required information should be completed.
- <u>Calibration and Maintenance Records</u> – Currently, these records don't provide any information on calibration details or service completed on the probes. Without this information it is impossible to determine if the probes were properly calibrated based on manufacturer requirements or what, if any, adjustments were required to bring the probes into compliance with equipment reporting standards. In order to demonstrate compliance with the permit condition, these records need to be improved to provide the additional information.
- <u>Operating and Training Procedures</u> – Although such documentation may exist, Darling should document that all plant operators and management personnel are trained in the proper operation of all possessing equipment and odor abatement and control equipment. Training should include at a minimum the review and familiarization of the equipment manufacturer's operating instructions. The facility should maintain records of the required training including a statement of

time, place and nature of the training provided. The facility should also have available clear and concise operating procedures based on the manufacturer's recommendations.

7.0 CONCLUSIONS

Operating a rendering plant in close proximity to a residential area is a difficult endeavor. The Darling International facility has been continuously operating at this location since the 1950's. Although the site was originally zoned for industrial operations such as this and the adjacent Foster Farms facility, residential development has slowly moved closer and closer to the plant over the years. As discussed herein, one of the most effective means of reducing odor impacts is to maintain a buffer zone that keeps potential receptors distant enough away that adverse impacts are not likely to occur. Ideally, as discussed within this analysis, this distance is 4-miles or greater. Presently, housing and residential development is less than 1-mile from the plant. The "buffer" is lost. However, refined operating practices and advancements in equipment design can make modern rendering operations nearly odor-free. While Darling is saddled with an antiquated structure, the recent modification of their operation through addition of new odor control and abatement equipment has reduced local impacts significantly. Based on SJVAPCD records, there hasn't been an odor or nuisance complaint to the District since 2007 – almost two years. Even through an intensive yearlong compliance review and site reconnaissance, there have been few documented complaints. Historical records provided for this analysis have shown an interesting trend – complaints from local residents have occurred on a regular basis throughout the last 50 years – but have reduced in frequency over the last two years. This reduction is probably a result of the recent modifications made by Darling at the facility.

This analysis can conclude that the Darling facility is a technologically up-to-date rendering facility including state-of-the-art odor control and abatement equipment. The operation exists in an aged building and could benefit from improved operational practices and mechanical modifications. This facility should be able to continue operations with little to no impact to the surrounding community – *provided the facility adheres to current SJVAPCD permit conditions.* The City of Fresno should endeavor to maintain as much distance between the Darling facility and potential receptors as possible. Further development of non-compatible uses in close proximity to the facility will result in future issues.

8.0 DISCLAIMER

Insight Environmental Consultants, inc. is a professional services consulting firm with experience in air quality, regulatory compliance, and environmental engineering. The management and professional staff of Insight are State of California Professional Engineers, Registered Environmental Assessors, and Geologists. Insight expresses no opinion as to disciplines, subjects and practices outside those specifically enumerated herein. Furthermore, Insight expresses no opinion as to any matters of California or Federal Law herein. This evaluation is based on information sought and obtained through legal means and is subject to limitations, qualifications, exceptions and assumptions set forth herein. Opinions expressed herein are based, in part, on reliance on the completeness and accuracy of information and data provided to Insight in the course of completing the analysis.

9.0 REFERENCES

1. American Conference of Governmental Industrial Hygienists, Inc., *Odor Thresholds for Chemicals with Established Occupational Health Standards*, Akron, Ohio, 1989.

2. *Draft CEQA Guide*, Sacramento Metropolitan Air Quality Management District, May 2009.

3. Edison Community Plan, Adopted by the Fresno City Council on May 10, 1977.

4. *Guide for Assessing and Mitigating Air Quality Impacts*, San Joaquin Valley Air Pollution Control District, January 10, 2002 Revision.

5. Meeker, David L, 2006. *Essential Rendering*, Kirby Lithographic Company, Inc., Arlington, Virginia, September 2006.

6. Zahn et al., Effect of a Packed-Bed Scrubber Using Radox Catalyst on the Emission of Odors and Volatile Organic Compounds from a Commercial Poultry Rendering Plant, 2002. [USDA – Agriculture Research Service, Official Technical Report]

Appendix B

Air Quality, Greenhouse Gas, and Noise Modeling Details

Emissions Summary

Emission Activity	MTCO2e/year
Vehicle Trips (Mobile Sources)	1,212
Electricity Consumption	570
Natural Gas (excluding WWTP-provided gas)	10,992
Water Consumption	57
Solid Waste Generation	25
Total	12,855

Construction Phase Adjustment

CalEEMod Default Construction Phases

Phase	Days
Site Prep	1
Grading	2
Building	100
Paving	5
Arch Coating	5
Total	113

Adjusted Construction Phases

Start Date	1/1/2018
End Date	12/31/2019
Total work days	522
Ratio	4.61946903

Phase	Days
Site Prep	5
Grading	9
Building	462
Paving	23
Arch Coating	23
Total	522

CalEEMod Default VMT Estimate

CalEEMod VMT Calculator (UNMITIGATED SCENARIO)

Trip Type

CalEEMod defaults based on land uses inputted

Land Use	Miles			Trip %			Trip Purpose		
	H-w or C-W	H-S or C-C	H-O or C-O	H-w or C-W	H-S or C-C	H-O or C-O	Primary	Diverted	Pass-by
Manufacturing	14.70	6.60	6.60	59.0%	28.0%	13.0%	92.0%	5.0%	3.0%

Total Trips

Total Trips = (TripRate weekday x 5 +Trip Sat + Trip Sun)

Average Daily Trips Based on CalEEMod Trip Gen Defaults per land use unit. Total trips Calculated

Land Use	Average Daily Trip Rate			
	weekday	Saturday	Sunday	Total Trips (weekly)
Manufacturing	152.8	59.6	24.8	**848.4**

Trip Length Calc

AVG Trip Length = Link % primary x trip length primary+link % divertedx0.25x length trip primary+link % passbyx0.1

Trip length calculated for each trip type based on trip purpose % and length defaults from CalEEMoc

Land Use

Manufacturing	link % primary	trip length primary	link % diverted	Constant (0.25)	trip length primary	link % passby	constant	Trip Length
H-W or c-w	92.0%	14.70	5.0%	0.25	14.7	3.0%	0.1	13.7
h-s or c-c	92.0%	6.60	5.0%	0.25	6.6	3.0%	0.1	6.2
h-o or c-o	92.0%	6.60	5.0%	0.25	6.6	3.0%	0.1	6.2

VMT Calc Per Land Use Type (Weekly)

VMT = #Trips x AVG Trip Length per land use and trip type

Trip number for each trip type are derived by multiplying the total trips for each land use calculated above in the Total Trip Calcs by the trip % shown in the Trip Type table for each land use

Manufacturing	**# trips**	**trip length**	**Weekly VMT**	**Annual VMT**
H-W or c-w	501	13.7	6,863	
h-s or c-c	238	6.2	1,463	
h-o or c-o	110	6.2	679	
Total VMT			9,005	468,252.08

Annual VMT Calc

the calculated weekly VMT for each land use is summed. This value is multiplied by 50 weeks/year to equal the annual VMT number calculated by CalEEMod

Summed Weekly VMT from Each Land Use	9,004.85			
Weeks per Year CalEEMod Uses for Annual VMT	52.00		52.0000	52.14285714
Calculated Annual VMT	**468,252**	468,252		
		1,283		

VMT Estimate from Traffic Study

CalEEMod VMT Calculator (MITIGATED SCENARIO)

Daily VMT Provided by Traffic Study	**6,379**
Annual VMT	**2,213,513**

Trip Type

CalEEMod defaults based on land uses inputted

Land Use	Miles			Trip %			Trip Purpose		
	H-w or C-W	H-S or C-C	H-O or C-O	H-w or C-W	H-S or C-C	H-O or C-O	Primary	Diverted	Pass-by
Manufacturing	72.00	30.50	21.40	59.0%	28.0%	13.0%	92.0%	5.0%	3.0%

Total Trips

Total Trips = (TripRate weekday x 5 +Trip Sat + Trip Sun)

Average Daily Trips Based on CalEEMod Trip Gen Defaults per land use unit. Total trips Calculated

Land Use	Average Daily Trip Rate			
	weekday	Saturday	Sunday	Total Trips (weekly)
Manufacturing	152.8	59.6	24.8	**848.4**

Trip Length Calc

AVG Trip Length = Link % primary x trip length primary+link % divertedx0.25x length trip primary+link % passbyx0.1

Trip length calculated for each trip type based on trip purpose % and length defaults from CalEEMod

Land Use

Manufacturing	link % primary	trip length primary	link % diverted	Constant (0.25)	trip length primary	link % passby	constant	Trip Length
H-W or c-w	92.0%	72.00	5.0%	0.25	72	3.0%	0.1	67.1
h-s or c-c	92.0%	30.50	5.0%	0.25	30.5	3.0%	0.1	28.4
h-o or c-o	92.0%	21.40	5.0%	0.25	21.4	3.0%	0.1	20.0

VMT Calc Per Land Use Type (Weekly)

VMT = #Trips x AVG Trip Length per land use and trip type

Trip number for each trip type are derived by multiplying the total trips for each land use calculated above in the Total Trip Calcs by the trip % shown in the Trip Type table for each land use

Manufacturing	# trips	trip length	Weekly VMT	Annual VMT
H-W or c-w	501	67.1	33,609	
h-s or c-c	238	28.4	6,757	
h-o or c-o	110	20.0	2,201	
Total VMT			42,567	2,213,488.31

Annual VMT Calc

the calculated weekly VMT for each land use is summed. This value is multiplied by 50 weeks/year to equal the annual VMT number calculated by CalEEMod

Summed Weekly VMT from Each Land Use			42,567.08			
Weeks per Year CalEEMod Uses for Annual VMT			52.00		52.0000	52.14285714
Calculated Annual VMT			**2,213,488**	2,213,488		
			25			
				6,064		
VMT by Vehicle Type						
Proposed (Trucks)	5461	0.856090296				
Proposed (Passenger Cars)	918	0.143909704				
Total	6379	1				
Existing (Trucks)	4514					
Existing (Passenger Cars)	924					
Existing + Proposed (Trucks)	9975					
Existing + Proposed (Passenger Cars)	1842					

Energy Usage

Natural Gas	
Usage (mcf)	244,608
18% from WWTP	44,029
Usage from nonrenewables (mcf)	200,579
Total Usage (therm)	2,069,971
Emissions (MT CO2)	10,992
Electricity Usage	
Usage (kwh)	4349700
Usage (MWh)	4,350
Emissions (MT CO2)	569.81

PG&E Intensity Factors (2020)	CO2		
Natural Gas		0.00531	MT/therm
Electricity		0.131	MT/MWh

Source: https://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf

Conversion Factors

1	mcf
10.32	therm
1	kwh
0.001	MWh

Darling Ingredients

Fresno County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	44.60	1000sqft	1.02	44,600.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**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)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Adjusted PG&E CO2 intensity factor based on RPS. Source: https://www.pge.com/includes/docs/pdfs/shared/environment/calculator/pge_ghg_emission_factor_info_sheet.pdf

Land Use - Revised PD - project total floor area of 44,600 sq ft.

Construction Phase - Construction anticipated to last 18-24 months (used more conservative 24 months).

Trips and VMT - Up to 50 workers per Project Description. Assumed to occur during most intense construction phase.

Vehicle Trips - Trip lengths adjusted to match traffic study.

Energy Use - 2016 Title 24 standards result in 5% energy efficiency for nonresidential buildings.

Water And Wastewater - 75,000 gallons of water/day demand.

Fleet Mix - Adjusted fleet mix to account for 14.39% trips from passenger cars, 85.61% from trucks

Stationary Sources - Process Boilers -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	23.00
tblConstructionPhase	NumDays	100.00	462.00
tblConstructionPhase	NumDays	2.00	9.00
tblConstructionPhase	NumDays	5.00	23.00
tblConstructionPhase	NumDays	1.00	5.00
tblEnergyUse	T24E	2.05	23.85
tblEnergyUse	T24NG	17.11	10,162.08
tblGrading	AcresOfGrading	2.50	0.50
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblProjectCharacteristics	OperationalYear	2018	2020
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	WorkerTripNumber	17.00	50.00
tblVehicleTrips	CC_TL	6.60	30.50
tblVehicleTrips	CNW_TL	6.60	21.40
tblVehicleTrips	CW_TL	14.70	72.00
tblWater	IndoorWaterUseRate	9,250,000.00	27,375,000.00

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					
2018	0.1902	1.5799	1.3420	2.5000e-003	0.0863	0.0928	0.1791	0.0240	0.0855	0.1095	0.0000	228.0407	228.0407	0.0468	0.0000	229.2117
2019	0.4337	1.2901	1.1832	2.2700e-003	0.0743	0.0728	0.1471	0.0199	0.0671	0.0870	0.0000	204.6262	204.6262	0.0425	0.0000	205.6897
Maximum	**0.4337**	**1.5799**	**1.3420**	**2.5000e-003**	**0.0863**	**0.0928**	**0.1791**	**0.0240**	**0.0855**	**0.1095**	**0.0000**	**228.0407**	**228.0407**	**0.0468**	**0.0000**	**229.2117**

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					
2018	0.1902	1.5799	1.3420	2.5000e-003	0.0863	0.0928	0.1791	0.0240	0.0855	0.1095	0.0000	228.0405	228.0405	0.0468	0.0000	229.2115
2019	0.4337	1.2901	1.1832	2.2700e-003	0.0743	0.0728	0.1471	0.0199	0.0671	0.0870	0.0000	204.6261	204.6261	0.0425	0.0000	205.6895
Maximum	**0.4337**	**1.5799**	**1.3420**	**2.5000e-003**	**0.0863**	**0.0928**	**0.1791**	**0.0240**	**0.0855**	**0.1095**	**0.0000**	**228.0405**	**228.0405**	**0.0468**	**0.0000**	**229.2115**

	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2018	3-31-2018	0.4228	0.4228
2	4-1-2018	6-30-2018	0.4463	0.4463
3	7-1-2018	9-30-2018	0.4513	0.4513
4	10-1-2018	12-31-2018	0.4529	0.4529
5	1-1-2019	3-31-2019	0.3959	0.3959
6	4-1-2019	6-30-2019	0.3989	0.3989
7	7-1-2019	9-30-2019	0.4033	0.4033
		Highest	0.4529	0.4529

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	0.2020	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004
Energy	2.4448	22.2255	18.6694	0.1334		1.6891	1.6891		1.6891	1.6891	0.0000	24,375.7900	24,375.7900	0.4818	0.4473	24,521.1350
Mobile	0.1784	2.3735	2.7626	0.0145	0.9462	0.0180	0.9642	0.2551	0.0171	0.2722	0.0000	1,350.0085	1,350.0085	0.0528	0.0000	1,351.3285
Stationary						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	10.0684	0.0000	10.0684	0.5950	0.0000	24.9439
Water						0.0000	0.0000		0.0000	0.0000	8.6848	19.4848	28.1696	0.8940	0.0215	56.9154
Total	**2.8252**	**24.5990**	**21.4324**	**0.1479**	**0.9462**	**1.7072**	**2.6533**	**0.2551**	**1.7063**	**1.9614**	**18.7532**	**25,745.2841**	**25,764.0372**	**2.0236**	**0.4688**	**25,954.3238**

2.2 Overall Operational

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	0.2020	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004
Energy	2.4448	22.2255	18.6694	0.1334		1.6891	1.6891		1.6891	1.6891	0.0000	24,375.7900	24,375.7900	0.4818	0.4473	24,521.1350
Mobile	0.1784	2.3735	2.7626	0.0145	0.9462	0.0180	0.9642	0.2551	0.0171	0.2722	0.0000	1,350.0085	1,350.0085	0.0528	0.0000	1,351.3285
Stationary						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	10.0684	0.0000	10.0684	0.5950	0.0000	24.9439
Water						0.0000	0.0000		0.0000	0.0000	8.6848	19.4848	28.1696	0.8940	0.0215	56.9154
Total	**2.8252**	**24.5990**	**21.4324**	**0.1479**	**0.9462**	**1.7072**	**2.6533**	**0.2551**	**1.7063**	**1.9614**	**18.7532**	**25,745.2841**	**25,764.0372**	**2.0236**	**0.4688**	**25,954.3238**

	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**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Darling Ingredients - Fresno County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/1/2018	1/5/2018	5	5	
2	Grading	Grading	1/6/2018	1/18/2018	5	9	
3	Building Construction	Building Construction	1/19/2018	10/28/2019	5	462	
4	Paving	Paving	10/29/2019	11/28/2019	5	23	
5	Architectural Coating	Architectural Coating	11/29/2019	12/31/2019	5	23	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 60,000; Non-Residential Outdoor: 20,000; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
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
Site Preparation	2	5.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	50.00	7.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 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					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9600e-003	0.0244	0.0106	2.0000e-005		1.0500e-003	1.0500e-003		9.6000e-004	9.6000e-004	0.0000	2.2288	2.2288	6.9000e-004	0.0000	2.2461
Total	**1.9600e-003**	**0.0244**	**0.0106**	**2.0000e-005**	**2.7000e-004**	**1.0500e-003**	**1.3200e-003**	**3.0000e-005**	**9.6000e-004**	**9.9000e-004**	**0.0000**	**2.2288**	**2.2288**	**6.9000e-004**	**0.0000**	**2.2461**

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	9.0000e-005	7.0000e-005	6.4000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1416	0.1416	0.0000	0.0000	0.1417
Total	**9.0000e-005**	**7.0000e-005**	**6.4000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1416**	**0.1416**	**0.0000**	**0.0000**	**0.1417**

3.2 Site Preparation - 2018

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					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9600e-003	0.0244	0.0106	2.0000e-005		1.0500e-003	1.0500e-003		9.6000e-004	9.6000e-004	0.0000	2.2288	2.2288	6.9000e-004	0.0000	2.2461
Total	**1.9600e-003**	**0.0244**	**0.0106**	**2.0000e-005**	**2.7000e-004**	**1.0500e-003**	**1.3200e-003**	**3.0000e-005**	**9.6000e-004**	**9.9000e-004**	**0.0000**	**2.2288**	**2.2288**	**6.9000e-004**	**0.0000**	**2.2461**

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	9.0000e-005	7.0000e-005	6.4000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1416	0.1416	0.0000	0.0000	0.1417
Total	**9.0000e-005**	**7.0000e-005**	**6.4000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1416**	**0.1416**	**0.0000**	**0.0000**	**0.1417**

3.3 Grading - 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					
Fugitive Dust					3.3900e-003	0.0000	3.3900e-003	1.8600e-003	0.0000	1.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7900e-003	0.0424	0.0350	5.0000e-005		2.8000e-003	2.8000e-003		2.6700e-003	2.6700e-003	0.0000	4.7737	4.7737	9.2000e-004	0.0000	4.7967
Total	**4.7900e-003**	**0.0424**	**0.0350**	**5.0000e-005**	**3.3900e-003**	**2.8000e-003**	**6.1900e-003**	**1.8600e-003**	**2.6700e-003**	**4.5300e-003**	**0.0000**	**4.7737**	**4.7737**	**9.2000e-004**	**0.0000**	**4.7967**

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	3.3000e-004	2.4000e-004	2.2900e-003	1.0000e-005	5.6000e-004	0.0000	5.6000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.5097	0.5097	2.0000e-005	0.0000	0.5101
Total	**3.3000e-004**	**2.4000e-004**	**2.2900e-003**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**5.6000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.5097**	**0.5097**	**2.0000e-005**	**0.0000**	**0.5101**

3.3 Grading - 2018

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					3.3900e-003	0.0000	3.3900e-003	1.8600e-003	0.0000	1.8600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.7900e-003	0.0424	0.0350	5.0000e-005		2.8000e-003	2.8000e-003		2.6700e-003	2.6700e-003	0.0000	4.7737	4.7737	9.2000e-004	0.0000	4.7967
Total	**4.7900e-003**	**0.0424**	**0.0350**	**5.0000e-005**	**3.3900e-003**	**2.8000e-003**	**6.1900e-003**	**1.8600e-003**	**2.6700e-003**	**4.5300e-003**	**0.0000**	**4.7737**	**4.7737**	**9.2000e-004**	**0.0000**	**4.7967**

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	3.3000e-004	2.4000e-004	2.2900e-003	1.0000e-005	5.6000e-004	0.0000	5.6000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.5097	0.5097	2.0000e-005	0.0000	0.5101
Total	**3.3000e-004**	**2.4000e-004**	**2.2900e-003**	**1.0000e-005**	**5.6000e-004**	**0.0000**	**5.6000e-004**	**1.5000e-004**	**0.0000**	**1.5000e-004**	**0.0000**	**0.5097**	**0.5097**	**2.0000e-005**	**0.0000**	**0.5101**

3.4 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	0.1340	1.3624	0.9573	1.4100e-003		0.0875	0.0875		0.0805	0.0805	0.0000	128.4544	128.4544	0.0400	0.0000	129.4541
Total	**0.1340**	**1.3624**	**0.9573**	**1.4100e-003**		**0.0875**	**0.0875**		**0.0805**	**0.0805**	**0.0000**	**128.4544**	**128.4544**	**0.0400**	**0.0000**	**129.4541**

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	4.1900e-003	0.1179	0.0213	2.3000e-004	5.1800e-003	9.1000e-004	6.1000e-003	1.5000e-003	8.7000e-004	2.3700e-003	0.0000	21.9886	21.9886	3.0100e-003	0.0000	22.0638
Worker	0.0448	0.0325	0.3149	7.7000e-004	0.0768	5.0000e-004	0.0773	0.0204	4.6000e-004	0.0209	0.0000	69.9440	69.9440	2.2100e-003	0.0000	69.9992
Total	**0.0490**	**0.1504**	**0.3362**	**1.0000e-003**	**0.0819**	**1.4100e-003**	**0.0834**	**0.0219**	**1.3300e-003**	**0.0232**	**0.0000**	**91.9326**	**91.9326**	**5.2200e-003**	**0.0000**	**92.0629**

3.4 Building Construction - 2018

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	0.1340	1.3624	0.9573	1.4100e-003		0.0875	0.0875		0.0805	0.0805	0.0000	128.4542	128.4542	0.0400	0.0000	129.4540
Total	**0.1340**	**1.3624**	**0.9573**	**1.4100e-003**		**0.0875**	**0.0875**		**0.0805**	**0.0805**	**0.0000**	**128.4542**	**128.4542**	**0.0400**	**0.0000**	**129.4540**

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	4.1900e-003	0.1179	0.0213	2.3000e-004	5.1800e-003	9.1000e-004	6.1000e-003	1.5000e-003	8.7000e-004	2.3700e-003	0.0000	21.9886	21.9886	3.0100e-003	0.0000	22.0638
Worker	0.0448	0.0325	0.3149	7.7000e-004	0.0768	5.0000e-004	0.0773	0.0204	4.6000e-004	0.0209	0.0000	69.9440	69.9440	2.2100e-003	0.0000	69.9992
Total	**0.0490**	**0.1504**	**0.3362**	**1.0000e-003**	**0.0819**	**1.4100e-003**	**0.0834**	**0.0219**	**1.3300e-003**	**0.0232**	**0.0000**	**91.9326**	**91.9326**	**5.2200e-003**	**0.0000**	**92.0629**

3.4 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	0.1029	1.0557	0.8109	1.2200e-003		0.0651	0.0651		0.0599	0.0599	0.0000	109.9730	109.9730	0.0348	0.0000	110.8429
Total	**0.1029**	**1.0557**	**0.8109**	**1.2200e-003**		**0.0651**	**0.0651**		**0.0599**	**0.0599**	**0.0000**	**109.9730**	**109.9730**	**0.0348**	**0.0000**	**110.8429**

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	3.2500e-003	0.0973	0.0165	2.0000e-004	4.5100e-003	6.7000e-004	5.1800e-003	1.3000e-003	6.4000e-004	1.9500e-003	0.0000	18.9741	18.9741	2.5900e-003	0.0000	19.0387
Worker	0.0352	0.0247	0.2415	6.5000e-004	0.0668	4.2000e-004	0.0672	0.0178	3.9000e-004	0.0181	0.0000	59.0801	59.0801	1.6900e-003	0.0000	59.1223
Total	**0.0385**	**0.1219**	**0.2580**	**8.5000e-004**	**0.0713**	**1.0900e-003**	**0.0724**	**0.0191**	**1.0300e-003**	**0.0201**	**0.0000**	**78.0542**	**78.0542**	**4.2800e-003**	**0.0000**	**78.1610**

3.4 Building Construction - 2019

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	0.1029	1.0557	0.8109	1.2200e-003		0.0651	0.0651		0.0599	0.0599	0.0000	109.9729	109.9729	0.0348	0.0000	110.8427
Total	**0.1029**	**1.0557**	**0.8109**	**1.2200e-003**		**0.0651**	**0.0651**		**0.0599**	**0.0599**	**0.0000**	**109.9729**	**109.9729**	**0.0348**	**0.0000**	**110.8427**

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	3.2500e-003	0.0973	0.0165	2.0000e-004	4.5100e-003	6.7000e-004	5.1800e-003	1.3000e-003	6.4000e-004	1.9500e-003	0.0000	18.9741	18.9741	2.5900e-003	0.0000	19.0387
Worker	0.0352	0.0247	0.2415	6.5000e-004	0.0668	4.2000e-004	0.0672	0.0178	3.9000e-004	0.0181	0.0000	59.0801	59.0801	1.6900e-003	0.0000	59.1223
Total	**0.0385**	**0.1219**	**0.2580**	**8.5000e-004**	**0.0713**	**1.0900e-003**	**0.0724**	**0.0191**	**1.0300e-003**	**0.0201**	**0.0000**	**78.0542**	**78.0542**	**4.2800e-003**	**0.0000**	**78.1610**

3.5 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	9.5400e-003	0.0902	0.0822	1.3000e-004		5.0900e-003	5.0900e-003		4.7200e-003	4.7200e-003	0.0000	11.0083	11.0083	3.1500e-003	0.0000	11.0870
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.5400e-003**	**0.0902**	**0.0822**	**1.3000e-004**		**5.0900e-003**	**5.0900e-003**		**4.7200e-003**	**4.7200e-003**	**0.0000**	**11.0083**	**11.0083**	**3.1500e-003**	**0.0000**	**11.0870**

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	1.3600e-003	9.5000e-004	9.3000e-003	3.0000e-005	2.5700e-003	2.0000e-005	2.5900e-003	6.8000e-004	1.0000e-005	7.0000e-004	0.0000	2.2753	2.2753	6.0000e-005	0.0000	2.2769
Total	**1.3600e-003**	**9.5000e-004**	**9.3000e-003**	**3.0000e-005**	**2.5700e-003**	**2.0000e-005**	**2.5900e-003**	**6.8000e-004**	**1.0000e-005**	**7.0000e-004**	**0.0000**	**2.2753**	**2.2753**	**6.0000e-005**	**0.0000**	**2.2769**

3.5 Paving - 2019

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	9.5400e-003	0.0902	0.0822	1.3000e-004		5.0900e-003	5.0900e-003		4.7200e-003	4.7200e-003	0.0000	11.0083	11.0083	3.1500e-003	0.0000	11.0870
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**9.5400e-003**	**0.0902**	**0.0822**	**1.3000e-004**		**5.0900e-003**	**5.0900e-003**		**4.7200e-003**	**4.7200e-003**	**0.0000**	**11.0083**	**11.0083**	**3.1500e-003**	**0.0000**	**11.0870**

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	1.3600e-003	9.5000e-004	9.3000e-003	3.0000e-005	2.5700e-003	2.0000e-005	2.5900e-003	6.8000e-004	1.0000e-005	7.0000e-004	0.0000	2.2753	2.2753	6.0000e-005	0.0000	2.2769
Total	**1.3600e-003**	**9.5000e-004**	**9.3000e-003**	**3.0000e-005**	**2.5700e-003**	**2.0000e-005**	**2.5900e-003**	**6.8000e-004**	**1.0000e-005**	**7.0000e-004**	**0.0000**	**2.2753**	**2.2753**	**6.0000e-005**	**0.0000**	**2.2769**

3.6 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	0.2781					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0600e-003	0.0211	0.0212	3.0000e-005		1.4800e-003	1.4800e-003		1.4800e-003	1.4800e-003	0.0000	2.9362	2.9362	2.5000e-004	0.0000	2.9424
Total	**0.2812**	**0.0211**	**0.0212**	**3.0000e-005**		**1.4800e-003**	**1.4800e-003**		**1.4800e-003**	**1.4800e-003**	**0.0000**	**2.9362**	**2.9362**	**2.5000e-004**	**0.0000**	**2.9424**

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	2.3000e-004	1.6000e-004	1.5500e-003	0.0000	4.3000e-004	0.0000	4.3000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	0.3792	0.3792	1.0000e-005	0.0000	0.3795
Total	**2.3000e-004**	**1.6000e-004**	**1.5500e-003**	**0.0000**	**4.3000e-004**	**0.0000**	**4.3000e-004**	**1.1000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3792**	**0.3792**	**1.0000e-005**	**0.0000**	**0.3795**

3.6 Architectural Coating - 2019

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	0.2781					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0600e-003	0.0211	0.0212	3.0000e-005		1.4800e-003	1.4800e-003		1.4800e-003	1.4800e-003	0.0000	2.9362	2.9362	2.5000e-004	0.0000	2.9424
Total	**0.2812**	**0.0211**	**0.0212**	**3.0000e-005**		**1.4800e-003**	**1.4800e-003**		**1.4800e-003**	**1.4800e-003**	**0.0000**	**2.9362**	**2.9362**	**2.5000e-004**	**0.0000**	**2.9424**

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	2.3000e-004	1.6000e-004	1.5500e-003	0.0000	4.3000e-004	0.0000	4.3000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	0.3792	0.3792	1.0000e-005	0.0000	0.3795
Total	**2.3000e-004**	**1.6000e-004**	**1.5500e-003**	**0.0000**	**4.3000e-004**	**0.0000**	**4.3000e-004**	**1.1000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3792**	**0.3792**	**1.0000e-005**	**0.0000**	**0.3795**

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	0.1784	2.3735	2.7626	0.0145	0.9462	0.0180	0.9642	0.2551	0.0171	0.2722	0.0000	1,350.0085	1,350.0085	0.0528	0.0000	1,351.3285
Unmitigated	0.1784	2.3735	2.7626	0.0145	0.9462	0.0180	0.9642	0.2551	0.0171	0.2722	0.0000	1,350.0085	1,350.0085	0.0528	0.0000	1,351.3285

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	170.37	66.45	27.65	2,468,039	2,468,039
Total	170.37	66.45	27.65	2,468,039	2,468,039

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
Manufacturing	72.00	30.50	21.40	59.00	28.00	13.00	92	5	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Manufacturing	0.481390	0.032808	0.168621	0.127212	0.018382	0.004997	0.032622	0.122881	0.002369	0.001675	0.005261	0.001115	0.000667

5.0 Energy Detail

Historical Energy Use: N

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	0.0000		0.0000	0.0000	0.0000	180.6377	180.6377	0.0181	3.7400e-003	182.2030
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	180.6377	180.6377	0.0181	3.7400e-003	182.2030
NaturalGas Mitigated	2.4448	22.2255	18.6694	0.1334		1.6891	1.6891		1.6891	1.6891	0.0000	24,195.1524	24,195.1524	0.4637	0.4436	24,338.9321
NaturalGas Unmitigated	2.4448	22.2255	18.6694	0.1334		1.6891	1.6891		1.6891	1.6891	0.0000	24,195.1524	24,195.1524	0.4637	0.4436	24,338.9321

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					
Manufacturing	4.534e +008	2.4448	22.2255	18.6694	0.1334		1.6891	1.6891		1.6891	1.6891	0.0000	24,195.15 24	24,195.15 24	0.4637	0.4436	24,338.93 21
Total		**2.4448**	**22.2255**	**18.6694**	**0.1334**		**1.6891**	**1.6891**		**1.6891**	**1.6891**	**0.0000**	**24,195.15 24**	**24,195.15 24**	**0.4637**	**0.4436**	**24,338.93 21**

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					
Manufacturing	4.534e +008	2.4448	22.2255	18.6694	0.1334		1.6891	1.6891		1.6891	1.6891	0.0000	24,195.15 24	24,195.15 24	0.4637	0.4436	24,338.93 21
Total		**2.4448**	**22.2255**	**18.6694**	**0.1334**		**1.6891**	**1.6891**		**1.6891**	**1.6891**	**0.0000**	**24,195.15 24**	**24,195.15 24**	**0.4637**	**0.4436**	**24,338.93 21**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Manufacturing	1.37323e +006	180.6377	0.0181	3.7400e-003	182.2030
Total		**180.6377**	**0.0181**	**3.7400e-003**	**182.2030**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Manufacturing	1.37323e +006	180.6377	0.0181	3.7400e-003	182.2030
Total		**180.6377**	**0.0181**	**3.7400e-003**	**182.2030**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	0.2020	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004
Unmitigated	0.2020	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004

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	0.0278					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1742					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004
Total	**0.2020**	**0.0000**	**4.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.0000e-004**	**8.0000e-004**	**0.0000**	**0.0000**	**8.5000e-004**

6.2 Area by SubCategory

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	0.0278					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1742					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.1000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	8.0000e-004	8.0000e-004	0.0000	0.0000	8.5000e-004
Total	**0.2020**	**0.0000**	**4.1000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**8.0000e-004**	**8.0000e-004**	**0.0000**	**0.0000**	**8.5000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	28.1696	0.8940	0.0215	56.9154
Unmitigated	28.1696	0.8940	0.0215	56.9154

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Manufacturing	27.375 / 0	28.1696	0.8940	0.0215	56.9154
Total		**28.1696**	**0.8940**	**0.0215**	**56.9154**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Manufacturing	27.375 / 0	28.1696	0.8940	0.0215	56.9154
Total		**28.1696**	**0.8940**	**0.0215**	**56.9154**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	10.0684	0.5950	0.0000	24.9439
Unmitigated	10.0684	0.5950	0.0000	24.9439

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Manufacturing	49.6	10.0684	0.5950	0.0000	24.9439
Total		**10.0684**	**0.5950**	**0.0000**	**24.9439**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Manufacturing	49.6	10.0684	0.5950	0.0000	24.9439
Total		**10.0684**	**0.5950**	**0.0000**	**24.9439**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
Boiler	0	0	0	0	

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total						**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

11.0 Vegetation

Construction Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,351	50.0
Residence 1	1200	49.9
Residence 2	1300	49.0

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Grader	85	0.4
Dozer	85	0.4
Excavator	85	0.4

Ground Type	SOFT
Source Height	12
Receiver Height	5
Ground Factor[2]	0.60

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Grader	81.0
Dozer	81.0
Excavator	81.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
86

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

$L_{eq}(equip) = E.L.+10*\log(U.F.) - 20*\log(D/50) - 10*G*\log(D/50)$

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

ASCENT ENVIRONMENTAL

Attenuation Calculations for Stationary Noise Sources

KEY: Orange cells are for input.

Grey cells are intermediate calculations performed by the model.

Green cells are data to present in a written analysis (output).

STEP 1: Identify the noise source and enter the reference noise level (dBA and distance).

STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.

STEP 3: Select the distance to the receiver.

Noise Source/ID	**Reference Noise Level** noise level (dBA)	@	distance (ft)	**Attenuation Characteristics** Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	**Attenuated Noise Level at Receptor** noise level (dBA)	@	distance (ft)
Construction Activity Lmax	85.0	@	50	soft	12	5	0.60	49.1	@	1200
Construction Activity Leq	86.0	@	50	soft	12	5	0.60	50.1	@	1200
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			

Notes:

Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 12-3 and 12-4 of FTA 2006.

Computation of the ground factor is based on the equation presentd in Figure 6-23 on pg. 6-23 of FTA 2006, where the distance of the reference noise leve can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Sources:

Federal Transit Association (FTA). 2006 (May). Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. Washington, D.C. Available: <http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf>. Accessed: September 24, 2010.

Operation Source Noise Prediction Model

Location	Distance to Nearest Receptor in feet	Combined Predicted Noise Level (L_{eq} dBA)
Threshold	1,608	50.0
Residence 1	1200	52.5
Residence 2	1300	51.8

Equipment	Reference Emission Noise Levels (L_{max}) at 50 feet[1]	Usage Factor[1]
Man Lift	85	0.2
Pickup Truck	55	0.4
Front End Loader	80	0.4

Ground Type	HARD
Source Height	12
Receiver Height	5
Ground Factor[2]	0.00

Predicted Noise Level [3]	L_{eq} dBA at 50 feet[3]
Man Lift	78.0
Pickup Truck	51.0
Front End Loader	76.0

Combined Predicted Noise Level (L_{eq} dBA at 50 feet)
80

Sources:

[1] Obtained from the FHWA Roadway Construction Noise Model, January 2006. Table 1.

[2] Based on Figure 6-5 from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 6-23).

[3] Based on the following from the Federal Transit Noise and Vibration Impact Assessment, 2006 (pg 12-3).

L_{eq}(equip) = E.L.+10*log (U.F.) - 20*log (D/50) - 10*G*log (D/50)

Where: E.L. = Emission Level;

U.F.= Usage Factor;

G = Constant that accounts for topography and ground effects (FTA 2006: pg 6-23); and

D = Distance from source to receiver.

Attenuation Calculations for Stationary Noise Sources

ASCENT ENVIRONMENTAL

KEY: Orange cells are for input.
Grey cells are intermediate calculations performed by the model.
Green cells are data to present in a written analysis (output).

STEP 1: Identify the noise source and enter the reference noise level (dBA and distance).

STEP 2: Select the ground type (hard or soft), and enter the source and receiver heights.

STEP 3: Select the distance to the receiver.

Noise Source/ID	Reference Noise Level noise level (dBA)	@	distance (ft)	Attenuation Characteristics: Ground Type (soft/hard)	Source Height (ft)	Receiver Height (ft)	Ground Factor	Attenuated Noise Level at Receptor: noise level (dBA)	@	distance (ft)
Construction Activity Lmax	85.0	@	50	hard	12	5	0.00	57.4	@	1200
Construction Activity Leq	80.0	@	50	hard	12	5	0.00	52.4	@	1200
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			
							0.66			

Notes:

Estimates of attenuated noise levels do not account for reductions from intervening barriers, including walls, trees, vegetation, or structures of any type.

Computation of the attenuated noise level is based on the equation presented on pg. 12-3 and 12-4 of FTA 2006.

Computation of the ground factor is based on the equation presentd in Figure 6-23 on pg. 6-23 of FTA 2006, where the distance of the reference noise leve can be adjusted and the usage factor is not applied (i.e., the usage factor is equal to 1).

Sources:

Federal Transit Association (FTA). 2006 (May). Transit Noise and Vibration Impact Assessment. FTA-VA-90-1003-06. Washington, D.C. Available: <http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf>. Accessed: September 24, 2010.

Traffic Noise Spreadsheet Calculator

Project: **Darling Ingredients, Inc. Rendering Facility - Existing**

Noise Level Descriptor: Ldn
Site Conditions: Soft
Traffic Input: Peak
Traffic K-Factor: 10

	Segment Description and Location			Input										Output				
				Peak Hour	Speed	Distance to Directional Centerline, (feet)4		Traffic Distribution Characteristics						Ldn,	Distance to Contour, (feet)3			
Number	Name	From	To	Volume	(mph)	Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night	(dBA)5,6,7	70 dBA	65 dBA	60 dBA	55 dBA
Existing Conditions																		
1	S. Cornelia Avenue	W. Church Avenue	W. Jensen Avenue	1,240	45	38	38	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	68	30	64	138	296
2	S. Cornelia Avenue	W. Jensen Avenue	Project Driveway	1,320	45	177	177	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	59	31	67	143	309
3	W. Jensen Avenue	Project Driveway	S. Cornelia Avenue	3,740	45	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	67	62	133	287	618
4	W. Jensen Avenue	S. Cornelia Avenue	S. Brawley Avenue	4,140	45	25	25	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	76	66	143	307	662
5	W. Jensen Avenue	S. Brawley Avenue	S. Marks Avenue	5,200	45	20	20	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	79	77	166	358	770
6	W. Jensen Avenue	S. Marks Avenue	S. West Avenue	5,370	45	80	80	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	70	79	170	365	787
7	W. Jensen Avenue	S. West Avenue	S. Fruit Avenue	5,540	45	75	75	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	70	80	173	373	804
8	S. Brawley Avenue	W. Church Avenue	W. Jensen Avenue	920	45	25	25	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	70	24	52	113	243
9	S. Brawley Avenue	W. Jensen Avenue	W. North Avenue	430	45	20	20	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	68	15	32	68	146
10	S. Marks Avenue	W. Church Avenue	W. Jensen Avenue	2,230	35	45	45	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	67	27	59	128	275
11	S. Marks Avenue	W. Jensen Avenue	W. North Avenue	1,410	35	38	38	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	66	20	44	94	202
12	S. West Avenue	W. Church Avenue	W. Jensen Avenue	610	35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	56	12	25	54	116
13	S. West Avenue	W. Jensen Avenue	W. North Avenue	460	35	35	35	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	62	10	21	45	96
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Traffic Noise Spreadsheet Calculator

Project: **Darling Ingredients, Inc. Rendering Facility - Existing + Project**

Noise Level Descriptor: Ldn
Site Conditions: Soft
Traffic Input: Peak
Traffic K-Factor: 10

	Segment Description and Location			Input										Output				
						Distance to Directional Centerline, (feet)$_4$		Traffic Distribution Characteristics						Ldn,	Distance to Contour, (feet)$_3$			
Number	Name	From	To	Peak Hour Volume	Speed (mph)	Near	Far	% Auto	% Medium	% Heavy	% Day	% Eve	% Night	(dBA)$_{5,6,7}$	70 dBA	65 dBA	60 dBA	55 dBA
Existing Conditions																		
1	S. Cornelia Avenue	W. Church Avenue	W. Jensen Avenue	1,250	45	38	38	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	68	30	64	138	298
2	S. Cornelia Avenue	W. Jensen Avenue	Project Driveway	1,530	45	177	177	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	59	34	73	158	341
3	W. Jensen Avenue	Project Driveway	S. Cornelia Avenue	4,000	45	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	67	65	139	300	647
4	W. Jensen Avenue	S. Cornelia Avenue	S. Brawley Avenue	4,590	45	25	25	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	77	71	153	329	709
5	W. Jensen Avenue	S. Brawley Avenue	S. Marks Avenue	5,640	45	20	20	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	79	81	175	378	813
6	W. Jensen Avenue	S. Marks Avenue	S. West Avenue	5,790	45	80	80	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	70	83	178	384	828
7	W. Jensen Avenue	S. West Avenue	S. Fruit Avenue	5,950	45	75	75	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	71	84	182	391	843
8	S. Brawley Avenue	W. Church Avenue	W. Jensen Avenue	930	45	25	25	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	70	24	53	114	245
9	S. Brawley Avenue	W. Jensen Avenue	W. North Avenue	440	45	20	20	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	68	15	32	69	148
10	S. Marks Avenue	W. Church Avenue	W. Jensen Avenue	2,240	35	45	45	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	67	28	59	128	276
11	S. Marks Avenue	W. Jensen Avenue	W. North Avenue	1,420	35	38	38	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	66	20	44	94	203
12	S. West Avenue	W. Church Avenue	W. Jensen Avenue	620	35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	56	12	25	54	117
13	S. West Avenue	W. Jensen Avenue	W. North Avenue	460	35	35	35	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%	62	10	21	45	96
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					
					35	100	100	97.0%	2.0%	1.0%	80.0%	15.0%	5.0%					

*All modeling assumes average pavement, level roadways (less than 1.5% grade), constant traffic flow and does not account for shielding of any type or finite roadway adjustments. All levels are reported as A-weighted noise levels.

Appendix C

SJVAPCD Best Performance Standards Example

San Joaquin Valley
Unified Air Pollution Control District

Best Performance Standard (BPS) x.x.xx

Date: February 22, 2011

<table>
<tr><th>Class</th><th>Gaseous Fuel-Fired Boilers</th></tr>
<tr><td>Category</td><td>New Hot Water Boilers, Fired Exclusively on Natural Gas or LPG</td></tr>
<tr><td rowspan="2">Best Performance Standard</td><td>Applicability Note: Hot water boilers fired with gaseous fuels other than natural gas or LPG (either exclusively or mixed with natural gas or LPG) and which meet the following standards shall be considered to meet BPS for their respective category.</td></tr>
<tr><td>Hot water boilers meeting this Best Performance Standard must comply with all three elements of this BPS (items 1, 2 and 3 listed below) where applicable:

1. The boiler shall meet the following design criteria or shall be equipped with an approved alternate heat recovery system which will collectively provide equivalent boiler efficiency. Equivalent heat recovery systems may utilize recovered heat for purposes other than steam generation provided such uses offset other fuel usage which would otherwise be required.

<u>Design Criteria</u>

A. Except for boilers subject to the requirements of item B below, the boiler shall be designed at full firing capacity to achieve a minimum thermal efficiency of 89 percent when operating with a return water temperature of 100°F and a temperature rise of 20°F.

B. Boilers for which more than 75% of the annual hours of operation will be with a cold water or return water temperature which is equal to or greater than 140°F or boilers which operate as secondary boilers in hydronic heating systems in which the primary or lead boiler is a condensing boiler meeting the requirements of item A above, shall be designed at full firing capacity to achieve a minimum thermal efficiency of 84 percent when operating with a return water temperature of 140°F and a temperature rise of 20°F.

2. Electric motors driving combustion air fans or induced draft fans shall have an efficiency meeting the standards of the National Electrical Manufacturer's Association (NEMA) for "premium efficiency" motors and shall each be operated with a variable speed control or equivalent for control of flow through the fan.

3. Hydronic boiler systems shall incorporate the applicable requirements of the 2008 California Energy Efficiency Standards, Subchapter 5, Section 144j. (Hydronic System Measures).</td></tr>
</table>

Percentage Achieved GHG Emission Reduction Relative to Baseline Emissions	**6.2%**

District Project Number	C-1100388
Evaluating Engineer	Dennis Roberts, P.E.
Lead Engineer	Martin Keast
Initial Public Notice Date	April 8, 2010
Final Public Notice Date	January 19, 2011
Determination Effective Date	February 22, 2011

Appendix D

Traffic Study

Darling Ingredients Inc.

Transportation Impact Analysis
Draft

June 2017

Prepared for:
City of Fresno

Submitted by:
FEHR PEERS

1001 K Street, 3rd Floor
Sacramento, CA 95814

Table of Contents

CHAPTER 1. INTRODUCTION 1

Study Area 1
Analysis Methodology 2
Travel Demand Forecasting 2
Traffic Operations 2
Analysis Assumptions and Methodology Limitations 5
Regulatory Setting 6
Significance Criteria 8

CHAPTER 2. EXISTING CONDITIONS 11

Travel Characteristics 11
Roadway Network 12
Traffic Operations 13

CHAPTER 3. PROJECT ANALYSIS 16

Project Description 16
Trip Generation 16
Trip Distribution 17
Traffic Forecasts 18

CHAPTER 4. MITIGATION MEASURES 19

TECHNICAL APPENDIX 23

List of Tables

Table 1: intersection Level of Service Criteria....2
Table 2: Roadway Functional Class and Peak Hour LOS Thresholds....4
Table 3: Peak Hour Intersection Level of Service – Existing Conditions....13
Table 4: Peak Hour Roadway Segment Level of Service – Existing Conditions....14
Table 5: Proposed Project Employee and Truck Trip Generation....17
Table 6: Project Trip Distribution....17
Table 11: Peak Hour Intersection Level of Service – Cumulative Plus Project Conditions (Mitigated)....20

CHAPTER 1. INTRODUCTION

This study analyzes the potential impacts to the transportation system associated with the proposed relocation of the Darling facility from its current location on Belgravia Avenue to a new location on about 35 to 50 acres near the City's wastewater treatment plan. The impact analysis examines the roadway, transit, bicycle, pedestrian, rail, and aviation components of the transportation system.

The technical analysis contained in this report will form the basis of the transportation chapter for the Environmental Impact Report (EIR) and includes traffic operations of the roadway segments within the study area. This report also evaluates policy impacts related to air traffic patterns, hazards, emergency access, transit, bicycle, and pedestrian facilities. The study identifies mitigation measures to address project impacts where appropriate. The methodologies used in this study comply with applicable California Environmental Quality Act (CEQA) guidelines and requirements.

This study analyzes the following scenarios:

- Existing Conditions Analysis – The existing and existing plus project analyses are used to identify impacts directly related to the development of the proposed project. Existing roadway operations were analyzed using roadway geometrics as observed in Spring 2017 and traffic volumes obtained in May 2017.

- Cumulative Conditions Analysis – The Cumulative Conditions scenario analyzes the proposed project's effects on transportation when viewed in connection with the effects of reasonably foreseeable future projects. Outside of the City of Fresno sphere-of-influence (SOI), the analysis uses a the Fresno Council of Governments (Fresno COG) 2035 population and employment forecasts as land use inputs for future development in the region. The analysis also includes reasonably foreseeable roadway network changes consistent with the City of Fresno General Plan.

STUDY AREA

The study area was developed with input from the City of Fresno and includes the following roadway segments and their intersections:

- Jensen Avenue (Project Access to Fruit Avenue)
- Cornelia Avenue (Church Avenue to North Avenue)
- Brawley Avenue (Church Avenue to North Avenue)
- Marks Avenue (Church Avenue to North Avenue)
- West Avenue (Church Avenue to North Avenue)

ANALYSIS METHODOLOGY

TRAVEL DEMAND FORECASTING

This study uses a modified version of the Fresno COG regional travel demand forecasting (TDF) model used for the City of Fresno General Plan Update. All traffic volume forecasts were adjusted, using the difference method, to account for the difference between existing counts and the base year model forecasts.

TRAFFIC OPERATIONS

The analysis of traffic operations was conducted for roadway segments and their intersections.

Study Intersections

Traffic operations at the study intersections were analyzed using procedures and methodologies contained in the Highway Capacity Manual (HCM), Transportation Research Board, 2010. These methodologies were applied using Synchro software package (Version 9), developed by Trafficware. **Table 1** displays the delay range associated with each LOS category for signalized and unsignalized intersections based on the HCM.

TABLE 1:
INTERSECTION LEVEL OF SERVICE CRITERIA

Level of Service	Average Control Delay [seconds/vehicle]		Description
	Signalized	Stop Controlled	
A	< 10.0	< 10.0	Very low delay. At signalized intersections, most vehicles do not stop.
B	10.1 to 20.0	10.1 to 15.0	Generally good progression of vehicles. Slight delays.
C	>20.1 to 35.0	>15.1 to 25.0	Fair progression. At signalized intersections, increased number of stopped vehicles.
D	>35.1 to 55.0	>25.1 to 35.0	Noticeable congestion. At signalized intersections, large portion of vehicles stopped.
E	>55.1 to 80.0	>35.1 to 50.0	Poor progression. High delays and frequent cycle failure.
F	>80.0	>50.0	Oversaturation. Forced flow. Extensive queuing.

Source: Highway Capacity Manual (Transportation Research Board, 2010)

The HCM methodology determines the level of service (LOS) at signalized intersections by comparing the average control delay (i.e. delay resulting from initial deceleration, queue move-up time, time actually stopped, and final acceleration) per vehicle at the intersection to the established thresholds. The LOS for traffic signal controlled and all-way stop controlled intersections is based on the average control delay for the entire intersection. For side-street stop-controlled intersections, the LOS is evaluated separately for each individual movement with delay reported for the critical (i.e., worst case) turning movement.

Study Roadway Segments

Roadway segment traffic operations was conducted using the roadway segment analysis methodology applied for the City's General Plan update. Traffic volumes on the study roadway segments are used to determine the overall usage and congestion. Note that the roadway segment analysis is based on traffic counts taken at a single location, which was intended to be representative of the entire segment. A link connects two intersections; a segment is a series of links. The segments used in this analysis were developed based on where a series of links had common physical and traffic conditions. Typically, intersection operations control the perception of drivers on a roadway facility, since drivers experience delay at intersections.

Traffic operations on the study roadway segments were measured using a qualitative measure called level of service (LOS). LOS is a general measure of traffic operating conditions whereby a letter grade, from A (the best) to F (the worst), is assigned. These grades represent the perspective of drivers and are an indication of the comfort and convenience associated with driving, as well as speed, travel time, traffic interruptions, and freedom to maneuver. The LOS grades are generally defined as follows:

- **LOS A** represents free-flow travel with an excellent level of comfort and convenience and the freedom to maneuver.
- **LOS B** has stable operating conditions, but the presence of other road users causes a noticeable, though slight, reduction in comfort, convenience, and maneuvering freedom.
- **LOS C** has stable operating conditions, but the operation of individual users is substantially affected by the interaction with others in the traffic stream.
- **LOS D** represents high-density, but stable flow. Users experience severe restriction in speed and freedom to maneuver, with poor levels of comfort and convenience.
- **LOS E** represents operating conditions at or near capacity. Speeds are reduced to a low but relatively uniform value. Freedom to maneuver is difficult with users experiencing frustration and poor comfort and convenience. Unstable operation is frequent, and minor disturbances in traffic flow can cause breakdown conditions.
- **LOS F** is used to define forced or breakdown conditions. This condition exists wherever the volume of traffic exceeds the capacity of the roadway. Long queues can form behind these bottleneck points with queued traffic traveling in a stop-and-go fashion.

The LOS was calculated for each study roadway segment to evaluate the quality of traffic conditions. LOS was determined by comparing traffic volumes for each roadway segments, incorporating roadway functional classification, and number of travel lanes, presence of two-way left-turn lanes with peak hour LOS capacity thresholds. These thresholds are shown in **Table 2** and were calculated based on the methodology contained in the Highway Capacity Manual (HCM) (Transportation Research Board 2000). The HCM methodology is the prevailing measurement standard used throughout the United States and is recommended for use in the City of Fresno *Traffic Impact Study Report Guidelines* (2009). In addition to LOS, the ratio of volume-to-capacity is also provided. The volume-to-capacity ratio is provided for information purposes to provide the reader with a general sense of how close the peak hour traffic volume on a subject roadway segment is to the assigned capacity of the roadway. A volume-to-capacity ration of 1.00 would signify a roadway at capacity.

TABLE 2:
ROADWAY FUNCTIONAL CLASS AND PEAK HOUR LOS THRESHOLDS

Functional Class	Median	Lanes	Peak Hour Level of Service Capacity Thresholds				
			A	**B**	**C**	**D**	**E**
Freeway	N/A[1]	4	2,720	4,460	6,630	7,720	8,630
		3+Aux[2]	2,360	3,860	5,640	6,730	7,530
		3	2,000	3,270	4,660	5,740	6,430
		2+Aux	1,650	2,700	3,850	4,760	5,340
		2	1,300	2,130	3,050	3,790	4,260
State Expressway	Divided	6	2,410	3,960	5,730	7,450	8,450
		4	1,610	2,650	3,810	4,960	5,630
		2	810	1,340	1,890	2,470	2,810
City Expressway	Raised Median	6			1,860	6,170	6,520
		5			1,520	5,110	5,430
		4			1,180	4,050	4,340
		2			520	1,910	2,160
Super Arterial	Raised Median	6				4,910	6,240
		5				4,040	5,195
		4				3,170	4,150
Arterial	Raised Median	8			2,120	7,070	7,490
		6			1,560	5,270	5,610
		5			1,280	4,370	4,670
		4			1,000	3,470	3,730
		3			720	2,555	2,795
		2			440	1,640	1,860
	TWLTL	4			940	3,290	3,550
		2			420	1,550	1,760
	Undivided	4			770	2,740	2,980
		2			340	1,270	1,480
Collector	TWLTL	4			940	3,290	3,550
		2			420	1,550	1,760
	Undivided	4			770	2,740	2,980
		2			340	1,270	1,480
One-Way	Undivided	3		1,960	2,240	2,430	2,610
		2		1,250	1,490	1,620	1,740
		1		550	740	800	870
Rural State Highway	Undivided	2	310	570	1,020	1,730	2,470
Rural Arterial	Divided	4			1,950	3,580	3,780
	Undivided	2			570	1,230	1,310
Rural Collector/Local	Undivided	2			700	930	1,000

Notes:
1 N/A – Not applicable for operational class
2 Aux – Auxiliary Lane
– LOS is not achievable because of type of facility.
Source: Fehr & Peers 2012.

ANALYSIS ASSUMPTIONS AND METHODOLOGY LIMITATIONS

Key assumptions made in the process of this study include:

- Existing traffic counts collected in May 2017 and are representative of existing conditions and included passenger cars and light trucks, and heavy vehicles. The share of heavy vehicles entering the study intersections is outlined below for AM and PM peak hour conditions:

Intersection With Jensen Avenue	AM	PM
Cornelia Avenue	21%	6%
Brawley Avenue	25%	5%
Marks Avenue	10%	5%
West Avenue	12%	5%

Travel Demand Forecasting Limitations

As noted earlier, this study uses a modified version of the Fresno COG regional travel demand forecasting (TDF) model used for the City of Fresno General Plan Update, which was calibrated and validated for the that analysis. While this makes the TDF model the most valid and capable tool for forecasting future traffic volumes, the TDF model has some limitations in its application for this study. For example, the model was designed to model traffic for regional air quality conformity, and typically only includes the regional roadway network within Fresno County. The TDF model does not included roadway network and traffic analysis zone detail in adjacent counties like Madera County, Merced County, San Benito County, Kings County, and Tulare County. Refinements to the traffic model's traffic analysis zone connections to the roadway network were made to better model development access and traffic assignment. In addition, local roadways were added to the model within the project study area to be able to generate future travel forecasts.

While the model was calibrated and is able to closely replicate existing roadway segment volumes, the model is more limited in its ability to forecast subtle differences in the operational characteristics of the transportation system. With multiple routes available, drivers may choose to use different routes for the same trip depending on traffic signal progression, congestion, and individual preferences. While the model accounts for segment level congestion, it is more limited in its ability to directly account for changes in routes due to signal operations, merge, diverge, and weaving operations at freeway interchanges, and driver preferences.

To account for some of these limitations, this study uses a process known as the "difference method" to develop traffic volume forecasts. This approach adjusts raw model volume forecasts by adding the forecasted incremental growth from the TDF model to the existing traffic counts.

Traffic Operations Limitations

This study uses analysis methodologies that are consistent with the City of Fresno's *Traffic Impact Study Report Guidelines* (2009). However, the roadway segment methodology has certain limitations. For example, while the development of the roadway segment capacity thresholds in **Table 2** considered corridor level inputs specific to City of Fresno roadways, such as median type, signal density, and signal cycle length for arterial-level facilities, segment-level analysis does not account for the full effect of subtle operational characteristics of the corridor operations like vehicle queuing that may occur due to a queue spilling out of or blocking a turn pocket at an intersection or vehicle queues spilling back from adjacent intersections or operations of arterial-level facilities with freeway facilities at interchange locations.

In addition, this methodology does not consider the potential impact on walking, bicycling, and transit. Pedestrians, bicyclists, and transit riders are all users of the roadway system but may not be fully recognized in the traffic operations analysis and the calculation of LOS. The LOS thresholds in **Table 2** are based on driver's comfort and convenience. Identifying the need for roadway improvements based on the resulting roadway LOS can have unintended impacts to other modes such as increasing the walking time for pedestrians. In evaluating the roadway system, a lower vehicle LOS may be desired when balanced against other community values related to resource protection, social equity, economic development, and consideration of pedestrians, bicyclists, and transit users. To address some of these limitations, peak hour intersection operations are also conducted.

REGULATORY SETTING

This section summarizes the transportation policies, laws, and regulations that apply to the proposed project. This information provides context for the impact discussion related to the project's consistency with applicable regulatory conditions. Further, this study identifies impacts to traffic operations by comparing roadway LOS analysis results against LOS policies set forth by the City of Fresno.

Federal Plans, Policies, Regulations, Laws

No federal plans, policies, regulations or laws pertaining to transportation are applicable.

State Plans, Policies, Regulations, and Laws

Senate Bill 743

On September 27, 2013, Governor Brown signed Senate Bill 743 (SB 743), which made several changes to the California Environmental Quality Act (CEQA) for project located in areas served by transit. The changes direct the Governor's Office of Planning and Research (OPR) to develop a new approach for analyzing the transportation impacts under CEQA, which may eliminated vehicle delay and level of service as CEQA impacts for many parts of California. SB 743 also creates a new exemption for certain projects that are consistent with a Specific Plan and, eliminates the need to evaluate aesthetic and parking impacts of a project, in some circumstances. The guidelines will likely go into effect in late 2017/early 2018 after the Natural Resource Agency completes its rulemaking process, unless OPR elects to allow an opt-in period of one to two years.

City of Fresno

The City of Fresno provides for the mobility of people and goods within the city.

City of Fresno 2035 General Plan

The City of Fresno adopted the Fresno General Plan in December 2014 as an update to the previous 2002 Fresno General Plan. The Fresno General Plan serves as the community's guide for the continued development, enhancement, and revitalization of the Fresno metropolitan area.

The General Plan includes the following policies related to transportation and circulation that are relevant to this analysis:

- **MT-2-i:** Transportation Impact Studies. Require a Transportation Impact Study (currently named Traffic Impact Study) to assess the impacts of new development projects on existing and planned streets for projects meeting one or more of the following criteria, unless it is determined by the City Traffic Engineer that the project site and surrounding area already has appropriate multi-modal infrastructure improvements.
  - When a project includes a General Plan amendment that changes the General Plan Land Use Designation.
  - When the project will substantially change the off-site transportation system (auto, transit, bike or pedestrian) or connection to the system, as determined by the City Traffic Engineer.
  - Transportation impact criteria are tiered based on a project's location within the City's Sphere of Influence. This is to assist with areas being incentivized for development. The four zones, as defined on Figure MT-4, are listed below. The following criteria apply:
    - Traffic Impact Zone I (TIZ-I): TIZ-I represents the Downtown Planning Area. Maintain a peak hour LOS standard of F or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 200 or more peak hour new vehicle trips.
    - Traffic Impact Zone II (TIZ-II): TIZ-II generally represents areas of the City currently built up and wanting to encourage infill development. Maintain a peak hour LOS standard of E or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 200 or more peak hour new vehicle trips.
    - Traffic Impact Zone III (TIZ-III): TIZ-III generally represents areas near or outside the City Limits but within the SOI as of December 31, 2012. Maintain a peak hour LOS standard

of D or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 100 or more peak hour new vehicle trips.

- Traffic Impact Zone IV (TIZ-IV): TIZ-IV represents the southern employment areas within and planned by the City. Maintain a peak hour LOS standard of E or better for all intersections and roadway segments. A TIS will be required for all development projected to generate 200 or more peak hour new vehicle trips.

City of Fresno Traffic Impact Study Report Guidelines

The City of Fresno's Traffic Impact Study Report Guidelines establish general procedures and requirements for the preparation of traffic impact studies associated with development within the city. The guidelines are intended to be a checklist to ensure regular study items are not missed, but are not intended to be prescriptive to the point of eliminating professional judgment.

The guidelines include the preferred traffic analysis methodologies, significance criteria, and documentation requirements. This study is conducted using the preferred analysis methodologies and significance criteria as outlined in the guidelines.

City of Fresno Bicycle Active Transportation Plan

The City of Fresno Active Transportation Plan (ATP) is a comprehensive guide outlining the vision of active transportation in the City of Fresno, and a roadmap for achieving that vision. ***County of Fresno 2000 General Plan***

The County of Fresno 2000 General Plan includes the following policy related to transportation and circulation that are relevant to this analysis:

- **Policy TR-A.2:** The County shall plan and design its roadway system in a manner that strives to meet Level of Service (LOS) D on urban roadways within the spheres of influence of the cities of Fresno and Clovis and LOS C on all other roadways in the county.

SIGNIFICANCE CRITERIA

In accordance with CEQA, the effects of a project are evaluated to determine if they will result in significant adverse impact on the environment. The criteria used to determine the significance of an impact to transportation and traffic are based on the Environmental Checklist in Appendix G of the State CEQA Guidelines. Accordingly, transportation and traffic impacts resulting from the proposed project are considered significant through application of the following thresholds of significance.

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

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 air 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 regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

As allowed with the passage of CA Assembly Bill 2419 (Bowler), the Fresno COG Policy Board rescinded the Congestion Management Program on September 25, 1997 at the request of the local member agencies. Therefore, no roadway segment in Fresno is identified in a county congestion management program. This issue will not be discussed further in this EIR.

City of Fresno

The proposed project is located in TIZ III as defined by Policy MT-2-1 of the City of Fresno General Plan. Therefore, the project would cause a significant impact to the roadway system if it would result in the following conditions:

- ► Cause a roadway segment operating at LOS D or better to operate at LOS E or worse

Transit, Bicycle, and Pedestrian Facilities

The City of Fresno *Traffic Impact Study Report Guidelines* do not currently have thresholds for impacts on transit, bicycle, and pedestrian facilities.

For purposes of this study, the project would cause a significant impact to the transit system, bicycle network, and/or pedestrian facilities if it would:

- ► Disrupt or interfere with existing or planned public transit services or facilities
- ► Create an inconsistency with policies concerning transit systems set forth in the City of Fresno General Plan or other applicable adopted policy document
- ► Disrupt or interfere with existing or planned bicycle/pedestrian facilities
- ► Result in unsafe conditions for pedestrians, including unsafe pedestrian/bicycle or pedestrian/vehicle conflicts

- Result in unsafe conditions for bicycles, including unsafe bicycle/pedestrian or bicycle/vehicle conflicts
- Create an inconsistency with policies related to bicycle or pedestrian systems set forth in the City of Fresno General Plan, the City of Fresno Bicycle, Pedestrian, and Trails Master Plan, or other applicable adopted policy document

CHAPTER 2. EXISTING CONDITIONS

This chapter describes the existing travel characteristics and the condition of the roadway, transit, bicycle and pedestrian systems, goods movement, and aviation in the study area. This study uses the existing conditions as the baseline to measure the potential impacts of proposed project.

TRAVEL CHARACTERISTICS

The City of Fresno is the fifth-largest city in California with a population of about 500,100 in 2011. Fresno County has a population of 940,220 people making it the tenth-largest county in the state and is expected to reach 1.1 million people by 2020 (City of Fresno 2012). Located in the California's San Joaquin Valley, Fresno is equidistance from the major population centers in Northern and Southern California with easy access to the California Central Coast and Sierra Nevada.

The 2000-2001 California Household Travel Survey provides information on residents travel patterns including the purpose and method of travel in Fresno County. For convenience, travel survey responses are grouped into the following three general categories:

- Home-Based Work: Trips may begin or end at a residence and represent travel between a residence and place of work.
- Home-Based Other: Trips may begin or end at a residence and include school trips, shopping trips, or trips for recreation.
- Non-Home-Based: Trips do not begin or end at a residence. These trips would include a trip from work to a restaurant during lunch

According to the 2000-2001 California Household Travel Survey, Home-Based Work trips account for 20 percent of trips. In general, Home-Based Work trips occur during the morning and evening commute periods and are predominately made by automobile. There is less flexibility in the departure and arrival time for work trips, due to traditional work schedules. Other trip purposes account for about 80 percent of travel and are more evenly distributed throughout the day.

Most residents traveled from home to work by automobile (about 98 percent) with about 15 percent of those being shared ride (i.e., carpool) trips. Shared ride, transit, walk, and bike trips were significantly higher for non-work trips (Home-Based Other and Non-Home-Based purposes).

The average weekday person trip length for Home-Based Work was about 20 minutes compared to Home-Based Other trips (15 minutes), and Non-Home-Based trips (16 minutes). On average, non-work trips are about 30 percent shorter than work trips and have a higher percentage of transit walk and bike use. This is reasonable given trip purpose, trip scheduling flexibility, and proximity of trip origin and trip destination.

The 2000-2001 California Household Travel Survey also shows that about 12 percent of Fresno County households did not have access to a vehicle and therefore are dependent on transit, walking, and bicycling for mobility.

ROADWAY NETWORK

The roadway network in the city is generally a traditional grid-based network of north/south and east/west streets. Nearly every major street in the Fresno metropolitan area is regularly spaced at half-mile intervals. The grid system provides high levels of accessibility (i.e., travel choices) for travelers. The study facilities are listed below:

Intersections

- Jensen Avenue/Cornelia Avenue
- Jensen Avenue/Brawley Avenue
- Jensen Avenue/Marks Avenue
- Jensen Avenue/West Avenue

Roadway Segments

- Jensen Avenue – Project Access to Cornelia Avenue
- Jensen Avenue – Cornelia Avenue to Brawley Avenue
- Jensen Avenue – Brawley Avenue to Marks Avenue
- Jensen Avenue – Marks Avenue to West Avenue
- Jensen Avenue – West Avenue to Fruit Avenue
- Cornelia Avenue – Church Avenue to Jensen Avenue
- Cornelia Avenue – Jensen Avenue to North Avenue
- Brawley Avenue – Church Avenue to Jensen Avenue
- Brawley Avenue – Jensen Avenue to North Avenue
- Marks Avenue – Church Avenue to Jensen Avenue
- Marks Avenue – Jensen Avenue to North Avenue
- West Avenue – Church Avenue to Jensen Avenue
- West Avenue – Jensen Avenue to North Avenue

Roadway Characteristics

All of the study roadways outlined above are two lanes. Except for Jensen Avenue, which is classified as an arterial, all of the other study roadways are collectors with 55 mile per hour posted speed limits. Jensen Avenue has striped and paved shoulders, while Cornelia Avenue, Brawley Avenue, Marks Avenue, and West

Avenue do not. All of the study intersection have side-street stop control with Jensen Avenue being the uncontrolled facility.

TRAFFIC OPERATIONS

Table 3 summarizes existing conditions AM and PM peak hour Level of Service (LOS) for the study intersections. As shown, all of the study intersections will operate acceptably at LOS C or better during both the AM and PM peak hours.

TABLE 3:
PEAK HOUR INTERSECTION LEVEL OF SERVICE – EXISTING CONDITIONS

Intersection	Traffic Control	LOS / Delay (seconds)	
		AM	PM
1. Jensen Avenue/Cornelia Avenue	SSSC	A (B) / 3 (12)	A (B) / 4 (14)
2. Jensen Avenue/Brawley Avenue	SSSC	A (B) / 4 (12)	A (B) / 2 (13)
3. Jensen Avenue/Marks Avenue	SSSC	A (B) / 4 (14)	A (C) / 5 (16)
4. Jensen Avenue/West Avenue	SSSC	A (B) / 1 (12)	A (B) / 1 (13)

Notes: SSSC = side-street stop control
Source: Fehr & Peers, 2017

The AM and PM peak hour intersection turning movement traffic volumes used for the analysis presented in **Table 3** are included in the technical appendix.

Table 4 summarizes existing conditions AM and PM peak hour Level of Service (LOS) for the study roadways. As shown, all of the study roadways will operate at LOS D or better during both the AM and PM peak hours. The County roadway segments, which includes Cornelia Avenue and Brawley Avenue, will operate acceptably at LOS C.

Compared to the intersection analysis results, the roadway segment analysis results in more conservative (i.e., on the high side) LOS, given that drivers perception of travel and delay while traveling along the study corridor are heavily influenced by conditions experience at the study intersections.

TABLE 4:
PEAK HOUR ROADWAY SEGMENT LEVEL OF SERVICE – EXISTING CONDITIONS

Intersection		Volume		Lanes	Existing			
					AM		PM	
		AM	PM		VC	LOS	VC	LOS
Jensen Avenue	Project Access to Cornelia Avenue	257	337	2	0.17	C	0.23	C
	Cornelia Avenue to Brawley Avenue	268	373	2	0.18	C	0.25	D
	Brawley Avenue to Marks Avenue	427	468	2	0.29	D	0.32	D
	Marks Avenue to West Avenue	405	483	2	0.27	D	0.33	D
	West Avenue to Fruit Avenue	412	499	2	0.28	D	0.34	D
Cornelia Avenue	Church Avenue to Jensen Avenue	84	112	2	0.06	C	0.08	C
	Jensen Avenue to North Avenue	83	119	2	0.06	C	0.08	C
Brawley Avenue	Church Avenue to Jensen Avenue	93	83	2	0.06	C	0.06	C
	Jensen Avenue to North Avenue	71	39	2	0.05	C	0.03	C
Marks Avenue	Church Avenue to Jensen Avenue	168	201	2	0.11	C	0.14	C
	Jensen Avenue to North Avenue	96	127	2	0.06	C	0.09	C
West Avenue	Church Avenue to Jensen Avenue	44	55	2	0.03	C	0.04	C
	Jensen Avenue to North Avenue	25	41	2	0.02	C	0.03	C

Notes: SSSC = side-street stop control
Source: Fehr & Peers, 2017

Public Transportation

Public transportation in the city consists of the following services and facilities:

- Public bus service
- Express bus service
- Demand-response paratransit
- Passenger rail service

Fresno Area Express (FAX) is the predominant transit provider in the city. FAX runs 20 routs and provides over 17,000,000 annual passenger boardings, averaging about 41,000 passenger trips per day. The entire FAX system runs about 1,000 bus operations per day. Ridership trends in recent years have shown an increase in the number of people using transit, which may be attributable to poor economic conditions and the rising cost of travel.

Handy Ride is a demand-response service for seniors and persons with disabilities, as required by the Americans with Disabilities Act. This paratransit service serves up to 12,500 eligible individuals in the FAX service area and provided about 240,000 passenger rides in fiscal year 2010.

The Fresno County Rural Transit Agency (FCRTA) and Amtrak also provide services for regional travel outside of the Fresno-Clovis Metropolitan Area. FCRTA provides service to many of the unincorporated communities in Fresno County such as Coalinga and Mendota (FCRTA 2012). The San Joaquin Line is one of Amtrak's passenger rail services with connections between the San Joaquin Valley, the Sacramento Valley, the San Francisco Bay Area, and Los Angeles. Greyhound provides similar (more frequent) bus service to these regions.

Bicycle and Pedestrian Circulation

The city is generally flat, which provide a favorable environment for bicycling and walking as a mode of transportation. The City of Fresno ATP, which was completed in October 2016, provides regarding the City of Fresno's bicycle and pedestrian circulation system.

Except for an uncontrolled pedestrian crossing on the east leg of the Jensen Avenue/Valentine Avenue intersection, there are no designated bicycle and pedestrian facilities at the study intersections, which is consistent with the land use in the study area. A Class II bike lane is planned on Jensen Avenue and a Class I bike path is planned on Marks Avenue. In addition, sidewalks are planned on Jensen Avenue and West Avenue.

In addition, the study area has a low bicycle and pedestrian index, as documented in the City of Fresno Active Transportation Plan (October 2016). This is an indication of a low level trips being made by walking and biking, but also consistent with the intensity of land use in the study area.

As documented in the City of Fresno Active Transportation Plan (October 2016), the study area has a low bicycle and pedestrian index,

Aviation

The City of Fresno manages the Fresno Yosemite International Airport (FYI). The airport is located in northeast Fresno just southwest of Clovis in between Highways 168 and 180. There are two runways, each of which is 7,205 feet long and 100 feet wide. There are 174 aircraft based at FYI with an average of 371 daily aircraft operations in 2012. In 2011, the two runways served about 1.2 million passengers and airport officials expect that number to grow in the future. There are also two other general aviation airports (i.e., Chandler and Sierra Sky Park) and four heliports, including McCarthy Ranch, Community Regional Medical Center, Valley Medical Center, and PG&E Service Center in the city (AirNav 2012).

CHAPTER 3. PROJECT ANALYSIS

This chapter presents the transportation analysis for existing plus project conditions. This scenario analyzes the impacts of the proposed project on existing conditions.

PROJECT DESCRIPTION

The proposed project includes a general plan amendment and rezone of land adjacent to the City of Fresno wastewater treatment plan to accommodate relocation of the existing Darling rendering facility, which is located at 795 W. Belgravia Avenue. The proposed project would be located approximately 4 miles west of the current facility.

The proposed project would generally be located on the southwest corner of the Jensen Avenue/Cornelia Avenue intersection. As proposed, the project would employ up to 70 full-time employees that would work in three shifts with a maximum of 25 employees on site per shift. The facility would typically operate 24 hours per day, up to seven days per week. The project is anticipated to generate an average of 150 truck trips per day. The project would also include up to 36 parking spaces for employee and visitor parking.

Project access is proposed on Jensen Avenue and Cornelia Avenue. The Jensen Avenue access will be for trucks and the Cornelia Avenue access will be for employees and visitors.

TRIP GENERATION

Table 5 summarizes daily, AM peak hour, and PM peak hour trip generation for the proposed project. Due to the unique characteristics of the project, we estimated trip generation based on the Darling Ingredients Inc. Operational Statement. As shown in Table 5, the proposed project is expected to generate about 273 trips per day with 36 trips occurring in the AM peak hour and 28 trips occurring in the PM peak hour. Truck trips are expected to represent about 55 percent of daily vehicle trips, 36 percent of AM peak hour trips, and 28 percent of PM peak hour trips.

TABLE 5:
PROPOSED PROJECT EMPLOYEE AND TRUCK TRIP GENERATION

<table>
<tr><th rowspan="4">User</th><th colspan="2" rowspan="2">Quantity[1]</th><th rowspan="4">Vehicle Occupancy [Persons/Vehicle][2]</th><th rowspan="4">Vehicles per Day</th><th colspan="7">Trip Generation</th></tr>
<tr><th rowspan="3">Daily[3]</th><th colspan="6">Peak Hour[4]</th></tr>
<tr><th rowspan="2">Trucks per Day</th><th rowspan="2">Employees</th><th colspan="3">AM</th><th colspan="3">PM</th></tr>
<tr><th>Total</th><th>In</th><th>Out</th><th>Total</th><th>In</th><th>Out</th></tr>
<tr><td>Employee</td><td></td><td>70</td><td>1.14</td><td>61</td><td>123</td><td>23</td><td>17</td><td>6</td><td>21</td><td>9</td><td>12</td></tr>
<tr><td>Trucks</td><td>75</td><td></td><td>1.00</td><td>75</td><td>150</td><td>13</td><td>7</td><td>6</td><td>8</td><td>5</td><td>3</td></tr>
<tr><td colspan="4">Total</td><td>136</td><td>273</td><td>36</td><td>24</td><td>12</td><td>28</td><td>14</td><td>15</td></tr>
</table>

Notes:
[1] Source: Darling Ingredients Inc. Operation Statement
[2] 2000/2001 California Statewide Travel Survey - Average vehicle occupancy for Home-Based-Work trips.
[3] Daily Vehicle trips were developed by multiplying total vehicles by two to account for vehicles entering and exiting the project.
[4] Percent of daily vehicles and directional distribution occurring in AM and PM peak hours based on the Manufacturing land use category (ITE 140) from Trip Generation Manual, Institute of Transportation Engineers, 9th Edition. The percent of daily truck trips and directional distribution occurring in the AM and PM peak hours based on the Fontana Truck Trip Generation Study.
Source: Fehr & Peers, 2017

TRIP DISTRIBUTION

Table 6 summarizes the expected distribution of project trips. As shown, the distribution is expected to be different for employees and trucks. All trucks will use Jensen Avenue to access the project. However, employees will not be restricted and will likely use other routes to access the project, based on the origin of their trip. The distribution of employee trips was developed based on existing counts and the output for the modified version of the FresnoCOG travel forecasting model developed for the City of Fresno General Plan.

TABLE 6:
PROJECT TRIP DISTRIBUTION

Roadway	Travel To/From Each Roadway							
	Employees				Trucks			
	North	South	East	West	North	South	East	West
Jensen Avenue	-	-	98%[2]	-	-	-	100%	100%[3]
Cornelia Avenue	1%	100% / 1%[1]	-	-	-	-	-	-
Brawley Avenue	1%	1%	-	-	-	-	-	-
Marks Avenue	2%	2%			-	-	-	-
West Avenue	1%	1%	-	-	-	-	-	-

Notes:
[1]100 % of employee trips will use Cornelia Avenue and the project access. 1% of employee tips are forecast to use Cornelia Avenue south of the project access.
[2]Repersents percentage of employee trips just east of Jensen Avenue.
[3]Represents truck trips between the project access and Cornelia Avenue.
Source: Fehr & Peers, 2017

TRAFFIC FORECASTS

Traffic volume forecasts for the project analysis scenarios under existing and cumulative conditions were developed by adding the project trip generation from **Table 5** to the existing traffic counts and cumulative no project traffic volume forecasts, using the trip distribution for employee and truck trips shown in **Table 6**.

As discussed previously, the cumulative traffic volume forecast were developed using the modified version of the Fresno COG regional travel demand forecasting (TDF) model developed for the City of Fresno General Plan Update. All traffic volume forecasts were adjusted, using the difference method, to account for the difference between existing counts and the base year model forecasts. In the study area, the General Plan includes widening of Jensen Avenue east of Marks Avenue from two to four lanes and widening of Marks Avenue from two to four lanes north of Jensen Avenue.

CHAPTER 4. MITIGATION MEASURES

This chapter summarizes the potentially significant project-specific and cumulative impacts of the proposed project on the transportation system. Each impact is followed by a recommended mitigation measure to reduce the significance of identified impacts.

This section evaluates the significance of project impacts based on the thresholds of significance and analysis results presented in previous chapters.

Traffic Increase

Impact 1: The project would conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit.

This is a Significant Impact

As outlined above, the addition of project trips would worsen unacceptable operations under cumulative conditions. Implementation of the following mitigation would result is acceptable operations:

Jensen Avenue/Cornelia Avenue

- Install all-way stop control

Jensen Avenue/Brawley Avenue

- Install all-way stop control

Jensen Avenue/Marks Avenue

- Install traffic signal control with protected left-turn phasing and the following lane configurations:
    - One left-turn and a shared through/right-turn lane on the northbound approach
    - One left-turn lane, one through lane, and one right-turn lane on the southbound approach
    - One left-turn and a shared through/right-turn lane on the eastbound approach
    - One left-turn lane, one through lane, and one right-turn lane on the westbound approach

  The improvements outlined above would need to be coordinated with the planned widening of Jensen Avenue and Marks Avenue, which would include lane transitions through the intersection.

Jensen Avenue/West Avenue

- Install traffic signal control with protected left-turn phasing and the following lane configurations:
    - One left-turn and a shared through/right-turn lane on the northbound approach
    - One left-turn and a shared through/right-turn lane on the southbound approach
    - One left-turn lane, one through lane, and a shared through/right-turn lane on the eastbound approach
    - One left-turn lane, one through lane, and a shared through/right-turn lane on the westbound approach

The improvements outlined above would need to be coordinated with the planned widening of Jensen Avenue and Marks Avenue, which would include lane transitions through the intersection.

Since this impact occurs under cumulative conditions, the project would be responsible for its proportional share of the improvements identified above. At the discretion of the City of Fresno, fair share payment could occur in the form of payment of traffic impact fees, an ad-hoc fee payment, or construction of the improvement with reimbursement or fee credits. **Table 11** summarizes intersection operations under cumulative conditions with the mitigation discussed above.

TABLE 11:
PEAK HOUR INTERSECTION LEVEL OF SERVICE – CUMULATIVE PLUS PROJECT CONDITIONS (MITIGATED)

Intersection	Traffic Control	LOS / Delay (seconds) [1]			
		Cumulative Plus Project Condition		Cumulative Plus Project Condition (Mitigated)	
		AM	PM	AM	PM
1. Jensen Avenue/Cornelia Avenue	SSSC	A (D) / 8 (27)	**B (F) / 12 (72)**	B / 13	D / 31
2. Jensen Avenue/Brawley Avenue	SSSC	A (C) / 5 (23)	**A (F) / 7 (52)**	B / 14	C / 24
3. Jensen Avenue/Marks Avenue	Signal	**F (F) / >180 (>180)**	**F (F) / >180 (>180)**	D / 44	D / 36
4. Jensen Avenue/West Avenue	Signal	**F (F) / >180 (>180)**	**F (F) / >180 (>180)**	C / 26	C / 30

Notes: SSSC = side-street stop control, **Bold** indicates unacceptable operations
[1]For side-street stop controlled intersections, the delay and LOS for the most-delayed individual movement is shown in parentheses next to the average intersection delay and LOS. All results are rounded to the nearest second.
Source: Fehr & Peers, 2017

Residual Significance: *Less than Significant*

Congestion Management Program

Impact 2 **The project would not 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.**

The passage of California Assembly Bill 2419 in 1996 allowed counties to "opt out" of the California Congestion Management Program, reference above, if a majority of local governments elected to exempt themselves from California's congestion management plans. On September 25, 1997, the Fresno COG Policy Board rescinded the Fresno County Congestion Management Program at the request of the local member agencies. Therefore, this impact criteria is not applicable and this impact is less than significant.

Residual Significance: *Less than Significant*

Air Traffic Patterns

Impact 3 **The project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.**

Residual Significance: *Less than Significant*

Hazards

Impact 4 **The project would not substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).**

Implementation of the project under existing conditions would not impact study roadway or intersection operation, based on established significance criterial. In addition, the mitigation discussed under Impact 1, would improve operations for non-project traffic under cumulative conditions.

Residual Significance: *Less than Significant*

Emergency Access

Impact 5 The project would not result in inadequate emergency access

The project include two access locations. One access on Jensen Avenue for trucks and one access on Cornelia Avenue for employees and visitors. In addition, the project will be constructed based on prevailing design standards related to roadway infrastructure.

Residual Significance: Less than Significant

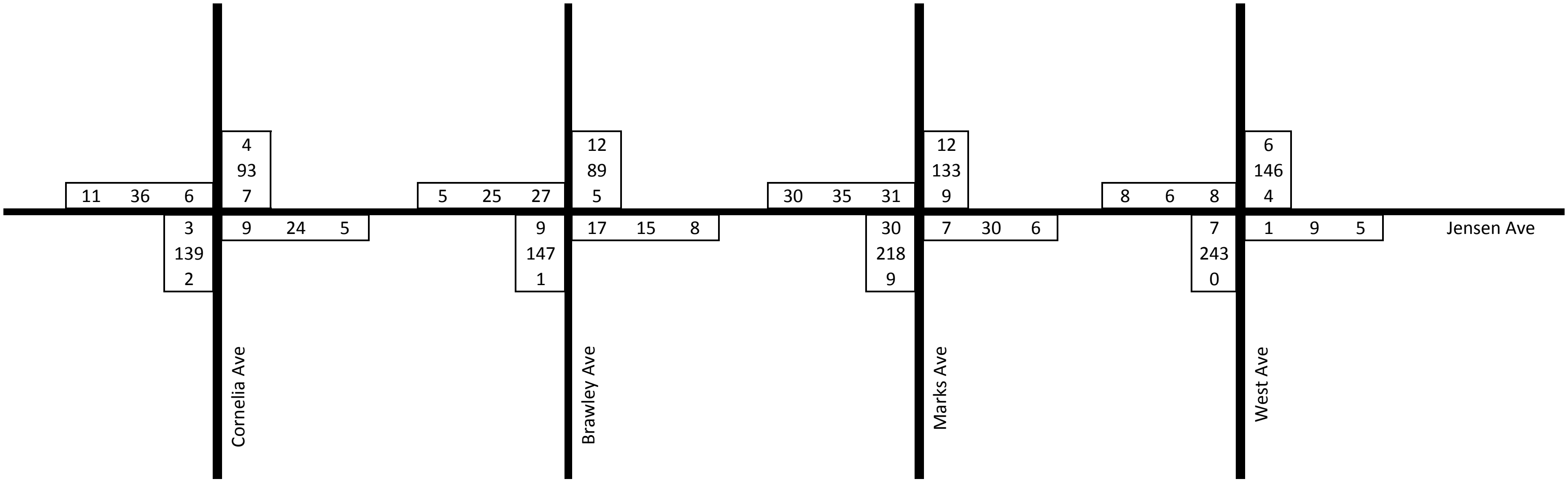
Conflict with Alternative Transportation

Impact 6 The project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

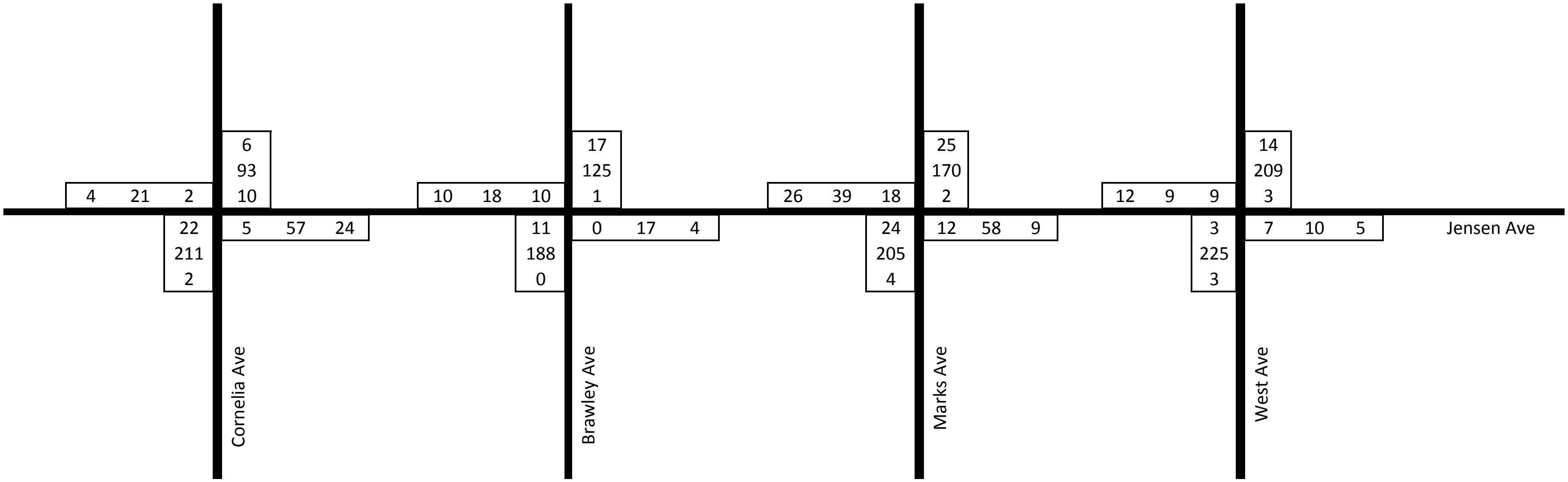
Residual Significance: Less than Significant

TECHNICAL APPENDIX

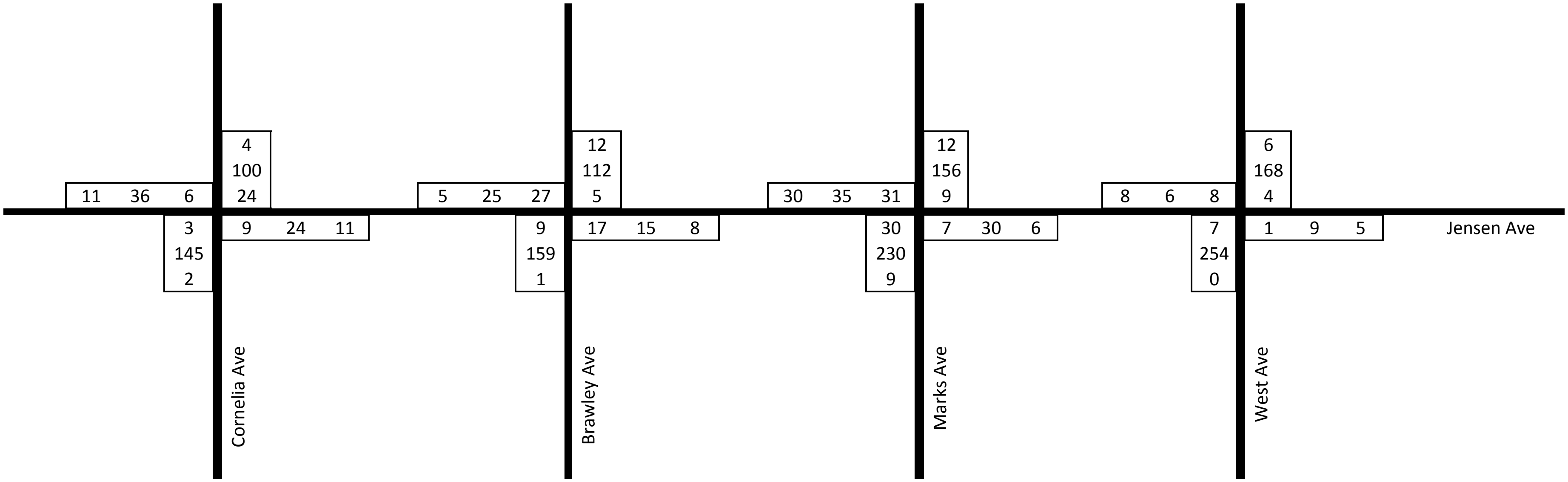
Existing AM Peak Hour



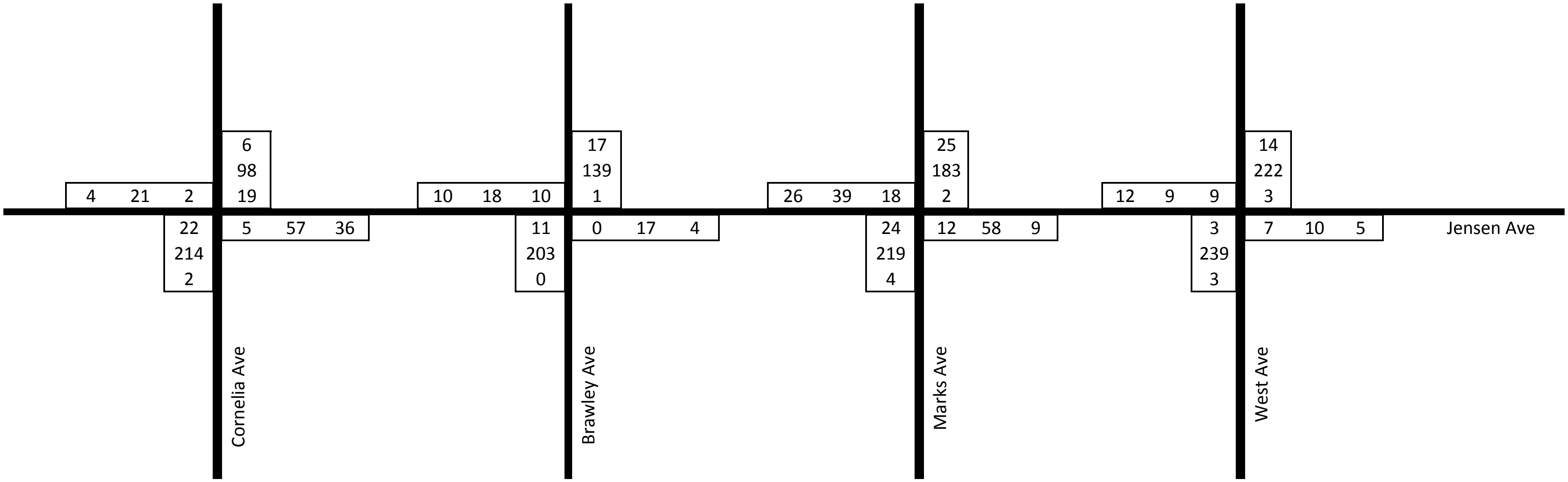
Existing PM Peak Hour



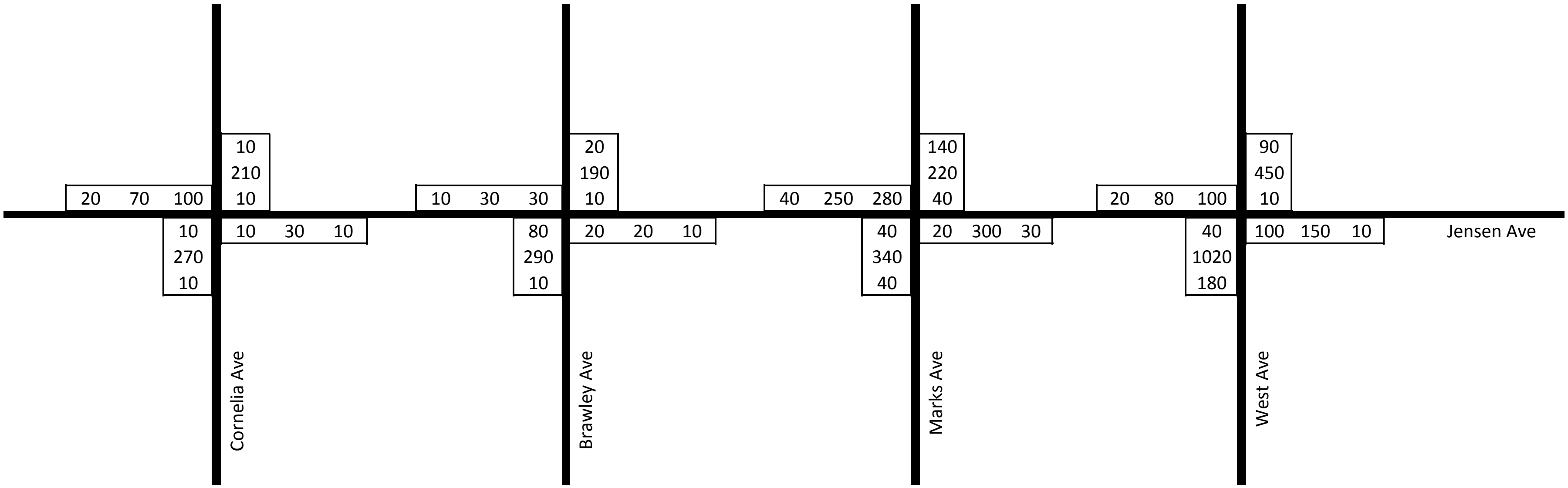
Existing + Project AM Peak Hour



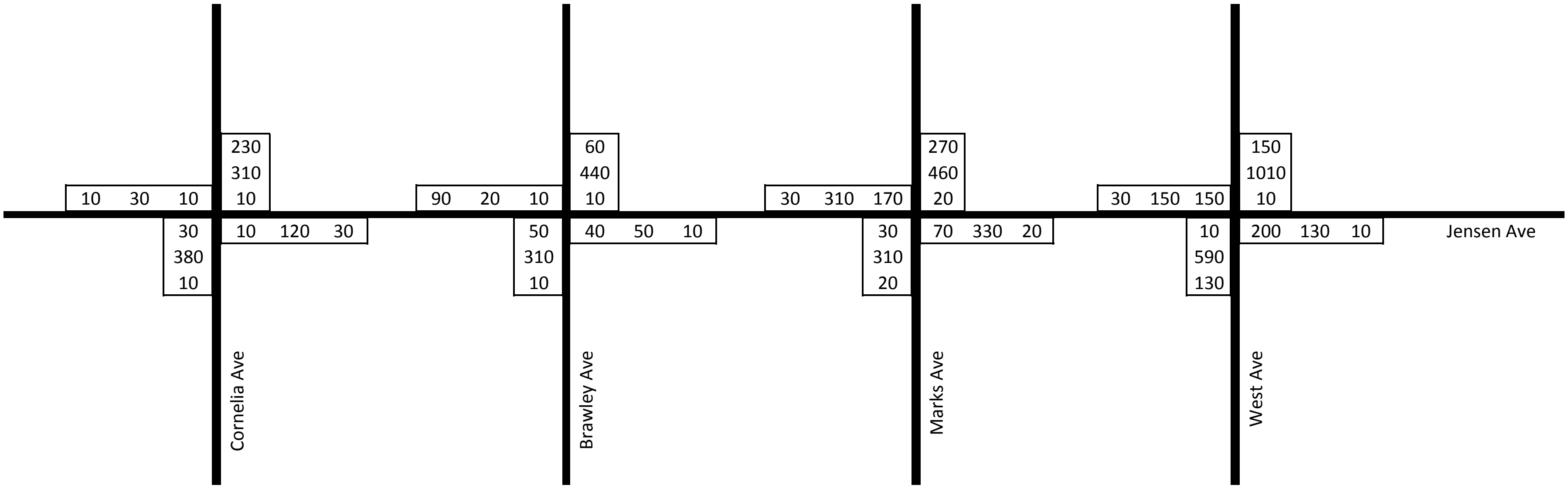
Existing + Project PM Peak Hour



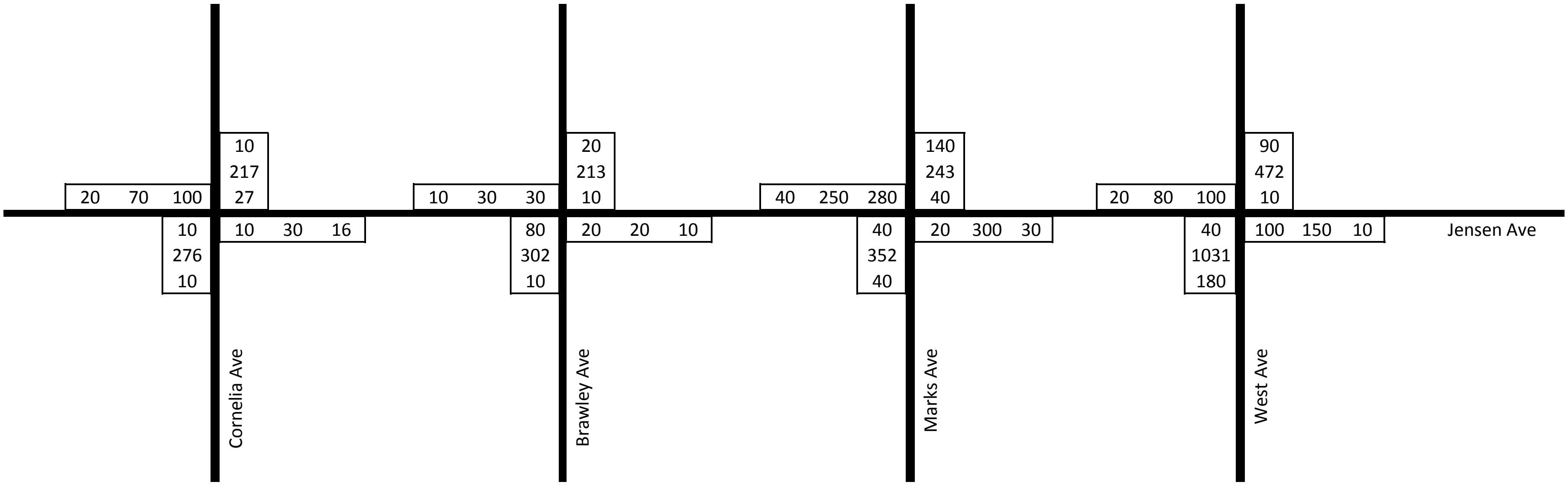
Cumulative AM Peak Hour



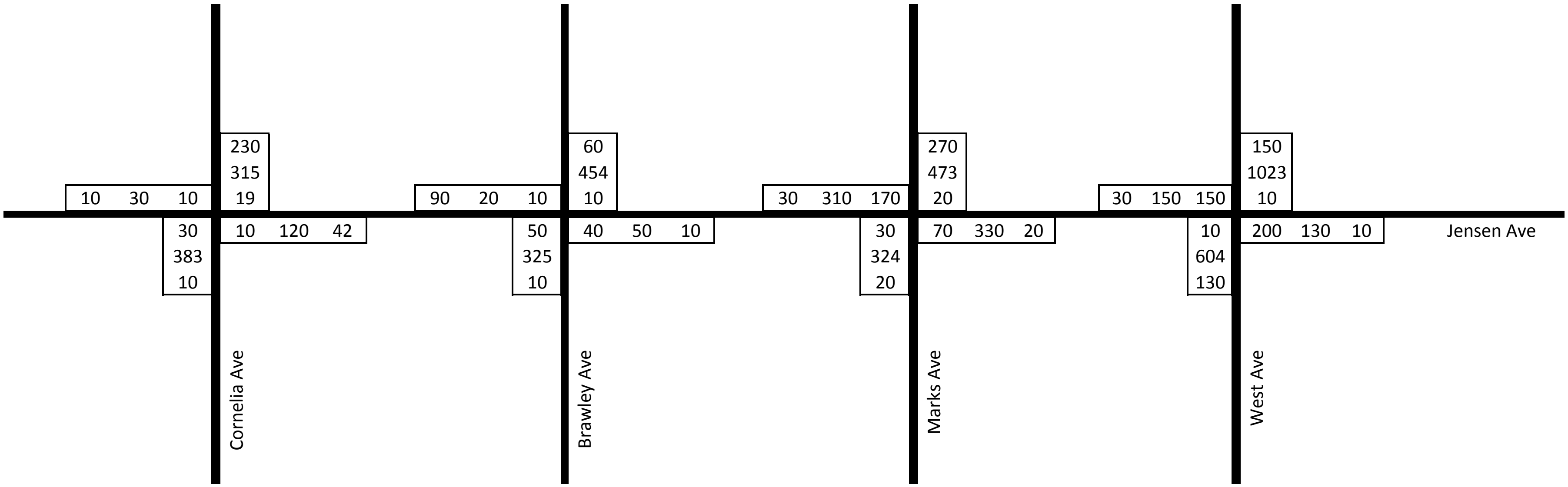
Cumulative PM Peak Hour



Cumulative + Project AM Peak Hour



Cumulative + Project PM Peak Hour



Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	139	2	7	93	4	9	24	5	6	36	11
Future Vol, veh/h	3	139	2	7	93	4	9	24	5	6	36	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	21	21	21	21	21	21	21	21	21	21	21	21
Mvmt Flow	4	178	3	9	119	5	12	31	6	8	46	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	124	0	0	181	0	0	350	329	179	346	328	122
Stage 1	-	-	-	-	-	-	187	187	-	140	140	-
Stage 2	-	-	-	-	-	-	163	142	-	206	188	-
Critical Hdwy	4.31	-	-	4.31	-	-	7.31	6.71	6.41	7.31	6.71	6.41
Critical Hdwy Stg 1	-	-	-	-	-	-	6.31	5.71	-	6.31	5.71	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.31	5.71	-	6.31	5.71	-
Follow-up Hdwy	2.389	-	-	2.389	-	-	3.689	4.189	3.489	3.689	4.189	3.489
Pot Cap-1 Maneuver	1353	-	-	1288	-	-	571	560	817	574	561	880
Stage 1	-	-	-	-	-	-	773	711	-	820	746	-
Stage 2	-	-	-	-	-	-	796	744	-	754	710	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1353	-	-	1288	-	-	522	554	817	541	555	880
Mov Cap-2 Maneuver	-	-	-	-	-	-	522	554	-	541	555	-
Stage 1	-	-	-	-	-	-	771	709	-	818	740	-
Stage 2	-	-	-	-	-	-	729	738	-	713	708	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	11.9	10.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	570	1353	-	-	1288	-	-	698
HCM Lane V/C Ratio	0.085	0.003	-	-	0.007	-	-	0.097
HCM Control Delay (s)	11.9	7.7	0	-	7.8	0	-	10.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	147	1	5	89	12	17	15	8	27	25	5
Future Vol, veh/h	9	147	1	5	89	12	17	15	8	27	25	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	25	25	25	25	25	25	25	25	25	25	25	25
Mvmt Flow	11	173	1	6	105	14	20	18	9	32	29	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	119	0	0	174	0	0	336	326	174	332	319	112
Stage 1	-	-	-	-	-	-	195	195	-	124	124	-
Stage 2	-	-	-	-	-	-	141	131	-	208	195	-
Critical Hdwy	4.35	-	-	4.35	-	-	7.35	6.75	6.45	7.35	6.75	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Follow-up Hdwy	2.425	-	-	2.425	-	-	3.725	4.225	3.525	3.725	4.225	3.525
Pot Cap-1 Maneuver	1338	-	-	1275	-	-	576	556	813	580	562	882
Stage 1	-	-	-	-	-	-	757	698	-	827	751	-
Stage 2	-	-	-	-	-	-	810	746	-	744	698	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1338	-	-	1275	-	-	543	548	813	553	554	882
Mov Cap-2 Maneuver	-	-	-	-	-	-	543	548	-	553	554	-
Stage 1	-	-	-	-	-	-	750	692	-	820	747	-
Stage 2	-	-	-	-	-	-	769	742	-	710	692	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.4	11.7	12.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	584	1338	-	-	1275	-	-	572
HCM Lane V/C Ratio	0.081	0.008	-	-	0.005	-	-	0.117
HCM Control Delay (s)	11.7	7.7	0	-	7.8	0	-	12.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.4

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	218	9	9	133	12	7	30	6	31	35	30
Future Vol, veh/h	30	218	9	9	133	12	7	30	6	31	35	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	35	253	10	10	155	14	8	35	7	36	41	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	169	0	0	264	0	0	548	518	259	532	517	162
Stage 1	-	-	-	-	-	-	328	328	-	183	183	-
Stage 2	-	-	-	-	-	-	220	190	-	349	334	-
Critical Hdwy	4.2	-	-	4.2	-	-	7.2	6.6	6.3	7.2	6.6	6.3
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.6	-	6.2	5.6	-
Follow-up Hdwy	2.29	-	-	2.29	-	-	3.59	4.09	3.39	3.59	4.09	3.39
Pot Cap-1 Maneuver	1361	-	-	1255	-	-	435	450	761	446	451	862
Stage 1	-	-	-	-	-	-	668	633	-	800	733	-
Stage 2	-	-	-	-	-	-	765	728	-	651	629	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1361	-	-	1255	-	-	376	433	761	403	434	862
Mov Cap-2 Maneuver	-	-	-	-	-	-	376	433	-	403	434	-
Stage 1	-	-	-	-	-	-	648	614	-	776	726	-
Stage 2	-	-	-	-	-	-	687	721	-	590	610	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.5	14	14.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	449	1361	-	-	1255	-	-	499
HCM Lane V/C Ratio	0.111	0.026	-	-	0.008	-	-	0.224
HCM Control Delay (s)	14	7.7	0	-	7.9	0	-	14.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.8

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	243	0	4	146	6	1	9	5	8	6	8
Future Vol, veh/h	7	243	0	4	146	6	1	9	5	8	6	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	12	12	12	12	12	12	12	12	12	12	12	12
Mvmt Flow	8	283	0	5	170	7	1	10	6	9	7	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	177	0	0	283	0	0	490	485	283	490	482	173
Stage 1	-	-	-	-	-	-	299	299	-	183	183	-
Stage 2	-	-	-	-	-	-	191	186	-	307	299	-
Critical Hdwy	4.22	-	-	4.22	-	-	7.22	6.62	6.32	7.22	6.62	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	6.22	5.62	-	6.22	5.62	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.22	5.62	-	6.22	5.62	-
Follow-up Hdwy	2.308	-	-	2.308	-	-	3.608	4.108	3.408	3.608	4.108	3.408
Pot Cap-1 Maneuver	1341	-	-	1224	-	-	473	468	733	473	470	845
Stage 1	-	-	-	-	-	-	689	649	-	796	730	-
Stage 2	-	-	-	-	-	-	788	728	-	682	649	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1341	-	-	1224	-	-	458	462	733	457	464	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	458	462	-	457	464	-
Stage 1	-	-	-	-	-	-	684	644	-	790	726	-
Stage 2	-	-	-	-	-	-	768	724	-	661	644	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	12.1	11.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	527	1341	-	-	1224	-	-	551
HCM Lane V/C Ratio	0.033	0.006	-	-	0.004	-	-	0.046
HCM Control Delay (s)	12.1	7.7	0	-	8	0	-	11.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.1

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	211	2	10	93	6	5	57	24	2	21	4
Future Vol, veh/h	22	211	2	10	93	6	5	57	24	2	21	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	29	278	3	13	122	8	7	75	32	3	28	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	130	0	0	280	0	0	503	494	279	543	491	126
Stage 1	-	-	-	-	-	-	337	337	-	153	153	-
Stage 2	-	-	-	-	-	-	166	157	-	390	338	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.16	6.56	6.26	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.254	-	-	3.554	4.054	3.354	3.554	4.054	3.354
Pot Cap-1 Maneuver	1431	-	-	1260	-	-	473	471	750	444	472	914
Stage 1	-	-	-	-	-	-	669	634	-	840	763	-
Stage 2	-	-	-	-	-	-	827	760	-	626	633	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1431	-	-	1260	-	-	437	455	750	362	456	914
Mov Cap-2 Maneuver	-	-	-	-	-	-	437	455	-	362	456	-
Stage 1	-	-	-	-	-	-	653	619	-	820	755	-
Stage 2	-	-	-	-	-	-	783	752	-	514	618	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	0.7	14.1	12.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	510	1431	-	-	1260	-	-	523
HCM Lane V/C Ratio	0.222	0.02	-	-	0.01	-	-	0.068
HCM Control Delay (s)	14.1	7.6	0	-	7.9	0	-	12.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.8	0.1	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	188	0	1	125	17	0	17	4	10	18	10
Future Vol, veh/h	11	188	0	1	125	17	0	17	4	10	18	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	15	265	0	1	176	24	0	24	6	14	25	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	200	0	0	265	0	0	507	499	265	502	487	188
Stage 1	-	-	-	-	-	-	296	296	-	191	191	-
Stage 2	-	-	-	-	-	-	211	203	-	311	296	-
Critical Hdwy	4.15	-	-	4.15	-	-	7.15	6.55	6.25	7.15	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Follow-up Hdwy	2.245	-	-	2.245	-	-	3.545	4.045	3.345	3.545	4.045	3.345
Pot Cap-1 Maneuver	1354	-	-	1282	-	-	471	469	766	475	476	846
Stage 1	-	-	-	-	-	-	706	663	-	804	737	-
Stage 2	-	-	-	-	-	-	784	728	-	693	663	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1354	-	-	1282	-	-	439	462	766	448	469	846
Mov Cap-2 Maneuver	-	-	-	-	-	-	439	462	-	448	469	-
Stage 1	-	-	-	-	-	-	697	654	-	794	736	-
Stage 2	-	-	-	-	-	-	744	727	-	654	654	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.1	12.7	12.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	500	1354	-	-	1282	-	-	524
HCM Lane V/C Ratio	0.059	0.011	-	-	0.001	-	-	0.102
HCM Control Delay (s)	12.7	7.7	0	-	7.8	0	-	12.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.3

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	205	4	2	170	25	12	58	9	18	39	26
Future Vol, veh/h	24	205	4	2	170	25	12	58	9	18	39	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	30	256	5	3	213	31	15	73	11	23	49	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	244	0	0	261	0	0	593	568	259	594	554	228
Stage 1	-	-	-	-	-	-	319	319	-	233	233	-
Stage 2	-	-	-	-	-	-	274	249	-	361	321	-
Critical Hdwy	4.15	-	-	4.15	-	-	7.15	6.55	6.25	7.15	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Follow-up Hdwy	2.245	-	-	2.245	-	-	3.545	4.045	3.345	3.545	4.045	3.345
Pot Cap-1 Maneuver	1305	-	-	1286	-	-	413	428	772	412	436	804
Stage 1	-	-	-	-	-	-	686	648	-	763	706	-
Stage 2	-	-	-	-	-	-	726	695	-	651	646	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1305	-	-	1286	-	-	353	415	772	344	423	804
Mov Cap-2 Maneuver	-	-	-	-	-	-	353	415	-	344	423	-
Stage 1	-	-	-	-	-	-	667	631	-	742	704	-
Stage 2	-	-	-	-	-	-	646	693	-	552	629	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.1	16	14.8
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	426	1305	-	-	1286	-	-	469
HCM Lane V/C Ratio	0.232	0.023	-	-	0.002	-	-	0.221
HCM Control Delay (s)	16	7.8	0	-	7.8	0	-	14.8
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	0.8

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	3	225	3	3	209	14	7	10	5	9	9	12
Future Vol, veh/h	3	225	3	3	209	14	7	10	5	9	9	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	4	271	4	4	252	17	8	12	6	11	11	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	269	0	0	275	0	0	560	556	273	556	549	260
Stage 1	-	-	-	-	-	-	280	280	-	267	267	-
Stage 2	-	-	-	-	-	-	280	276	-	289	282	-
Critical Hdwy	4.15	-	-	4.15	-	-	7.15	6.55	6.25	7.15	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Follow-up Hdwy	2.245	-	-	2.245	-	-	3.545	4.045	3.345	3.545	4.045	3.345
Pot Cap-1 Maneuver	1277	-	-	1271	-	-	434	435	759	437	439	771
Stage 1	-	-	-	-	-	-	720	674	-	732	683	-
Stage 2	-	-	-	-	-	-	720	676	-	712	672	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1277	-	-	1271	-	-	415	432	759	422	435	771
Mov Cap-2 Maneuver	-	-	-	-	-	-	415	432	-	422	435	-
Stage 1	-	-	-	-	-	-	717	671	-	729	680	-
Stage 2	-	-	-	-	-	-	692	673	-	691	669	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	13.1	12.4
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	472	1277	-	-	1271	-	-	521
HCM Lane V/C Ratio	0.056	0.003	-	-	0.003	-	-	0.069
HCM Control Delay (s)	13.1	7.8	0	-	7.8	0	-	12.4
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2

Intersection												
Int Delay, s/veh	3.7											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	145	2	24	100	4	9	24	11	6	36	11
Future Vol, veh/h	3	145	2	24	100	4	9	24	11	6	36	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	23	23	23	23	23	23	23	23	23	23	23	23
Mvmt Flow	4	186	3	31	128	5	12	31	14	8	46	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	133	0	0	188	0	0	410	390	187	409	388	131
Stage 1	-	-	-	-	-	-	195	195	-	192	192	-
Stage 2	-	-	-	-	-	-	215	195	-	217	196	-
Critical Hdwy	4.33	-	-	4.33	-	-	7.33	6.73	6.43	7.33	6.73	6.43
Critical Hdwy Stg 1	-	-	-	-	-	-	6.33	5.73	-	6.33	5.73	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.33	5.73	-	6.33	5.73	-
Follow-up Hdwy	2.407	-	-	2.407	-	-	3.707	4.207	3.507	3.707	4.207	3.507
Pot Cap-1 Maneuver	1332	-	-	1269	-	-	517	514	804	517	515	865
Stage 1	-	-	-	-	-	-	761	702	-	764	704	-
Stage 2	-	-	-	-	-	-	742	702	-	740	701	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1332	-	-	1269	-	-	462	499	804	473	500	865
Mov Cap-2 Maneuver	-	-	-	-	-	-	462	499	-	473	500	-
Stage 1	-	-	-	-	-	-	759	700	-	762	686	-
Stage 2	-	-	-	-	-	-	663	684	-	693	699	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	1.5	12.4	11.5
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	541	1332	-	-	1269	-	-	626
HCM Lane V/C Ratio	0.104	0.003	-	-	0.024	-	-	0.109
HCM Control Delay (s)	12.4	7.7	0	-	7.9	0	-	11.5
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0.1	-	-	0.4

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	159	1	5	112	12	17	15	8	27	25	5
Future Vol, veh/h	9	159	1	5	112	12	17	15	8	27	25	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	26	26	26	26	26	26	26	26	26	26	26	26
Mvmt Flow	11	187	1	6	132	14	20	18	9	32	29	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	146	0	0	188	0	0	377	367	188	373	360	139
Stage 1	-	-	-	-	-	-	209	209	-	151	151	-
Stage 2	-	-	-	-	-	-	168	158	-	222	209	-
Critical Hdwy	4.36	-	-	4.36	-	-	7.36	6.76	6.46	7.36	6.76	6.46
Critical Hdwy Stg 1	-	-	-	-	-	-	6.36	5.76	-	6.36	5.76	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.36	5.76	-	6.36	5.76	-
Follow-up Hdwy	2.434	-	-	2.434	-	-	3.734	4.234	3.534	3.734	4.234	3.534
Pot Cap-1 Maneuver	1302	-	-	1254	-	-	539	526	796	542	530	849
Stage 1	-	-	-	-	-	-	741	686	-	798	729	-
Stage 2	-	-	-	-	-	-	781	724	-	729	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1302	-	-	1254	-	-	507	519	796	516	523	849
Mov Cap-2 Maneuver	-	-	-	-	-	-	507	519	-	516	523	-
Stage 1	-	-	-	-	-	-	734	680	-	791	725	-
Stage 2	-	-	-	-	-	-	740	720	-	695	680	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.3	12.1	12.6
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	552	1302	-	-	1254	-	-	538
HCM Lane V/C Ratio	0.085	0.008	-	-	0.005	-	-	0.125
HCM Control Delay (s)	12.1	7.8	0	-	7.9	0	-	12.6
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	0.4

Intersection												
Int Delay, s/veh	4.1											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	230	9	9	156	12	7	30	6	31	35	30
Future Vol, veh/h	30	230	9	9	156	12	7	30	6	31	35	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	12	12	12	12	12	12	12	12	12	12	12	12
Mvmt Flow	35	267	10	10	181	14	8	35	7	36	41	35

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	195	0	0	278	0	0	589	558	273	572	557	188
Stage 1	-	-	-	-	-	-	342	342	-	209	209	-
Stage 2	-	-	-	-	-	-	247	216	-	363	348	-
Critical Hdwy	4.22	-	-	4.22	-	-	7.22	6.62	6.32	7.22	6.62	6.32
Critical Hdwy Stg 1	-	-	-	-	-	-	6.22	5.62	-	6.22	5.62	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.22	5.62	-	6.22	5.62	-
Follow-up Hdwy	2.308	-	-	2.308	-	-	3.608	4.108	3.408	3.608	4.108	3.408
Pot Cap-1 Maneuver	1320	-	-	1229	-	-	405	425	742	416	425	829
Stage 1	-	-	-	-	-	-	653	621	-	771	711	-
Stage 2	-	-	-	-	-	-	735	706	-	636	617	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1320	-	-	1229	-	-	348	408	742	374	408	829
Mov Cap-2 Maneuver	-	-	-	-	-	-	348	408	-	374	408	-
Stage 1	-	-	-	-	-	-	633	602	-	747	705	-
Stage 2	-	-	-	-	-	-	657	700	-	575	598	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s	0.9			0.4			14.6			15.1		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	423	1320	-	-	1229	-	-	469
HCM Lane V/C Ratio	0.118	0.026	-	-	0.009	-	-	0.238
HCM Control Delay (s)	14.6	7.8	0	-	8	0	-	15.1
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	0.1	-	-	0	-	-	0.9

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	254	0	4	168	6	1	9	5	8	6	8
Future Vol, veh/h	7	254	0	4	168	6	1	9	5	8	6	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	86	86	86	86	86	86	86	86	86
Heavy Vehicles, %	14	14	14	14	14	14	14	14	14	14	14	14
Mvmt Flow	8	295	0	5	195	7	1	10	6	9	7	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	202	0	0	295	0	0	528	524	295	528	520	199
Stage 1	-	-	-	-	-	-	312	312	-	208	208	-
Stage 2	-	-	-	-	-	-	216	212	-	320	312	-
Critical Hdwy	4.24	-	-	4.24	-	-	7.24	6.64	6.34	7.24	6.64	6.34
Critical Hdwy Stg 1	-	-	-	-	-	-	6.24	5.64	-	6.24	5.64	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.24	5.64	-	6.24	5.64	-
Follow-up Hdwy	2.326	-	-	2.326	-	-	3.626	4.126	3.426	3.626	4.126	3.426
Pot Cap-1 Maneuver	1301	-	-	1201	-	-	443	442	717	443	444	812
Stage 1	-	-	-	-	-	-	674	637	-	767	708	-
Stage 2	-	-	-	-	-	-	760	705	-	667	637	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1301	-	-	1201	-	-	429	437	717	427	439	812
Mov Cap-2 Maneuver	-	-	-	-	-	-	429	437	-	427	439	-
Stage 1	-	-	-	-	-	-	669	633	-	762	704	-
Stage 2	-	-	-	-	-	-	740	701	-	646	633	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.2	12.4	12.3
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	502	1301	-	-	1201	-	-	521
HCM Lane V/C Ratio	0.035	0.006	-	-	0.004	-	-	0.049
HCM Control Delay (s)	12.4	7.8	0	-	8	0	-	12.3
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.2

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	22	214	2	19	98	6	5	57	36	2	21	4
Future Vol, veh/h	22	214	2	19	98	6	5	57	36	2	21	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	76	76	76	76	76	76	76	76	76	76	76	76
Heavy Vehicles, %	8	8	8	8	8	8	8	8	8	8	8	8
Mvmt Flow	29	282	3	25	129	8	7	75	47	3	28	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	137	0	0	284	0	0	538	528	283	585	525	133
Stage 1	-	-	-	-	-	-	341	341	-	183	183	-
Stage 2	-	-	-	-	-	-	197	187	-	402	342	-
Critical Hdwy	4.18	-	-	4.18	-	-	7.18	6.58	6.28	7.18	6.58	6.28
Critical Hdwy Stg 1	-	-	-	-	-	-	6.18	5.58	-	6.18	5.58	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.18	5.58	-	6.18	5.58	-
Follow-up Hdwy	2.272	-	-	2.272	-	-	3.572	4.072	3.372	3.572	4.072	3.372
Pot Cap-1 Maneuver	1411	-	-	1245	-	-	445	447	742	414	449	900
Stage 1	-	-	-	-	-	-	662	628	-	805	737	-
Stage 2	-	-	-	-	-	-	791	734	-	613	627	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1411	-	-	1245	-	-	406	427	742	324	429	900
Mov Cap-2 Maneuver	-	-	-	-	-	-	406	427	-	324	429	-
Stage 1	-	-	-	-	-	-	646	613	-	786	721	-
Stage 2	-	-	-	-	-	-	740	718	-	492	612	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.7	1.2	14.6	12.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	504	1411	-	-	1245	-	-	490
HCM Lane V/C Ratio	0.256	0.021	-	-	0.02	-	-	0.073
HCM Control Delay (s)	14.6	7.6	0	-	8	0	-	12.9
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	1	0.1	-	-	0.1	-	-	0.2

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	203	0	1	139	17	0	17	4	10	18	10
Future Vol, veh/h	11	203	0	1	139	17	0	17	4	10	18	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	71	71	71	71	71	71	71	71	71	71	71	71
Heavy Vehicles, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	15	286	0	1	196	24	0	24	6	14	25	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	220	0	0	286	0	0	547	540	286	543	528	208
Stage 1	-	-	-	-	-	-	317	317	-	211	211	-
Stage 2	-	-	-	-	-	-	230	223	-	332	317	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	1320	-	-	1248	-	-	440	442	741	443	449	820
Stage 1	-	-	-	-	-	-	684	645	-	780	718	-
Stage 2	-	-	-	-	-	-	762	710	-	671	645	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1320	-	-	1248	-	-	409	435	741	416	442	820
Mov Cap-2 Maneuver	-	-	-	-	-	-	409	435	-	416	442	-
Stage 1	-	-	-	-	-	-	674	636	-	769	717	-
Stage 2	-	-	-	-	-	-	722	709	-	632	636	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	0.1	13.1	13.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	472	1320	-	-	1248	-	-	494
HCM Lane V/C Ratio	0.063	0.012	-	-	0.001	-	-	0.108
HCM Control Delay (s)	13.1	7.8	0	-	7.9	0	-	13.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.4

Intersection												
Int Delay, s/veh	4.6											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	24	219	4	2	183	25	12	58	9	18	39	26
Future Vol, veh/h	24	219	4	2	183	25	12	58	9	18	39	26
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	30	274	5	3	229	31	15	73	11	23	49	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	260	0	0	279	0	0	626	601	276	627	588	244
Stage 1	-	-	-	-	-	-	336	336	-	249	249	-
Stage 2	-	-	-	-	-	-	290	265	-	378	339	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.16	6.56	6.26	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.254	-	-	3.554	4.054	3.354	3.554	4.054	3.354
Pot Cap-1 Maneuver	1282	-	-	1261	-	-	391	409	753	390	416	785
Stage 1	-	-	-	-	-	-	670	635	-	746	693	-
Stage 2	-	-	-	-	-	-	709	682	-	636	633	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1282	-	-	1261	-	-	332	396	753	323	403	785
Mov Cap-2 Maneuver	-	-	-	-	-	-	332	396	-	323	403	-
Stage 1	-	-	-	-	-	-	651	617	-	725	691	-
Stage 2	-	-	-	-	-	-	630	680	-	537	615	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.1	16.7	15.5
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	406	1282	-	-	1261	-	-	447
HCM Lane V/C Ratio	0.243	0.023	-	-	0.002	-	-	0.232
HCM Control Delay (s)	16.7	7.9	0	-	7.9	0	-	15.5
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.9	0.1	-	-	0	-	-	0.9

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	3	239	3	3	222	14	7	10	5	9	9	12
Future Vol, veh/h	3	239	3	3	222	14	7	10	5	9	9	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	4	288	4	4	267	17	8	12	6	11	11	14

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	284	0	0	292	0	0	593	589	290	589	582	276
Stage 1	-	-	-	-	-	-	297	297	-	283	283	-
Stage 2	-	-	-	-	-	-	296	292	-	306	299	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.16	6.56	6.26	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.254	-	-	3.554	4.054	3.354	3.554	4.054	3.354
Pot Cap-1 Maneuver	1256	-	-	1247	-	-	411	415	740	414	419	753
Stage 1	-	-	-	-	-	-	703	660	-	715	670	-
Stage 2	-	-	-	-	-	-	704	664	-	695	659	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1256	-	-	1247	-	-	393	412	740	399	416	753
Mov Cap-2 Maneuver	-	-	-	-	-	-	393	412	-	399	416	-
Stage 1	-	-	-	-	-	-	700	657	-	712	667	-
Stage 2	-	-	-	-	-	-	677	661	-	674	656	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.1	13.5	12.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	450	1256	-	-	1247	-	-	499
HCM Lane V/C Ratio	0.059	0.003	-	-	0.003	-	-	0.072
HCM Control Delay (s)	13.5	7.9	0	-	7.9	0	-	12.8
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	0.2

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	10	270	10	10	210	10	10	30	10	100	70	20
Future Vol, veh/h	10	270	10	10	210	10	10	30	10	100	70	20
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
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, %	21	21	21	21	21	21	21	21	21	21	21	21
Mvmt Flow	11	293	11	11	228	11	11	33	11	109	76	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	241	0	0	306	0	0	618	586	303	601	585	238
Stage 1	-	-	-	-	-	-	323	323	-	257	257	-
Stage 2	-	-	-	-	-	-	295	263	-	344	328	-
Critical Hdwy	4.31	-	-	4.31	-	-	7.31	6.71	6.41	7.31	6.71	6.41
Critical Hdwy Stg 1	-	-	-	-	-	-	6.31	5.71	-	6.31	5.71	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.31	5.71	-	6.31	5.71	-
Follow-up Hdwy	2.389	-	-	2.389	-	-	3.689	4.189	3.489	3.689	4.189	3.489
Pot Cap-1 Maneuver	1222	-	-	1154	-	-	376	398	694	386	398	756
Stage 1	-	-	-	-	-	-	651	618	-	707	661	-
Stage 2	-	-	-	-	-	-	674	657	-	634	614	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1220	-	-	1152	-	-	304	388	691	348	388	753
Mov Cap-2 Maneuver	-	-	-	-	-	-	304	388	-	348	388	-
Stage 1	-	-	-	-	-	-	643	610	-	698	652	-
Stage 2	-	-	-	-	-	-	571	649	-	583	606	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.4	15.4	22.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	401	1220	-	-	1152	-	-	406
HCM Lane V/C Ratio	0.136	0.009	-	-	0.009	-	-	0.509
HCM Control Delay (s)	15.4	8	0	-	8.2	0	-	22.7
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	2.8

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	290	10	10	190	20	20	20	10	30	30	10
Future Vol, veh/h	80	290	10	10	190	20	20	20	10	30	30	10
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	25	25	25	25	25	25	25	25	25	25	25	25
Mvmt Flow	87	315	11	11	207	22	22	22	11	33	33	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	230	0	0	328	0	0	760	749	325	754	743	221
Stage 1	-	-	-	-	-	-	497	497	-	241	241	-
Stage 2	-	-	-	-	-	-	263	252	-	513	502	-
Critical Hdwy	4.35	-	-	4.35	-	-	7.35	6.75	6.45	7.35	6.75	6.45
Critical Hdwy Stg 1	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.35	5.75	-	6.35	5.75	-
Follow-up Hdwy	2.425	-	-	2.425	-	-	3.725	4.225	3.525	3.725	4.225	3.525
Pot Cap-1 Maneuver	1214	-	-	1113	-	-	296	314	666	299	317	764
Stage 1	-	-	-	-	-	-	514	508	-	714	666	-
Stage 2	-	-	-	-	-	-	694	658	-	504	506	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1212	-	-	1111	-	-	246	282	663	255	285	761
Mov Cap-2 Maneuver	-	-	-	-	-	-	246	282	-	255	285	-
Stage 1	-	-	-	-	-	-	468	462	-	650	657	-
Stage 2	-	-	-	-	-	-	642	650	-	430	461	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.4	19.7	21.2
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	299	1212	-	-	1111	-	-	297
HCM Lane V/C Ratio	0.182	0.072	-	-	0.01	-	-	0.256
HCM Control Delay (s)	19.7	8.2	0	-	8.3	0	-	21.2
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0	-	-	1

Intersection	
Int Delay, s/veh	Delay exceeds 300 seconds

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	340	40	40	220	140	20	300	30	280	250	40
Future Vol, veh/h	40	340	40	40	220	140	20	300	30	280	250	40
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	10	10	10	10	10	10	10	10	10	10	10	10
Mvmt Flow	43	370	43	43	239	152	22	326	33	304	272	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	393	0	0	415	0	0	824	960	211	841	906	200
Stage 1	-	-	-	-	-	-	480	480	-	404	404	-
Stage 2	-	-	-	-	-	-	344	480	-	437	502	-
Critical Hdwy	4.3	-	-	4.3	-	-	7.7	6.7	7.1	7.7	6.7	7.1
Critical Hdwy Stg 1	-	-	-	-	-	-	6.7	5.7	-	6.7	5.7	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.7	5.7	-	6.7	5.7	-
Follow-up Hdwy	2.3	-	-	2.3	-	-	3.6	4.1	3.4	3.6	4.1	3.4
Pot Cap-1 Maneuver	1107	-	-	1085	-	-	252	~ 242	770	~ 245	~ 261	783
Stage 1	-	-	-	-	-	-	515	533	-	573	578	-
Stage 2	-	-	-	-	-	-	623	533	-	547	521	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1105	-	-	1083	-	-	-	~ 217	767	-	~ 234	780
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 217	-	-	~ 234	-
Stage 1	-	-	-	-	-	-	488	505	-	543	547	-
Stage 2	-	-	-	-	-	-	280	504	-	~ 176	493	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	1		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	246	1105	-	-	1083	-	-	-	282
HCM Lane V/C Ratio	-	0.795	0.039	-	-	0.04	-	-	-	0.636
HCM Control Delay (s)		$ 59.4	8.4	0.2	-	8.5	0.2	-		$ 37.7
HCM Lane LOS	-	F	A	A	-	A	A	-	-	E
HCM 95th %tile Q(veh)	-	6	0.1	-	-	0.1	-	-	-	4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	Delay exceeds 300 seconds

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	1020	180	10	450	90	100	150	10	100	80	20
Future Vol, veh/h	40	1020	180	10	450	90	100	150	10	100	80	20
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	12	12	12	12	12	12	12	12	12	12	12	12
Mvmt Flow	43	1109	196	11	489	98	109	163	11	109	87	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	589	0	0	1306	0	0	1607	1906	656	1287	1955	297
Stage 1	-	-	-	-	-	-	1295	1295	-	562	562	-
Stage 2	-	-	-	-	-	-	312	611	-	725	1393	-
Critical Hdwy	4.34	-	-	4.34	-	-	7.74	6.74	7.14	7.74	6.74	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	6.74	5.74	-	6.74	5.74	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.74	-	6.74	5.74	-
Follow-up Hdwy	2.32	-	-	2.32	-	-	3.62	4.12	3.42	3.62	4.12	3.42
Pot Cap-1 Maneuver	917	-	-	475	-	-	~ 63	~ 61	385	111	~ 56	670
Stage 1	-	-	-	-	-	-	157	213	-	455	484	-
Stage 2	-	-	-	-	-	-	646	459	-	360	190	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	915	-	-	474	-	-	-	~ 48	384	-	~ 44	667
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 48	-	-	~ 44	-
Stage 1	-	-	-	-	-	-	128	173	-	370	466	-
Stage 2	-	-	-	-	-	-	490	442	-	~ 16	155	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.4		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	915	-	-	474	-	-	-
HCM Lane V/C Ratio	-	0.048	-	-	0.023	-	-	-
HCM Control Delay (s)	$	9.1	0.8	-	12.8	0.2	-	$
HCM Lane LOS	-	A	A	-	B	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-	0.1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	30	380	10	10	310	230	10	120	30	10	30	10
Future Vol, veh/h	30	380	10	10	310	230	10	120	30	10	30	10
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
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, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	33	413	11	11	337	250	11	130	33	11	33	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	589	0	0	426	0	0	988	1097	422	1053	977	466
Stage 1	-	-	-	-	-	-	486	486	-	486	486	-
Stage 2	-	-	-	-	-	-	502	611	-	567	491	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.16	6.56	6.26	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.254	-	-	3.554	4.054	3.354	3.554	4.054	3.354
Pot Cap-1 Maneuver	967	-	-	1112	-	-	222	210	623	201	247	588
Stage 1	-	-	-	-	-	-	555	544	-	555	544	-
Stage 2	-	-	-	-	-	-	544	478	-	501	542	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	965	-	-	1110	-	-	185	197	621	85	231	586
Mov Cap-2 Maneuver	-	-	-	-	-	-	185	197	-	85	231	-
Stage 1	-	-	-	-	-	-	529	519	-	529	535	-
Stage 2	-	-	-	-	-	-	493	470	-	339	517	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.2	60.3	29.3
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	225	965	-	-	1110	-	-	202
HCM Lane V/C Ratio	0.773	0.034	-	-	0.01	-	-	0.269
HCM Control Delay (s)	60.3	8.9	0	-	8.3	0	-	29.3
HCM Lane LOS	F	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	5.5	0.1	-	-	0	-	-	1

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	310	10	10	440	60	40	50	10	10	20	90
Future Vol, veh/h	50	310	10	10	440	60	40	50	10	10	20	90
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	54	337	11	11	478	65	43	54	11	11	22	98

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	545	0	0	350	0	0	1047	1020	346	1021	994	515
Stage 1	-	-	-	-	-	-	453	453	-	535	535	-
Stage 2	-	-	-	-	-	-	594	567	-	486	459	-
Critical Hdwy	4.15	-	-	4.15	-	-	7.15	6.55	6.25	7.15	6.55	6.25
Critical Hdwy Stg 1	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.15	5.55	-	6.15	5.55	-
Follow-up Hdwy	2.245	-	-	2.245	-	-	3.545	4.045	3.345	3.545	4.045	3.345
Pot Cap-1 Maneuver	1009	-	-	1192	-	-	203	234	690	212	242	554
Stage 1	-	-	-	-	-	-	581	565	-	524	519	-
Stage 2	-	-	-	-	-	-	486	502	-	557	561	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1007	-	-	1190	-	-	145	215	687	158	222	552
Mov Cap-2 Maneuver	-	-	-	-	-	-	145	215	-	158	222	-
Stage 1	-	-	-	-	-	-	541	526	-	488	511	-
Stage 2	-	-	-	-	-	-	377	495	-	458	522	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.2	46.2	19.4
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	191	1007	-	-	1190	-	-	379
HCM Lane V/C Ratio	0.569	0.054	-	-	0.009	-	-	0.344
HCM Control Delay (s)	46.2	8.8	0	-	8.1	0	-	19.4
HCM Lane LOS	E	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	3.1	0.2	-	-	0	-	-	1.5

Intersection												
Int Delay, s/veh	Delay exceeds 300 seconds											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰↑↱			↰↑↱			↰↑↱			↰↑↱	
Traffic Vol, veh/h	30	310	20	20	460	270	70	330	20	170	310	30
Future Vol, veh/h	30	310	20	20	460	270	70	330	20	170	310	30
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	33	337	22	22	500	293	76	359	22	185	337	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	795	0	0	361	0	0	879	1254	183	1107	1118	401
Stage 1	-	-	-	-	-	-	415	415	-	692	692	-
Stage 2	-	-	-	-	-	-	464	839	-	415	426	-
Critical Hdwy	4.2	-	-	4.2	-	-	7.6	6.6	7	7.6	6.6	7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Follow-up Hdwy	2.25	-	-	2.25	-	-	3.55	4.05	3.35	3.55	4.05	3.35
Pot Cap-1 Maneuver	803	-	-	1173	-	-	237	~ 166	819	~ 161	~ 201	590
Stage 1	-	-	-	-	-	-	577	583	-	393	436	-
Stage 2	-	-	-	-	-	-	540	372	-	577	577	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	801	-	-	1171	-	-	-	~ 151	816	-	~ 183	588
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 151	-	-	~ 183	-
Stage 1	-	-	-	-	-	-	546	552	-	372	420	-
Stage 2	-	-	-	-	-	-	97	~ 358	-	186	546	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.3		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	166	801	-	-	1171	-	-	-	206
HCM Lane V/C Ratio	-	1.211	0.041	-	-	0.019	-	-	-	0.976
HCM Control Delay (s)	$	192.9	9.7	0.2	-	8.1	0.1	-	$	104.9
HCM Lane LOS	-	F	A	A	-	A	A	-	-	F
HCM 95th %tile Q(veh)	-	11.1	0.1	-	-	0.1	-	-	-	8.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	Delay exceeds 300 seconds

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	590	130	10	1010	150	200	130	10	150	150	30
Future Vol, veh/h	10	590	130	10	1010	150	200	130	10	150	150	30
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	11	641	141	11	1098	163	217	141	11	163	163	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1263	0	0	785	0	0	1390	2021	395	1618	2009	634
Stage 1	-	-	-	-	-	-	736	736	-	1203	1203	-
Stage 2	-	-	-	-	-	-	654	1285	-	415	806	-
Critical Hdwy	4.2	-	-	4.2	-	-	7.6	6.6	7	7.6	6.6	7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Follow-up Hdwy	2.25	-	-	2.25	-	-	3.55	4.05	3.35	3.55	4.05	3.35
Pot Cap-1 Maneuver	530	-	-	810	-	-	~ 99	~ 55	596	~ 67	~ 56	415
Stage 1	-	-	-	-	-	-	370	416	-	191	250	-
Stage 2	-	-	-	-	-	-	415	228	-	577	386	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	529	-	-	808	-	-	-	~ 50	594	-	~ 51	413
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 50	-	-	~ 51	-
Stage 1	-	-	-	-	-	-	355	399	-	183	238	-
Stage 2	-	-	-	-	-	-	~ 114	217	-	351	371	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.3		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	529	-	-	808	-	-	-
HCM Lane V/C Ratio	-	0.021	-	-	0.013	-	-	-
HCM Control Delay (s)	$	11.9	0.2	-	9.5	0.2	-	$
HCM Lane LOS	-	B	A	-	A	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	10	276	10	27	217	10	10	30	16	100	70	20
Future Vol, veh/h	10	276	10	27	217	10	10	30	16	100	70	20
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
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, %	22	22	22	22	22	22	22	22	22	22	22	22
Mvmt Flow	11	300	11	29	236	11	11	33	17	109	76	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	249	0	0	313	0	0	669	636	309	656	637	245
Stage 1	-	-	-	-	-	-	329	329	-	302	302	-
Stage 2	-	-	-	-	-	-	340	307	-	354	335	-
Critical Hdwy	4.32	-	-	4.32	-	-	7.32	6.72	6.42	7.32	6.72	6.42
Critical Hdwy Stg 1	-	-	-	-	-	-	6.32	5.72	-	6.32	5.72	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.32	5.72	-	6.32	5.72	-
Follow-up Hdwy	2.398	-	-	2.398	-	-	3.698	4.198	3.498	3.698	4.198	3.498
Pot Cap-1 Maneuver	1208	-	-	1142	-	-	345	371	687	353	370	747
Stage 1	-	-	-	-	-	-	644	612	-	666	630	-
Stage 2	-	-	-	-	-	-	635	626	-	624	608	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1206	-	-	1140	-	-	270	355	684	309	354	744
Mov Cap-2 Maneuver	-	-	-	-	-	-	270	355	-	309	354	-
Stage 1	-	-	-	-	-	-	636	604	-	657	610	-
Stage 2	-	-	-	-	-	-	522	606	-	568	600	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.9	16.1	27.1
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	386	1206	-	-	1140	-	-	364
HCM Lane V/C Ratio	0.158	0.009	-	-	0.026	-	-	0.567
HCM Control Delay (s)	16.1	8	0	-	8.2	0	-	27.1
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.6	0	-	-	0.1	-	-	3.4

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	302	10	10	213	20	20	20	10	30	30	10
Future Vol, veh/h	80	302	10	10	213	20	20	20	10	30	30	10
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	26	26	26	26	26	26	26	26	26	26	26	26
Mvmt Flow	87	328	11	11	232	22	22	22	11	33	33	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	255	0	0	341	0	0	798	787	338	792	781	246
Stage 1	-	-	-	-	-	-	510	510	-	266	266	-
Stage 2	-	-	-	-	-	-	288	277	-	526	515	-
Critical Hdwy	4.36	-	-	4.36	-	-	7.36	6.76	6.46	7.36	6.76	6.46
Critical Hdwy Stg 1	-	-	-	-	-	-	6.36	5.76	-	6.36	5.76	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.36	5.76	-	6.36	5.76	-
Follow-up Hdwy	2.434	-	-	2.434	-	-	3.734	4.234	3.534	3.734	4.234	3.534
Pot Cap-1 Maneuver	1182	-	-	1096	-	-	277	297	653	280	300	737
Stage 1	-	-	-	-	-	-	504	500	-	690	647	-
Stage 2	-	-	-	-	-	-	671	640	-	494	497	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1180	-	-	1094	-	-	228	266	651	237	268	734
Mov Cap-2 Maneuver	-	-	-	-	-	-	228	266	-	237	268	-
Stage 1	-	-	-	-	-	-	457	454	-	626	638	-
Stage 2	-	-	-	-	-	-	619	631	-	420	451	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.7	0.3	20.9	22.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	280	1180	-	-	1094	-	-	278
HCM Lane V/C Ratio	0.194	0.074	-	-	0.01	-	-	0.274
HCM Control Delay (s)	20.9	8.3	0	-	8.3	0	-	22.8
HCM Lane LOS	C	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.7	0.2	-	-	0	-	-	1.1

Intersection	
Int Delay, s/veh	Delay exceeds 300 seconds

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	352	40	40	243	140	20	300	30	280	250	40
Future Vol, veh/h	40	352	40	40	243	140	20	300	30	280	250	40
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	11	11	11	11	11	11	11	11	11	11	11	11
Mvmt Flow	43	383	43	43	264	152	22	326	33	304	272	43

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	418	0	0	428	0	0	850	998	217	872	944	212
Stage 1	-	-	-	-	-	-	493	493	-	429	429	-
Stage 2	-	-	-	-	-	-	357	505	-	443	515	-
Critical Hdwy	4.32	-	-	4.32	-	-	7.72	6.72	7.12	7.72	6.72	7.12
Critical Hdwy Stg 1	-	-	-	-	-	-	6.72	5.72	-	6.72	5.72	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.72	5.72	-	6.72	5.72	-
Follow-up Hdwy	2.31	-	-	2.31	-	-	3.61	4.11	3.41	3.61	4.11	3.41
Pot Cap-1 Maneuver	1076	-	-	1066	-	-	239	~ 228	760	~ 231	~ 246	766
Stage 1	-	-	-	-	-	-	504	523	-	551	560	-
Stage 2	-	-	-	-	-	-	609	517	-	540	511	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1074	-	-	1064	-	-	-	~ 203	757	-	~ 220	763
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 203	-	-	~ 220	-
Stage 1	-	-	-	-	-	-	476	494	-	521	529	-
Stage 2	-	-	-	-	-	-	264	488	-	~ 166	483	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.9		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	231	1074	-	-	1064	-	-	-	266
HCM Lane V/C Ratio	-	0.847	0.04	-	-	0.041	-	-	-	0.674
HCM Control Delay (s)	$	70.6	8.5	0.2	-	8.5	0.2	-	$	42.6
HCM Lane LOS	-	F	A	A	-	A	A	-	-	E
HCM 95th %tile Q(veh)	-	6.6	0.1	-	-	0.1	-	-	-	4.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	Delay exceeds 300 seconds

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	1031	180	10	472	90	100	150	10	100	80	20
Future Vol, veh/h	40	1031	180	10	472	90	100	150	10	100	80	20
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	12	12	12	12	12	12	12	12	12	12	12	12
Mvmt Flow	43	1121	196	11	513	98	109	163	11	109	87	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	613	0	0	1318	0	0	1631	1942	662	1317	1991	309
Stage 1	-	-	-	-	-	-	1307	1307	-	586	586	-
Stage 2	-	-	-	-	-	-	324	635	-	731	1405	-
Critical Hdwy	4.34	-	-	4.34	-	-	7.74	6.74	7.14	7.74	6.74	7.14
Critical Hdwy Stg 1	-	-	-	-	-	-	6.74	5.74	-	6.74	5.74	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.74	5.74	-	6.74	5.74	-
Follow-up Hdwy	2.32	-	-	2.32	-	-	3.62	4.12	3.42	3.62	4.12	3.42
Pot Cap-1 Maneuver	897	-	-	470	-	-	~ 61	~ 57	381	~ 106	~ 53	658
Stage 1	-	-	-	-	-	-	155	210	-	439	471	-
Stage 2	-	-	-	-	-	-	635	447	-	357	187	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	895	-	-	469	-	-	-	~ 44	380	-	~ 41	655
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 44	-	-	~ 41	-
Stage 1	-	-	-	-	-	-	125	169	-	353	453	-
Stage 2	-	-	-	-	-	-	477	430	-	~ 10	150	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.4		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	895	-	-	469	-	-	-
HCM Lane V/C Ratio	-	0.049	-	-	0.023	-	-	-
HCM Control Delay (s)	$	9.2	0.8	-	12.9	0.2	-	$
HCM Lane LOS	-	A	A	-	B	A	-	-
HCM 95th %tile Q(veh)	-	0.2	-	-	0.1	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	11.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	383	10	19	315	230	10	120	42	10	30	10
Future Vol, veh/h	30	383	10	19	315	230	10	120	42	10	30	10
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
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, %	7	7	7	7	7	7	7	7	7	7	7	7
Mvmt Flow	33	416	11	21	342	250	11	130	46	11	33	11

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	594	0	0	429	0	0	1016	1125	426	1088	1005	471
Stage 1	-	-	-	-	-	-	489	489	-	511	511	-
Stage 2	-	-	-	-	-	-	527	636	-	577	494	-
Critical Hdwy	4.17	-	-	4.17	-	-	7.17	6.57	6.27	7.17	6.57	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.17	5.57	-	6.17	5.57	-
Follow-up Hdwy	2.263	-	-	2.263	-	-	3.563	4.063	3.363	3.563	4.063	3.363
Pot Cap-1 Maneuver	958	-	-	1104	-	-	212	201	618	189	237	583
Stage 1	-	-	-	-	-	-	551	541	-	536	529	-
Stage 2	-	-	-	-	-	-	525	464	-	493	538	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	956	-	-	1102	-	-	173	185	616	71	219	581
Mov Cap-2 Maneuver	-	-	-	-	-	-	173	185	-	71	219	-
Stage 1	-	-	-	-	-	-	525	516	-	511	512	-
Stage 2	-	-	-	-	-	-	467	449	-	325	513	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.3	71.8	33.4
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	222	956	-	-	1102	-	-	180
HCM Lane V/C Ratio	0.842	0.034	-	-	0.019	-	-	0.302
HCM Control Delay (s)	71.8	8.9	0	-	8.3	0	-	33.4
HCM Lane LOS	F	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	6.5	0.1	-	-	0.1	-	-	1.2

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	50	325	10	10	454	60	40	50	10	10	20	90
Future Vol, veh/h	50	325	10	10	454	60	40	50	10	10	20	90
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	6	6	6	6	6	6	6	6	6	6	6	6
Mvmt Flow	54	353	11	11	493	65	43	54	11	11	22	98

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	561	0	0	366	0	0	1079	1051	363	1052	1025	530
Stage 1	-	-	-	-	-	-	469	469	-	550	550	-
Stage 2	-	-	-	-	-	-	610	582	-	502	475	-
Critical Hdwy	4.16	-	-	4.16	-	-	7.16	6.56	6.26	7.16	6.56	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.16	5.56	-	6.16	5.56	-
Follow-up Hdwy	2.254	-	-	2.254	-	-	3.554	4.054	3.354	3.554	4.054	3.354
Pot Cap-1 Maneuver	990	-	-	1171	-	-	193	223	673	201	231	541
Stage 1	-	-	-	-	-	-	567	554	-	512	509	-
Stage 2	-	-	-	-	-	-	475	493	-	544	551	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	988	-	-	1169	-	-	136	204	670	147	211	539
Mov Cap-2 Maneuver	-	-	-	-	-	-	136	204	-	147	211	-
Stage 1	-	-	-	-	-	-	527	515	-	476	501	-
Stage 2	-	-	-	-	-	-	366	485	-	445	512	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.2	51.5	20.3
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	180	988	-	-	1169	-	-	364
HCM Lane V/C Ratio	0.604	0.055	-	-	0.009	-	-	0.358
HCM Control Delay (s)	51.5	8.9	0	-	8.1	0	-	20.3
HCM Lane LOS	F	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	3.3	0.2	-	-	0	-	-	1.6

Intersection	
Int Delay, s/veh	Delay exceeds 300 seconds

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	324	20	20	473	270	70	330	20	170	310	30
Future Vol, veh/h	30	324	20	20	473	270	70	330	20	170	310	30
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	33	352	22	22	514	293	76	359	22	185	337	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	810	0	0	376	0	0	901	1283	191	1129	1147	408
Stage 1	-	-	-	-	-	-	430	430	-	706	706	-
Stage 2	-	-	-	-	-	-	471	853	-	423	441	-
Critical Hdwy	4.2	-	-	4.2	-	-	7.6	6.6	7	7.6	6.6	7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Follow-up Hdwy	2.25	-	-	2.25	-	-	3.55	4.05	3.35	3.55	4.05	3.35
Pot Cap-1 Maneuver	793	-	-	1158	-	-	228	~ 160	809	~ 155	~ 193	584
Stage 1	-	-	-	-	-	-	566	574	-	386	430	-
Stage 2	-	-	-	-	-	-	535	367	-	571	568	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	791	-	-	1156	-	-	-	~ 145	806	-	~ 175	582
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 145	-	-	~ 175	-
Stage 1	-	-	-	-	-	-	535	543	-	365	413	-
Stage 2	-	-	-	-	-	-	89	~ 353	-	~ 178	537	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.3		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	-	159	791	-	-	1156	-	-	-	197
HCM Lane V/C Ratio	-	1.265	0.041	-	-	0.019	-	-	-	1.021
HCM Control Delay (s)	$	215.4	9.7	0.2	-	8.2	0.1	-	$	119.7
HCM Lane LOS	-	F	A	A	-	A	A	-	-	F
HCM 95th %tile Q(veh)	-	11.7	0.1	-	-	0.1	-	-	-	8.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	Delay exceeds 300 seconds

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	604	130	10	1023	150	200	130	10	150	150	30
Future Vol, veh/h	10	604	130	10	1023	150	200	130	10	150	150	30
Conflicting Peds, #/hr	2	0	2	2	0	2	2	0	2	2	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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, %	5	5	5	5	5	5	5	5	5	5	5	5
Mvmt Flow	11	657	141	11	1112	163	217	141	11	163	163	33

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1277	0	0	800	0	0	1412	2050	403	1640	2039	642
Stage 1	-	-	-	-	-	-	751	751	-	1217	1217	-
Stage 2	-	-	-	-	-	-	661	1299	-	423	822	-
Critical Hdwy	4.2	-	-	4.2	-	-	7.6	6.6	7	7.6	6.6	7
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.6	-	6.6	5.6	-
Follow-up Hdwy	2.25	-	-	2.25	-	-	3.55	4.05	3.35	3.55	4.05	3.35
Pot Cap-1 Maneuver	524	-	-	800	-	-	~ 95	~ 53	589	~ 64	~ 54	410
Stage 1	-	-	-	-	-	-	362	409	-	187	246	-
Stage 2	-	-	-	-	-	-	411	224	-	571	379	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	523	-	-	798	-	-	-	~ 48	587	-	~ 49	408
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	~ 48	-	-	~ 49	-
Stage 1	-	-	-	-	-	-	347	392	-	179	233	-
Stage 2	-	-	-	-	-	-	~ 108	212	-	344	364	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.3		
HCM LOS			-	-

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	523	-	-	798	-	-	-
HCM Lane V/C Ratio	-	0.021	-	-	0.014	-	-	-
HCM Control Delay (s)	$	12	0.2	-	9.6	0.2	-	$
HCM Lane LOS	-	B	A	-	A	A	-	-
HCM 95th %tile Q(veh)	-	0.1	-	-	0	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	13
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			✣				✣				✣	
Traffic Vol, veh/h	0	10	276	10	0	27	217	10	0	10	30	16
Future Vol, veh/h	0	10	276	10	0	27	217	10	0	10	30	16
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	22	22	22	2	22	22	22	2	22	22	22
Mvmt Flow	0	11	300	11	0	29	236	11	0	11	33	17
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	14	12.9	10.1
HCM LOS	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	18%	3%	11%	53%
Vol Thru, %	54%	93%	85%	37%
Vol Right, %	29%	3%	4%	11%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	56	296	254	190
LT Vol	10	10	27	100
Through Vol	30	276	217	70
RT Vol	16	10	10	20
Lane Flow Rate	61	322	276	207
Geometry Grp	1	1	1	1
Degree of Util (X)	0.106	0.497	0.432	0.35
Departure Headway (Hd)	6.263	5.557	5.637	6.105
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	570	650	638	589
Service Time	4.321	3.594	3.675	4.149
HCM Lane V/C Ratio	0.107	0.495	0.433	0.351
HCM Control Delay	10.1	14	12.9	12.4
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	0.4	2.8	2.2	1.6

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations			✥	
Traffic Vol, veh/h	0	100	70	20
Future Vol, veh/h	0	100	70	20
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	22	22	22
Mvmt Flow	0	109	76	22
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	12.4
HCM LOS	B

Intersection	
Intersection Delay, s/veh	13.5
Intersection LOS	B

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	80	302	10	0	10	213	20	0	20	20	10
Future Vol, veh/h	0	80	302	10	0	10	213	20	0	20	20	10
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	26	26	26	2	26	26	26	2	26	26	26
Mvmt Flow	0	87	328	11	0	11	232	22	0	22	22	11
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	15.7	11.6	9.9
HCM LOS	C	B	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	20%	4%	43%
Vol Thru, %	40%	77%	88%	43%
Vol Right, %	20%	3%	8%	14%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	50	392	243	70
LT Vol	20	80	10	30
Through Vol	20	302	213	30
RT Vol	10	10	20	10
Lane Flow Rate	54	426	264	76
Geometry Grp	1	1	1	1
Degree of Util (X)	0.095	0.602	0.383	0.132
Departure Headway (Hd)	6.274	5.088	5.218	6.259
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	574	703	681	576
Service Time	4.277	3.169	3.309	4.262
HCM Lane V/C Ratio	0.094	0.606	0.388	0.132
HCM Control Delay	9.9	15.7	11.6	10.2
HCM Lane LOS	A	C	B	B
HCM 95th-tile Q	0.3	4.1	1.8	0.5

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations				
Traffic Vol, veh/h	0	30	30	10
Future Vol, veh/h	0	30	30	10
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	26	26	26
Mvmt Flow	0	33	33	11
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	10.2
HCM LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	352	40	40	243	140	20	300	30	280	250	40
Future Volume (veh/h)	40	352	40	40	243	140	20	300	30	280	250	40
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		0.97	1.00		0.97	1.00		0.98	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	1712	1712	1900	1712	1712	1712	1712	1712	1900	1712	1712	1712
Adj Flow Rate, veh/h	43	383	39	43	264	31	22	326	29	304	272	18
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	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, %	11	11	11	11	11	11	11	11	11	11	11	11
Cap, veh/h	59	417	42	59	468	387	38	381	34	335	733	608
Arrive On Green	0.04	0.27	0.27	0.04	0.27	0.27	0.02	0.25	0.25	0.21	0.43	0.43
Sat Flow, veh/h	1630	1524	155	1630	1712	1417	1630	1547	138	1630	1712	1420
Grp Volume(v), veh/h	43	0	422	43	264	31	22	0	355	304	272	18
Grp Sat Flow(s),veh/h/ln	1630	0	1679	1630	1712	1417	1630	0	1685	1630	1712	1420
Q Serve(g_s), s	2.4	0.0	22.3	2.4	12.1	1.5	1.2	0.0	18.4	16.6	9.9	0.7
Cycle Q Clear(g_c), s	2.4	0.0	22.3	2.4	12.1	1.5	1.2	0.0	18.4	16.6	9.9	0.7
Prop In Lane	1.00		0.09	1.00		1.00	1.00		0.08	1.00		1.00
Lane Grp Cap(c), veh/h	59	0	459	59	468	387	38	0	415	335	733	608
V/C Ratio(X)	0.73	0.00	0.92	0.73	0.56	0.08	0.58	0.00	0.86	0.91	0.37	0.03
Avail Cap(c_a), veh/h	89	0	478	91	489	405	105	0	500	357	772	640
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.6	0.0	32.2	43.6	28.5	24.7	44.2	0.0	32.9	35.4	17.8	15.1
Incr Delay (d2), s/veh	15.4	0.0	22.5	15.4	1.4	0.1	13.0	0.0	11.9	25.2	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	13.2	1.3	5.9	0.6	0.7	0.0	10.0	9.9	4.7	0.3
LnGrp Delay(d),s/veh	59.0	0.0	54.7	59.0	29.9	24.7	57.1	0.0	44.8	60.7	18.1	15.1
LnGrp LOS	E		D	E	C	C	E		D	E	B	B
Approach Vol, veh/h		465			338			377			594	
Approach Delay, s/veh		55.1			33.1			45.5			39.8	
Approach LOS		E			C			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	23.9	27.9	8.4	31.2	7.2	44.5	8.4	31.2
Change Period (Y+Rc), s	5.1	5.4	5.1	6.2	5.1	5.4	5.1	6.2
Max Green Setting (Gmax), s	20.0	27.1	5.1	26.0	5.9	41.2	5.0	26.1
Max Q Clear Time (g_c+I1), s	18.6	20.4	4.4	24.3	3.2	11.9	4.4	14.1
Green Ext Time (p_c), s	0.1	2.0	0.0	0.7	0.0	3.9	0.0	3.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.7
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	40	1031	180	10	472	90	100	150	10	100	80	20
Future Volume (veh/h)	40	1031	180	10	472	90	100	150	10	100	80	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		0.98	1.00		0.98	1.00		0.98	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	1696	1696	1900	1696	1696	1900	1696	1696	1900	1696	1696	1900
Adj Flow Rate, veh/h	43	1121	184	11	513	84	109	163	9	109	87	12
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, %	12	12	12	12	12	12	12	12	12	12	12	12
Cap, veh/h	62	1372	224	22	1305	213	135	222	12	135	203	28
Arrive On Green	0.04	0.50	0.50	0.01	0.47	0.47	0.08	0.14	0.14	0.08	0.14	0.14
Sat Flow, veh/h	1616	2764	452	1616	2765	451	1616	1591	88	1616	1456	201
Grp Volume(v), veh/h	43	652	653	11	298	299	109	0	172	109	0	99
Grp Sat Flow(s),veh/h/ln	1616	1612	1604	1616	1612	1604	1616	0	1679	1616	0	1656
Q Serve(g_s), s	2.1	27.9	28.2	0.6	9.8	9.9	5.4	0.0	8.0	5.4	0.0	4.5
Cycle Q Clear(g_c), s	2.1	27.9	28.2	0.6	9.8	9.9	5.4	0.0	8.0	5.4	0.0	4.5
Prop In Lane	1.00		0.28	1.00		0.28	1.00		0.05	1.00		0.12
Lane Grp Cap(c), veh/h	62	800	796	22	760	757	135	0	234	135	0	231
V/C Ratio(X)	0.70	0.81	0.82	0.50	0.39	0.40	0.81	0.00	0.74	0.81	0.00	0.43
Avail Cap(c_a), veh/h	150	924	920	101	875	871	180	0	560	180	0	552
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	38.8	17.4	17.4	40.0	14.0	14.0	36.8	0.0	33.7	36.8	0.0	32.1
Incr Delay (d2), s/veh	13.3	5.0	5.3	16.8	0.3	0.3	17.7	0.0	4.5	17.7	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	13.4	13.5	0.3	4.4	4.4	3.1	0.0	4.0	3.1	0.0	2.1
LnGrp Delay(d),s/veh	52.0	22.4	22.7	56.8	14.3	14.3	54.4	0.0	38.1	54.4	0.0	33.4
LnGrp LOS	D	C	C	E	B	B	D		D	D		C
Approach Vol, veh/h		1348			608			281			208	
Approach Delay, s/veh		23.5			15.1			44.5			44.4	
Approach LOS		C			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	11.9	16.8	6.2	46.7	11.9	16.8	8.2	44.7
Change Period (Y+Rc), s	5.1	5.4	5.1	6.2	5.1	5.4	5.1	6.2
Max Green Setting (Gmax), s	9.1	27.2	5.1	46.8	9.1	27.2	7.6	44.3
Max Q Clear Time (g_c+I1), s	7.4	10.0	2.6	30.2	7.4	6.5	4.1	11.9
Green Ext Time (p_c), s	0.0	1.3	0.0	10.3	0.0	1.4	0.0	15.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.6
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	31.4
Intersection LOS	D

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations			✥				✥				✥	
Traffic Vol, veh/h	0	30	383	10	0	19	315	230	0	10	120	42
Future Vol, veh/h	0	30	383	10	0	19	315	230	0	10	120	42
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	7	7	7	2	7	7	7	2	7	7	7
Mvmt Flow	0	33	416	11	0	21	342	250	0	11	130	46
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	24.8	43.5	13.8
HCM LOS	C	E	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	7%	3%	20%
Vol Thru, %	70%	91%	56%	60%
Vol Right, %	24%	2%	41%	20%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	172	423	564	50
LT Vol	10	30	19	10
Through Vol	120	383	315	30
RT Vol	42	10	230	10
Lane Flow Rate	187	460	613	54
Geometry Grp	1	1	1	1
Degree of Util (X)	0.358	0.754	0.932	0.113
Departure Headway (Hd)	6.903	5.901	5.471	7.493
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	520	616	668	477
Service Time	4.957	3.92	3.486	5.562
HCM Lane V/C Ratio	0.36	0.747	0.918	0.113
HCM Control Delay	13.8	24.8	43.5	11.5
HCM Lane LOS	B	C	E	B
HCM 95th-tile Q	1.6	6.8	12.6	0.4

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations			✥	
Traffic Vol, veh/h	0	10	30	10
Future Vol, veh/h	0	10	30	10
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	7	7	7
Mvmt Flow	0	11	33	11
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	11.5
HCM LOS	B

Intersection	
Intersection Delay, s/veh	23.9
Intersection LOS	C

Movement	EBU	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBU	NBL	NBT	NBR
Lane Configurations												
Traffic Vol, veh/h	0	50	325	10	0	10	454	60	0	40	50	10
Future Vol, veh/h	0	50	325	10	0	10	454	60	0	40	50	10
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	6	6	6	2	6	6	6	2	6	6	6
Mvmt Flow	0	54	353	11	0	11	493	65	0	43	54	11
Number of Lanes	0	0	1	0	0	0	1	0	0	0	1	0

Approach	EB	WB	NB
Opposing Approach	WB	EB	SB
Opposing Lanes	1	1	1
Conflicting Approach Left	SB	NB	EB
Conflicting Lanes Left	1	1	1
Conflicting Approach Right	NB	SB	WB
Conflicting Lanes Right	1	1	1
HCM Control Delay	19.3	32.4	12
HCM LOS	C	D	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	40%	13%	2%	8%
Vol Thru, %	50%	84%	87%	17%
Vol Right, %	10%	3%	11%	75%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	100	385	524	120
LT Vol	40	50	10	10
Through Vol	50	325	454	20
RT Vol	10	10	60	90
Lane Flow Rate	109	418	570	130
Geometry Grp	1	1	1	1
Degree of Util (X)	0.214	0.661	0.856	0.238
Departure Headway (Hd)	7.085	5.689	5.412	6.57
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	509	628	661	549
Service Time	5.093	3.789	3.501	4.578
HCM Lane V/C Ratio	0.214	0.666	0.862	0.237
HCM Control Delay	12	19.3	32.4	11.6
HCM Lane LOS	B	C	D	B
HCM 95th-tile Q	0.8	4.9	9.8	0.9

Intersection	
Intersection Delay, s/veh	
Intersection LOS	

Movement	SBU	SBL	SBT	SBR
Lane Configurations			✥	
Traffic Vol, veh/h	0	10	20	90
Future Vol, veh/h	0	10	20	90
Peak Hour Factor	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	6	6	6
Mvmt Flow	0	11	22	98
Number of Lanes	0	0	1	0

Approach	SB
Opposing Approach	NB
Opposing Lanes	1
Conflicting Approach Left	WB
Conflicting Lanes Left	1
Conflicting Approach Right	EB
Conflicting Lanes Right	1
HCM Control Delay	11.6
HCM LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	30	324	20	20	473	270	70	330	20	170	310	30
Future Volume (veh/h)	30	324	20	20	473	270	70	330	20	170	310	30
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		0.97	1.00		0.97	1.00		0.98	1.00		0.97
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	1810	1810	1900	1810	1810	1810	1810	1810	1900	1810	1810	1810
Adj Flow Rate, veh/h	33	352	19	22	514	76	76	359	20	185	337	9
Adj No. of Lanes	1	1	0	1	1	1	1	1	0	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, %	5	5	5	5	5	5	5	5	5	5	5	5
Cap, veh/h	56	548	30	42	569	471	97	434	24	220	593	491
Arrive On Green	0.03	0.32	0.32	0.02	0.31	0.31	0.06	0.26	0.26	0.13	0.33	0.33
Sat Flow, veh/h	1723	1699	92	1723	1810	1499	1723	1697	95	1723	1810	1499
Grp Volume(v), veh/h	33	0	371	22	514	76	76	0	379	185	337	9
Grp Sat Flow(s),veh/h/ln	1723	0	1791	1723	1810	1499	1723	0	1791	1723	1810	1499
Q Serve(g_s), s	1.5	0.0	14.3	1.0	22.0	3.0	3.5	0.0	16.2	8.5	12.4	0.3
Cycle Q Clear(g_c), s	1.5	0.0	14.3	1.0	22.0	3.0	3.5	0.0	16.2	8.5	12.4	0.3
Prop In Lane	1.00		0.05	1.00		1.00	1.00		0.05	1.00		1.00
Lane Grp Cap(c), veh/h	56	0	578	42	569	471	97	0	458	220	593	491
V/C Ratio(X)	0.59	0.00	0.64	0.53	0.90	0.16	0.79	0.00	0.83	0.84	0.57	0.02
Avail Cap(c_a), veh/h	107	0	591	109	600	497	145	0	565	232	662	549
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	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.6	0.0	23.4	39.0	26.6	20.0	37.7	0.0	28.4	34.5	22.5	18.4
Incr Delay (d2), s/veh	9.6	0.0	2.3	10.1	16.7	0.2	15.1	0.0	8.2	22.3	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	7.4	0.6	13.6	1.2	2.1	0.0	9.0	5.4	6.3	0.1
LnGrp Delay(d),s/veh	48.2	0.0	25.7	49.1	43.2	20.2	52.8	0.0	36.6	56.7	23.4	18.4
LnGrp LOS	D		C	D	D	C	D		D	E	C	B
Approach Vol, veh/h		404			612			455			531	
Approach Delay, s/veh		27.5			40.6			39.3			34.9	
Approach LOS		C			D			D			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	15.4	26.1	7.1	32.3	9.6	31.9	7.7	31.6
Change Period (Y+Rc), s	5.1	5.4	5.1	6.2	5.1	5.4	5.1	6.2
Max Green Setting (Gmax), s	10.9	25.5	5.1	26.7	6.8	29.6	5.0	26.8
Max Q Clear Time (g_c+I1), s	10.5	18.2	3.0	16.3	5.5	14.4	3.5	24.0
Green Ext Time (p_c), s	0.0	2.5	0.0	3.8	0.0	3.7	0.0	1.4

Intersection Summary		
HCM 2010 Ctrl Delay		36.2
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	604	130	10	1023	150	200	130	10	150	150	30
Future Volume (veh/h)	10	604	130	10	1023	150	200	130	10	150	150	30
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.98	1.00		0.98	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	1810	1810	1900	1810	1810	1900	1810	1810	1900	1810	1810	1900
Adj Flow Rate, veh/h	11	657	125	11	1112	152	217	141	9	163	163	24
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, %	5	5	5	5	5	5	5	5	5	5	5	5
Cap, veh/h	23	1274	242	23	1345	183	253	296	19	198	222	33
Arrive On Green	0.01	0.44	0.44	0.01	0.44	0.44	0.15	0.18	0.18	0.12	0.14	0.14
Sat Flow, veh/h	1723	2871	545	1723	3030	413	1723	1681	107	1723	1538	226
Grp Volume(v), veh/h	11	393	389	11	630	634	217	0	150	163	0	187
Grp Sat Flow(s),veh/h/ln	1723	1719	1698	1723	1719	1725	1723	0	1788	1723	0	1764
Q Serve(g_s), s	0.5	14.3	14.3	0.5	27.9	28.0	10.6	0.0	6.5	8.0	0.0	8.8
Cycle Q Clear(g_c), s	0.5	14.3	14.3	0.5	27.9	28.0	10.6	0.0	6.5	8.0	0.0	8.8
Prop In Lane	1.00		0.32	1.00		0.24	1.00		0.06	1.00		0.13
Lane Grp Cap(c), veh/h	23	763	753	23	763	765	253	0	315	198	0	255
V/C Ratio(X)	0.48	0.52	0.52	0.48	0.83	0.83	0.86	0.00	0.48	0.82	0.00	0.73
Avail Cap(c_a), veh/h	99	829	819	99	829	832	308	0	555	288	0	527
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	42.4	17.4	17.4	42.4	21.2	21.2	36.1	0.0	32.1	37.5	0.0	35.5
Incr Delay (d2), s/veh	14.4	0.5	0.6	14.4	6.4	6.6	17.8	0.0	1.1	11.7	0.0	4.1
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	0.4	6.9	6.8	0.4	14.5	14.6	6.3	0.0	3.3	4.4	0.0	4.5
LnGrp Delay(d),s/veh	56.8	17.9	17.9	56.8	27.6	27.8	53.9	0.0	33.2	49.2	0.0	39.6
LnGrp LOS	E	B	B	E	C	C	D		C	D		D
Approach Vol, veh/h		793			1275			367			350	
Approach Delay, s/veh		18.5			27.9			45.4			44.0	
Approach LOS		B			C			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	15.1	20.7	6.3	44.7	17.8	17.9	6.3	44.7
Change Period (Y+Rc), s	5.1	5.4	5.1	6.2	5.1	5.4	5.1	6.2
Max Green Setting (Gmax), s	14.5	26.9	5.0	41.8	15.5	25.9	5.0	41.8
Max Q Clear Time (g_c+I1), s	10.0	8.5	2.5	16.3	12.6	10.8	2.5	30.0
Green Ext Time (p_c), s	0.2	1.7	0.0	14.3	0.2	1.5	0.0	8.4

Intersection Summary	
HCM 2010 Ctrl Delay	29.6
HCM 2010 LOS	C

Comment Letters

1. California Department of Fish and Wildlife, October 5, 2017
2. California Department of Transportation (Caltrans), October 6, 2017
3. Fresno County, October 9, 2017
4. San Joaquin Valley Air Pollution Control District, October 9, 2017
5. San Joaquin Valley Air Pollution Control District, October 12, 2017

State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Central Region
1234 East Shaw Avenue
Fresno, California 93710
www.wildlife.ca.gov

EDMUND G. BROWN JR., Governor
CHARLTON H. BONHAM, Director

October 5, 2017

Mike Sanchez, AICP, MCRP, Assistant Director
Development and Resource Management
City of Fresno
2600 Fresno Street
Fresno, California 93721

Subject: Rendering Plant Relocation (Project); Mitigated Negative Declaration; SCH # 2017091020

Dear Mr. Sanchez:

The California Department of Fish and Wildlife (CDFW) received a notice of completion regarding a Mitigated Negative Declaration (MND) from The City of Fresno for the Rendering Plant Relocation Project pursuant the California Environmental Quality Act (CEQA) and CEQA Guidelines.[1]

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

CDFW ROLE

CDFW is California's **Trustee Agency** for fish and wildlife resources and holds those resources in trust by statute for all the people of the State (Fish & Game Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).). CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species (*Id.*, § 1802). Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

[1] CEQA is codified in the California Public Resources Code in section 21000 et seq. The "CEQA Guidelines" are found in Title 14 of the California Code of Regulations, commencing with section 15000.

CDFW is also submitting comments as a **Responsible Agency** under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381). CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. For example, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish & Game Code, § 2050 et seq.), related authorization as provided by the Fish and Game Code will be required.

PROJECT DESCRIPTION SUMMARY

Proponent: City of Fresno and Darling Ingredients, Inc.

Objective: The City of Fresno seeks to relocate the Darling Ingredients, Inc. rendering plant from its current location southwest of downtown Fresno. The City of Fresno is considering relocation of the rendering facility because non-industrial urban uses have been developed in the area surrounding the existing rendering plant facility subsequent to its establishment and residential homes are now within 800 feet of the facility. The relocation Project will also allow expansion of the plant's allowable processing limits to a permitted maximum of 10 million pounds per week. The Project will require a General Plan Amendment to change the General Plan land use designation of the receiving site from Public Facility to Heavy Industrial, and a rezone of the same property from Public and Institutional (PI) to Industrial-Heavy (IH). In addition, a Conditional Use Permit will be needed to complete the Project. Subsequent ministerial actions, including issuance of grading and building permits, will also be required for Project implementation.

Location: A 40-acre parcel at 5449 West Jensen Avenue, Fresno CA, 93706, just east of the Fresno-Clovis Regional Wastewater Reclamation Facility, comprises the Project site; Assessor's Parcel Numbers 32703041T and 32703038T; 36.7025, -119.8852.

Timeframe: Unspecified.

CDFW offers the comments and recommendations below to assist the City of Fresno in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. As requested, CDFW is providing recommendations on the scope and content of the MND prepared for the Project. Editorial comments or other suggestions may also be included to improve the document.

The MND indicates that the Project area has the potential to support several special-status species. The Project therefore has the potential to impact these species. CDFW recognizes that the MND outlines mitigation measures to reduce impacts to special-status species. However, CDFW is concerned that, as currently drafted, these measures may not be adequate to reduce impacts to a level that is less than significant. Specifically, CDFW is concerned regarding adequacy of mitigation measures for the State threatened Swainson's hawk (*Buteo swainsoni*) and the State species of special concern burrowing owl (*Athene cunicularia*).

COMMENTS AND RECOMMENDATIONS

Swainson's Hawk: The MND indicates potential for Swainson's hawk (SWHA) to nest in the vicinity of the Project. Mitigation Measure BIO-1 describes measures to reduce impacts to SWHA, including pre-activity surveys conducted within a ½-mile buffer of the Project site and within 30 days of Project initiation. However, CDFW recommends that surveys be conducted prior to project initiation following the survey methodology and timing developed by the SWHA Technical Advisory Committee (SWHA TAC 2000). Specifically, CDFW recommends that surveys be completed for at least two survey periods immediately prior to the Project's initiation. SWHA TAC identifies survey periods as follows: (I) January to March 20, (II) March 20 to April 5, (III) April 5 to April 20, (IV) April 21 to June 10, and (V) June 10 to July 30. In addition, SWHA TAC identifies differing levels of survey effort depending on the survey period during which surveys take place. Specifically, one survey is recommended during survey period I, while three surveys are recommended during survey periods II, III, and V. Lastly, SWHA TAC advises against initiating surveys during survey period IV. Further, if ground-disturbing project activities take place during the normal bird breeding season (February 1 through September 15), CDFW recommends that additional pre-construction surveys for active nests be conducted by a qualified biologist no more than 10 days prior to the start of construction.

Mitigation Measure BIO-1 also describes implementation of ¼- to ½-mile no-disturbance buffers in the event a SWHA nest is found. However, if an active SWHA nest is found, CDFW recommends implementation of a minimum ½-mile no-disturbance buffer until the breeding season has ended or until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival. If the ½-mile no-disturbance nest buffer is not feasible, consultation with CDFW is warranted to determine if the Project can be implemented and avoid take. If the Project cannot avoid take, then pursuant to Fish and Game Code Section 2081(b), acquisition of an Incidental Take Permit for SWHA is necessary prior to project implementation to comply with CESA. CDFW recommends fully addressing avoidance, minimization, and mitigation measures for SWHA and that these measures be included as enforceable mitigation in the finalized MND prepared for this Project.

Burrowing Owl: The MND indicates potential for burrowing owl (BUOW) to occur on the Project site. Mitigation Measure BIO-2 describes mitigation measures to reduce Project-related impacts to BUOW. This measure describes the use of eviction and relocation of BUOW found onsite. To reduce impacts of eviction and relocation, the MND identifies compensatory mitigation, in the form of preservation of known BUOW nest sites within Fresno County, at a ratio of 1:1. As currently drafted, this portion of the measure only applies to BUOW nests found and lost due to Project activities. CDFW agrees with the mitigation ratio described in this measure; however, because BUOW rely on burrow habitat year round, CDFW recommends compensatory mitigation extend to any burrow occupied by BUOW, regardless of nesting status or time of year. CDFW recommends fully addressing avoidance, minimization, and mitigation measures for BUOW and that these measures be included as enforceable mitigation in the finalized MND prepared for this Project.

ENVIRONMENTAL DATA

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations (Pub. Resources Code, § 21003, subd. (e)). Accordingly, please report any special status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDB). The CNNDB field survey form can be found at the following link: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/CNDDB_FieldSurveyForm.pdf. The completed form can be mailed electronically to CNDDB at the following email address: CNDDB@wildlife.ca.gov. The types of information reported to CNDDB can be found at the following link: http://www.dfg.ca.gov/biogeodata/cnddb/plants_and_animals.asp.

FILING FEES

If it is determined the Project will have an impact on fish and/or wildlife, an assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final (Cal. Code Regs, Title 14, § 753.5; Fish & Game Code, § 711.4; Pub. Resources Code, § 21089).

CONCLUSION

CDFW appreciates the opportunity to comment on the MND prepared for the Project to assist the City of Fresno in identifying and mitigating Project impacts on biological resources.

More information on survey and monitoring protocols for sensitive species can be found at the CDFW's website (https://www.wildlife.ca.gov/Conservation/Survey-Protocols).

Questions regarding this letter or further coordination should be directed to Renée Robison, Environmental Scientist, at the address provided on this letterhead, by telephone at (559) 243-4014 extension 274, or by electronic email at Renee.Robison@wildlife.ca.gov.

Sincerely,

Julie A. Vance
Regional Manager

REFERENCES

SWHA TAC, 2000. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in the Central Valley of California. Swainson's Hawk Technical Advisory Committee.

Ricky Caperton

From: Padilla, Dave@DOT <dave.padilla@dot.ca.gov>
Sent: Friday, October 06, 2017 3:53 PM
To: Mike Sanchez
Cc: state.clearinghouse (state.clearinghouse@opr.ca.gov)
Subject: Rendering Plant Relocation Project (SCH 2017091020)

Hello Mike,

We have no concerns with the proposed project.

Thank you

David Padilla, Associate Transportation Planner
Office of Planning & Local Assistance
1352 W. Olive Avenue
Fresno, CA 93778-2616
Office: (559) 444-2493, Fax: (559) 445-5875
District 6

County of Fresno
DEPARTMENT OF PUBLIC WORKS AND PLANNING
STEVEN E. WHITE, DIRECTOR

October 9, 2017

Mike Sanchez, AICP, MCRP, Assistant Director
Development and Resource Management
2600 Fresno St. Room 3065
Fresno, CA 93721

SUBJECT: City of Fresno Rendering Plan Relocation Project

Dear Mr. Sanchez,

The County of Fresno appreciates the opportunity to review and comment on the subject Initial Study/Mitigated Negative Declaration (IS/MND). Fresno County requests that the following comments are considered prior to adoption of the MND:

Transportation/Traffic:

It is anticipated that project's operation would use an average of 75 trucks per day, or 150 truck trips per day; total trips projected to generate approximately 273 daily trips. It would typically operate 24 hours per day, 6 to 7 days per week. Two dedicated access points would be provided for the site: Jensen Avenue would serve as the dedicated truck route, and all trucks would access the project site from Jensen Avenue and employees and sales calls would access the site via Cornelia Avenue.

<u>This project impacts Fresno County Roadways and Intersections.</u> Fresno County General Plan Policy TR-A.2 states that:

- The County shall plan and design its roadway system in a manner that strives to meet Level of Service (LOS) D on urban roadways within the spheres of influence of the cities of Fresno and Clovis and LOS C on all other roadways in the county.
- In no case should the County plan for worse than LOS D on rural County roadways, worse than LOS E on urban roadways within the spheres of influence of the cities of Fresno and Clovis, or in cooperation with Caltrans and the Council of Fresno County Governments, plan for worse than LOS E on State highways in the county.

In addition, a project is considered to have a significant impact if its traffic, when added to the traffic of the without-project condition, would cause any of the changes in traffic conditions described below:

1) On roadway segments:
    a) Cause a roadway that is operating at an acceptable LOS to deteriorate to an unacceptable LOS; OR
    b) Cause the V/C ratio (on a directional peak hour basis) to increase by more than 0.05 on a roadway that is already operating at an unacceptable LOS. It should be

noted that a decrease from an unacceptable LOS to a lesser LOS (e.g. from LOS D to LOS E in County areas) is not considered an impact unless the corresponding V/C ratio increase is greater than 0.05.

2) At signalized intersections:
   a) Cause an intersection that is operating at an acceptable LOS to deteriorate to an unacceptable LOS; OR
   b) Cause the average delay to increase by more than 5.0 seconds at a signalized intersection that is operating at an unacceptable LOS.
3) At unsignalized intersections, including all-way stop, minor approach stop, and roundabouts:
   a) Cause a movement or approach that is operating at an acceptable LOS to deteriorate to an unacceptable LOS; OR
   b) Cause the average delay to increase by more than 5.0 seconds on a movement or approach that is operating at an unacceptable LOS. It should be noted that a decrease from an unacceptable LOS to a lesser LOS (e.g. from LOS D to LOS E in County areas) is not considered an impact unless the corresponding delay increase is greater than 5.0 seconds.

Area outside of City Limits/Sphere of Influence is considered a rural setting where the acceptable LOS would be C for the roadways within the County's Jurisdiction. The report should be revised accordingly. The report does not address impacts to the pavement as result of the increased Truck traffic i.e. Traffic Index Analysis. The project is expected to generate a high volume of truck traffic and all of which would travel EB/WB on Jensen Avenue to the project site. Pavement impacts are analyzed based on a comparison of the traffic index with the project to the traffic index without the project. The traffic index is described in detail, and shall be calculated as outlined, in the most recent edition of the Caltrans Highway Design Manual. A 20-year traffic index shall be provided and if the project truck causes the traffic index to be increased by 0.5 or more than the project would cause a significant impact and project would need to mitigate the impact.

County requests the following items:

- Trip Generation - Provide County with justification for the number of truck trip for this type of operations. County staff was not included in any discussions regarding trip generation and distribution
- Traffic Index Analysis on the following road segments: Jensen From East of Marks Avenue to Project Site (west of Cornelia)
- Intersection analysis per County LOS standard
- A left turn analysis on Jensen Avenue at project site access
- A right turn acceleration lane analysis on Jensen at project site access.
- Any modifications to the scope of the project listed above, the traffic impact would need to be revised and County staff should be included in developing the scope of the project since County roadways and intersections are being impacted.
- Since the project impacts County Roadway, County should be included in any discussion related to a fair-share cost for the mitigations identified in the Report.

Intersection/ Mitigation Measure as Identified by the Traffic Study:

1. Jensen Avenue/ Cornelia Avenue (100 % County's Jurisdiction) – Mitigation: Install all-way stop control;
2. Jensen Avenue/ Brawley Avenue(100 % County's Jurisdiction) – Mitigation: Install all-way stop control.

3. Jensen Avenue/ Marks Avenue (100 % County's Jurisdiction) – Mitigations: Install Traffic signal control with protected let-turn phasing and the following lane configurations:
    - One left-turn and a shared through/right-turn lane on the northbound approach;
    - One left-turn lane, one through lane, and one right-turn lane on the southbound approach;
    - One left-turn and a shared through/right-turn lane on the eastbound approach; and
    - One left-turn lane, one through lane, and one right-turn lane on the westbound approach.
4. Jensen Avenue/ West Avenue (25% County's Jurisdiction) – Mitigations: Install Traffic signal control with protected let-turn phasing and the following lane configurations:
    - One left-turn and a shared through/right-turn lane on the northbound approach;
    - One left-turn and a shared through/right-turn lane on the southbound approach;
    - One left-turn lane, one through lane, and a shared through/right-turn lane on the eastbound approach; and
    - One left-turn lane, one through lane, and a shared through/right-turn lane on the westbound approach.

We appreciate the opportunity to comment on the project. If you have any questions, you may e-mail me at cmonfette@co.fresno.ca.us or contact me at (559) 600-4245.

Sincerely,

Christina Monfette, Planner
Development Services Division

CMM:
G:\4360Devs&Pln\EnvPlan\OAR\City of Fresno\Rendering Plant Relocation\Comment Letter.docx

c: Bernard Jimenez, Deputy Director of Planning
William M. Kettler, Development Services Division
Chris Motta, Development Services Division
Marianne Mollring, Senior Planner

October 9, 2017

Mike Sanchez
City of Fresno
Development and Resource Management
2600 Fresno Street, Room 3065
Fresno, CA 93721

Project: Draft Mitigated Negative Declaration for the Rending Plant Relocation Project

District CEQA Reference No: 20170997

Dear Mr. Sanchez:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the Draft Mitigated Negative Declaration (Draft MND) for the Rendering Plant Relocation Project. The Rendering Plant Relocation Project consists of relocating the Darling Ingredients, Inc. rendering facility from its current location on Belgravia Avenue, just southwest of downtown, to the undeveloped, 40-acre, City owned parcel east of the existing Fresno-Clovis Regional Wastewater Reclamation Facility (FWRF), constructing a 44,600 square feet rendering plant facility, and expanding its peak daily processing rate from approximately 850,000 pounds to approximately 2 million pounds of raw materials (Project). The Project is located at 5449 West Jensen Avenue, in Fresno, CA. The District offers the following comments:

1. On Page 3-15, the Draft MND includes a qualitative discussion regarding the Project's criteria pollutant emissions. The Draft MND states that the Project is below the District's screening level of 920,000 square feet for a heavy industrial development and 1,506 trips for an industrial development and concludes that criteria pollutant emissions would be less than significant. However, in *Appendix B Air Quality, Greenhouse Gas, and Noise Modeling Details*, a quantitative analysis was conducted for the Project using the California Emissions Estimator Model (CalEEMod). The results of the CalEEMod analysis for the Project demonstrates that the mitigated NOx emissions during operations are estimated to be 24.59 tons per year, which is above the District's significance threshold of 10 tons per year. This is inconsistent with the conclusion in the Draft MND that states the impact would be less than significant. Therefore, the District recommends clarification of this discrepancy and correction of the analysis if needed.

2. On Page 3-15, the Draft MND includes a qualitative discussion regarding the Project's impact on the ambient air quality standard. The Draft MND states that the Project is below the District's screening level for an industrial land use and would be subject to stationary permit limits/requirements required by District Rule 2201 (New and Modified Stationary Source Review Rule). Therefore, the Project would not violate or contribute substantially to an existing or projected air quality violation and the impact would be less than significant.

   The District would like to clarify that determination of whether project emissions would violate any ambient air quality standard is largely a function of air quality dispersion modeling. If project emissions would not exceed State and Federal ambient air quality standards at the project's property boundaries, the project would be considered not to violate any air quality standard or contribute substantially to an existing or projected air quality violation.

   The need to perform an air quality dispersion modeling analysis (also known as an ambient air quality analysis) for any project depends on the level of emissions associated with the proposed Project. The impact may be significant when on-site emissions increases from construction activities or operational activities exceed the 100 pound per day screening level of any pollutant after implementation of all enforceable mitigation measures.

   The District recommends that the daily Project emissions be quantified and compared against the 100 pounds per day screening level. Should any pollutant emissions exceed the screening level of 100 pounds per day, the District further recommends that an ambient air quality analysis be performed for all criteria pollutants in which an ambient air quality standard exists, such as those listed for the California Ambient Air Quality Standard (CAAQS) or National Ambient Air Quality Standard (NAAQS).

   If an ambient air quality analysis is determined to be necessary, the District recommends consultation with District staff to determine the appropriate model and input data to use in the analysis.

3. A Health Risk Screening/Assessment identifies potential Toxic Air Contaminants (TAC's) impact on surrounding sensitive receptors such as hospitals, daycare centers, schools, work-sites, and residences. TAC's are air pollutants identified by the Office of Environmental Health Hazard Assessment/California Air Resources Board (OEHHA/CARB) (https://www.arb.ca.gov/toxics/healthval/healthval.htm) that pose a present or potential hazard to human health. A common source of TACs can be attributed to diesel exhaust emitted from both mobile and stationary sources. Industry specific TACs generated must also be identified and quantified.

   The District recommends the Project be evaluated for potential health impacts to surrounding receptors (on-site and off-site) resulting from operational and multi-year construction TAC emissions.

i. The District recommends conducting a screening analysis that includes all sources of emissions. A screening analysis is used to identify projects which may have a significant health impact. A prioritization, using CAPCOA's updated methodology, is a recommended screening method. A prioritization score of 10 or greater is considered to be significant and a refined Health Risk Assessment (HRA) should be performed. The prioritization calculator can be found at: http:www.valleyair.org/busind/pto/emission_factors/Criteria/Toxics/Utilities/PRIORITIZATION%20RMR%202016.XLS.

ii. The District recommends a refined HRA for projects that result in a prioritization score of 10 or greater. It is recommended that the Project proponent contact the District to review the proposed modeling protocol. The Project would be considered to have a significant health risk if the HRA demonstrates that the Project related health impacts would exceed the Districts significance threshold of 20 in a million for carcinogenic risk and 1.0 for the Acute and Chronic Hazard Indices.

More information on toxic emission factors, prioritizations and HRAs can be obtained by:

- E-Mailing inquiries to: hramodeler@valleyair.org; or
- The District can be contacted at (559) 230-6000 for assistance; or
- Visiting the Districts website (Modeling Guidance) at http://www.valleyair.org/busind/pto/Tox_Resources/AirQualityMonitoring.htm

4. This Project will be subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and will require District permits. Prior to construction, the Project proponent should submit to the District an application for an Authority to Construct (ATC). For further information or assistance, the Project proponent may contact the District's Small Business Assistance (SBA) Office at (559) 230-5888.

5. This Project may be subject to District Rules and Regulations, including: Regulation VIII (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance), Rule 4601 (Architectural Coatings), and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations). In the event an existing building will be renovated, partially demolished or removed, the Project may be subject to District Rule 4002 (National Emission Standards for Hazardous Air Pollutants). The above list of rules is neither exhaustive nor exclusive. To identify other District rules or regulations that apply to this Project or to obtain information about District permit requirements, the applicant is strongly encouraged to contact the District's Small Business Assistance Office at (559) 230-5888. Current District rules can be found online at: www.valleyair.org/rules/1ruleslist.htm.

6. The District recommends that a copy of the District's comments be provided to the Project proponent.

If you have any questions or require further information, please call Sharla Yang at (559) 230-5934.

Sincerely,

Arnaud Marjollet
Director of Permit Services

Brian Clements
Program Manager

AM: sy

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

October 12, 2017

Mike Sanchez
City of Fresno
Development and Resource Management
2600 Fresno Street, Room 3065
Fresno, CA 93721

Project: Mitigated Negative Declaration for the Rending Plant Relocation Project

District CEQA Reference No: 20170997 – Revised Comments

Dear Mr. Sanchez:

The San Joaquin Valley Unified Air Pollution Control District (District) was provided additional information clarifying the project referenced above, the Mitigated Negative Declaration (MND) for the Rendering Plant Relocation Project. The Rendering Plant Relocation Project consists of relocating the Darling Ingredients, Inc. rendering facility from its current location on Belgravia Avenue, just southwest of downtown to the undeveloped 40-acre city-owned parcel, constructing a 44,600 square feet rendering plant facility, and expanding its peak daily processing rate from approximately 850,000 pounds to approximately 2 million pounds of raw materials (Project). The Project is located at 5449 West Jensen Avenue, in Fresno, CA. The District offers the following comments, which replace all prior comments related to this MND:

1. The draft MND states that the Project is below the District's screening level of 920,000 square feet for a heavy industrial development and 1,506 trips for an industrial development, and, through a correction to calculation methodology, has clarified that the Project emissions are not expected to exceed District significance thresholds of 10 tons/year for NOx for either construction or operational phases. The District therefore concurs that the project would have a less than significant impact on air quality.

2. The Project is subject to District Rule 2010 (Permits Required) and Rule 2201 (New and Modified Stationary Source Review) and requires District permits. The District has received an application for an Authority to Construct (ATC) from the Project

proponent for this Project. As one prerequisite of approval of this permit application, the District will require that emissions, including those emissions that cause odors, from all stationary source operations, including rendering operations, are controlled with the best air pollution control technologies available. For further information or assistance, the project proponent may contact the District's Small Business Assistance (SBA) Office at (559) 230-5888.

3. The District recommends that a copy of the District's comments be provided to the Project proponent.

If you have any questions or require further information, please call Sharla Yang at (559) 230-5934.

Sincerely,

Arnaud Marjollet
Director of Permit Services

for Brian Clements
Program Manager

AM: sy