# GLENN COUNTY SOLID WASTE CONVERSION FACILITY PROJECT

Draft Environmental Impact Report

SCH Number 2012082041

Prepared for
Glenn County Planning & Public Works Agency

October 2015

ESA

## Notice of Availability of a Draft Environmental Impact Report for the Glenn County Solid Waste Conversion Facility

**Notice is Hereby Given** that the Glenn County Planning & Public Works Agency has completed an assessment of the possible environmental effects of the following described Project, determined that an Environmental Impact Report (EIR) is appropriate, and prepared a Draft EIR analyzing the potential effects of the Project described below. This determination has been made, and the Draft EIR has been prepared, according to the California Environmental Quality Act (CEQA), the State CEQA Guidelines, and the rules, regulations, and procedures for implementing CEQA as adopted by the Glenn County Planning & Public Works Agency.

**Project Title:** Glenn County Solid Waste Conversion Facility (GCSWCF)

**Lead Agency:** Glenn County Planning & Public Works Agency

**Applicant:** KVB, Inc.

**Project Description:** The Project would include the construction and operation of a new solid waste receiving and transfer facility, anaerobic digester (AD) facility, on-site electrical generation facility, utilities connections, compressed natural gas (CNG) production facility, and fueling station. This Project would be a municipal solid waste (MSW) materials recovery facility (MRF) (up to 500 tons per day) and AD facility. The MRF would consist of mechanical and manual processes to separate out marketable recyclable materials from the MSW waste stream. The products of the AD process are biogas, digestate, and liquid effluent. Biogas would be used onsite as a fuel for power generation, or further processed and converted to CNG. The MRF/AD facilities would cover approximately 8.5 acres of Assessor's Parcel Number 037-260-004-9. The Project is located along Highway 32, approximately three miles west of Hamilton city and five miles east of Orland, in unincorporated Glenn County. The Project site is bordered by Highway 32 to the north and Stony Creek to the south, and was formerly used as a gravel processing facility.

**Potential Project Impacts:** The Draft EIR has identified the following potentially significant environmental impacts associated with the Project that can be mitigated to less than significant: air quality impacts from odors, impacts to biological resources, cultural resources, hazardous materials, hydrology and water quality, noise, transportation, traffic and circulation, and fire protection services. Mitigation measures have been proposed that would reduce all of the potentially significant impacts to less-than-significant levels upon implementation. There are no significant environmental impacts that cannot be avoided if the Project is implemented, nor are there any significant irreversible environmental effects that cannot be avoided if the Project is implemented.

**Public Meeting**: During the public review period, Glenn County will conduct a public meeting to receive oral comment on the adequacy of the analysis included in the Draft EIR. The public meeting for the Draft EIR will be held November 18, 2015, at 9:00 AM or as soon thereafter as the businesses of the Planning Commission will allow. The meeting will be held at the Board of Supervisor Chambers, Willows Memorial Hall, 525 West Sycamore Street, 2nd Floor, Willows, CA 95988.

**Public Review Period:** The Glenn County Planning & Public Works Agency appreciates your interest and participation in this environmental review process. The Draft EIR will be available for review beginning October 22, 2015 and ending December 7, 2015. Public comments will be accepted during the public review period until 5:00 p.m. on December 7, 2015. During the public review period, written comments should be mailed, emailed, or hand delivered to:

> Glenn County Planning & Public Works Agency, 777 N. Colusa Street, Willows, CA 95988
> Andy Popper, Associate Planner, APopper@countyofglenn.net, (530) 934-6540

**Obtaining the Draft EIR:** Hardcopies of the Draft EIR can be obtained for a fee by contacting the Planning & Public Works Agency. A CD of the Draft EIR can be obtained for no fee. An electronic copy of the Draft EIR is available for download at http://www.countyofglenn.net. The Draft EIR is also available for public review at the following locations:

**Orland City Library**
333 Mill St.
Orland, CA 95963

**Hamilton City Branch Library**
330 Broadway
Hamilton City, CA 95951

**Board Clerks Office**
525 W Sycamore St.
Willows, CA 95988

**Willows Public Library**
201 N Lassen St.
Willows, CA 95988

**Planning &Public Works Agency**
777 N Colusa St.
Willows, CA 95988

Referenced materials are available for review at the Glenn County Planning & Public Works Agency (address shown above; please call (530) 934-6540 for assistance).

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130954

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# EXECUTIVE SUMMARY

## ES.1 Introduction

This Environmental Impact Report (EIR) has been prepared by the Glenn County Planning & Public Works Agency as Lead Agency to evaluate the potential environmental effects of the proposed Glenn County Solid Waste Conversion Facility (GCSWCF) (the "Project"). 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, Title 14).

This executive summary includes: (a) an overview of the Project description; (b) alternatives to the Project that could reduce potentially significant effects; (c) known areas of controversy; and (d) impacts of the Project and mitigation measures designed to reduce potentially significant impacts (Table ES-2). Each of these topics is discussed in detail in this Draft EIR.

As lead agency, the Glenn County Planning & Public Works Agency determined that this Draft EIR will address the following technical issue areas: air quality and greenhouse gases, biological resources, cultural resources, geology, soils and seismicity, hazardous materials, hydrology and water quality, noise, transportation, traffic and circulation, and utilities and fire protection services. As demonstrated in this EIR, all Project impacts are less than significant or may be reduced to a less-than-significant level through implementation of feasible mitigation measures.

During the public review period, Glenn County will conduct a public meeting to receive oral comment on the adequacy of the analysis included in the Draft EIR. The public meeting for the Draft EIR will be held Wednesday November 18, 2015, at 9:00 AM or as soon thereafter as the business of the Planning Commission will allow. The meeting will be Board Supervisor Chambers, Willows Memorial Hall 525 West Sycamore Street, 2nd Floor, Willows, CA 95988. The Draft EIR is also available for review at the following locations:

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# ES.2 Project Objectives

The objectives are intended to demonstrate the purpose of the Project. The primary objectives of the Project include the following:

- Divert and recycle up to 70 percent of County municipal solid waste from landfill disposal.
- Provide a replacement solid waste management system for the County, up to the currently permitted waste management level of 200 tons per day, due to the planned closure of the Glenn County Landfill.
- Assist the County in complying with State mandates to divert solid waste from landfill disposal.
- Support the *General Plan Energy Element* goal to see the development of renewable energy facilities in Glenn County that support a diversified and stable economic base while preserving valuable agricultural land and protecting public health and safety and the environment.
- Support Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, greenhouse gas (GHG) reduction measures related to the use of anaerobic digestion:
  - *Measure E-3*. Achieve a 33 percent renewable energy mix by 2020 (AD facilities produce biogas, which is a renewable energy source).
  - *Measure RW-3*. High Recycling/ Zero Waste (AD is one of five subcategories listed under this measure).
- Establish a waste recovery facility within the Glenn County Recycling Market Development Zone (RMDZ). The RMDZ program combines recycling with economic development to fuel new businesses, expand existing ones, create jobs, and divert waste from landfills. The RMDZ program provides loans, technical assistance, and free product marketing to businesses in a RMDZ that use materials from the waste stream to manufacture their products. Each RMDZ differs in target materials to be diverted from the waste stream and incentives for using materials from the waste stream.
- Include wastes from Chico that would increase tipping-fee revenues and biogas production that could both directly or indirectly make Phase II (AD facility) more successful.

# ES.3 Project Description

## Introduction

KVB, Inc., (KVB) is proposing to develop the Glenn County Solid Waste Conversion Facility (GCSWCF) (the “Project”). The Project would include the construction and operation of a municipal solid waste (MSW) materials recovery facility (MRF), transfer station (TS) and anaerobic digestion (AD) facility. These facilities and associated facilities, equipment and operations are described in more detail in this Chapter and would be used to manage municipal solid waste (MSW) from Glenn County and potentially from the City of Chico.

The Project is planned to be developed in two phases (as described else in the Project Description). Phase 1 would be the construction and operation of the MRF and Phase 2 would be the construction and operation of the AD facility.

## Project Location

The main facilities (MRF/AD Processing Area; aerobic stabilization lagoons, leach fields, and storm water pond) would cover approximately 8.5 acres of Assessor's Parcel Number 037-260-004-9 on the south side of SR 32, approximately three miles west of Hamilton City and five miles east of the City of Orland, in the unincorporated area of Glenn County. Total pavement area would be approximately 250,000 sf (5.7 acres). The Project originally included an additional 37-acre Land Application Area (where digestate could be applied to the land), but that has been removed from the Project. The Project now plans to remove the digestate from the facility and deliver it to local composters (to add to their processing) or, if that is not feasible, or take the digestate to a landfill for disposal. **Figure ES-1** shows the regional location of the Project. The MRF/AD area is to be situated at the location of a previous gravel processing facility, between SR 32 to the north and Stony Creek to the south. **Figure ES-2** is an aerial map showing the location of the MRF/AD Processing facilities, the Project site (Project Study Area ~46.7 acres) and the overall property boundary. The Project site is within Assessor's Parcel Number 037-260-004-9. The Assessor's Parcel Numbers for the property boundary are 037-250-010-9, 037-260-004-9, 037-260-005-9, and 037-260-007-9. The property is currently owned by the Project applicant, and is located within the County RMDZ.

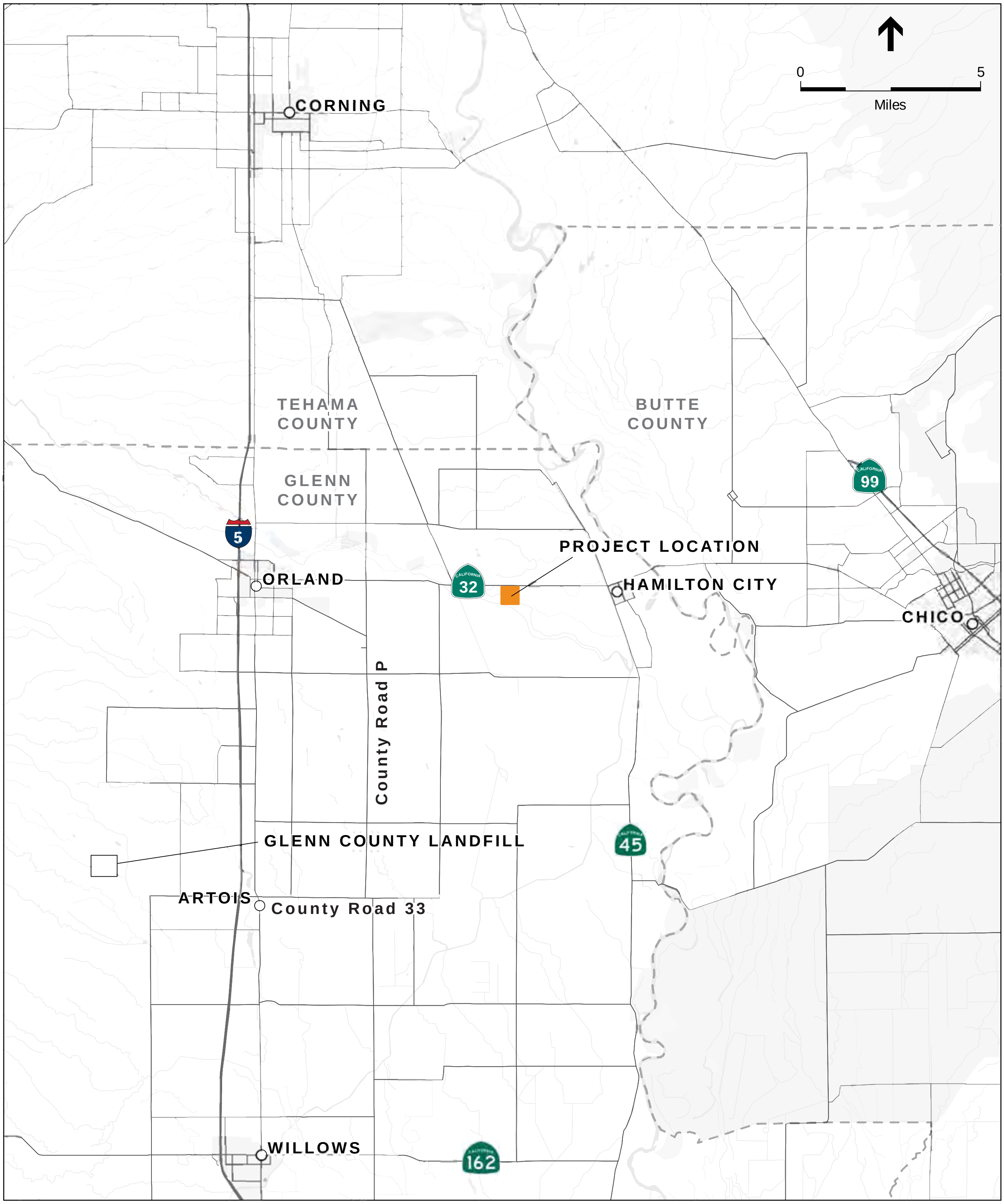
The nearest residence is located approximately one-quarter mile to the northwest of the Project site. The Project site currently has an area zoned Industrial and areas zoned Agricultural. The areas surrounding the Project site are zoned either Agricultural or Industrial. Access to the Project site would be from SR 32.

## Project Overview

The Project plans to receive and process wastes that currently are delivered to the Glenn County Landfill and also relocate the PHHWCF operation. The Glenn County Landfill is currently permitted to receive up to 200 tons per day (tpd) of MSW and 200 vehicles per day. Incoming MSW at the Glenn County Landfill has averaged approximately 20,000 tons per year (tpy) in recent years, an average of approximately 65 tpd (operational days). In addition to wastes from Glenn County, the Project may also receive and process MSW from other jurisdictions, including commercially hauled loads from the City of Chico. General public waste from Chico will not be accepted at the facility.

The City of Chico is approximately 13 miles east of the Project site (see **Figure ES-1**). The combined waste streams from Glenn County and Chico would average up to approximately 400 tpd of incoming materials (based on 5 days per week) and peak incoming materials could reach 500 tpd. Yard waste collected in Chico would continue to be processed in Chico and would not be hauled to the Project site.

The Project concept uses local to California technology providers: The CP Group for the MRF equipment and CleanWorld for the AD facility. The CP Group describes their group of companies as the industry leader and supplier of automated turn-key processing and sorting systems for single stream and dual stream MRFs. CleanWorld is a leader in AD technology with three commercial-scale digesters using the High Rate Digestion (HRD) system installed in the Sacramento region.




SOURCE: DeLorme Street Atlas USA, 2000; ESA, 2014

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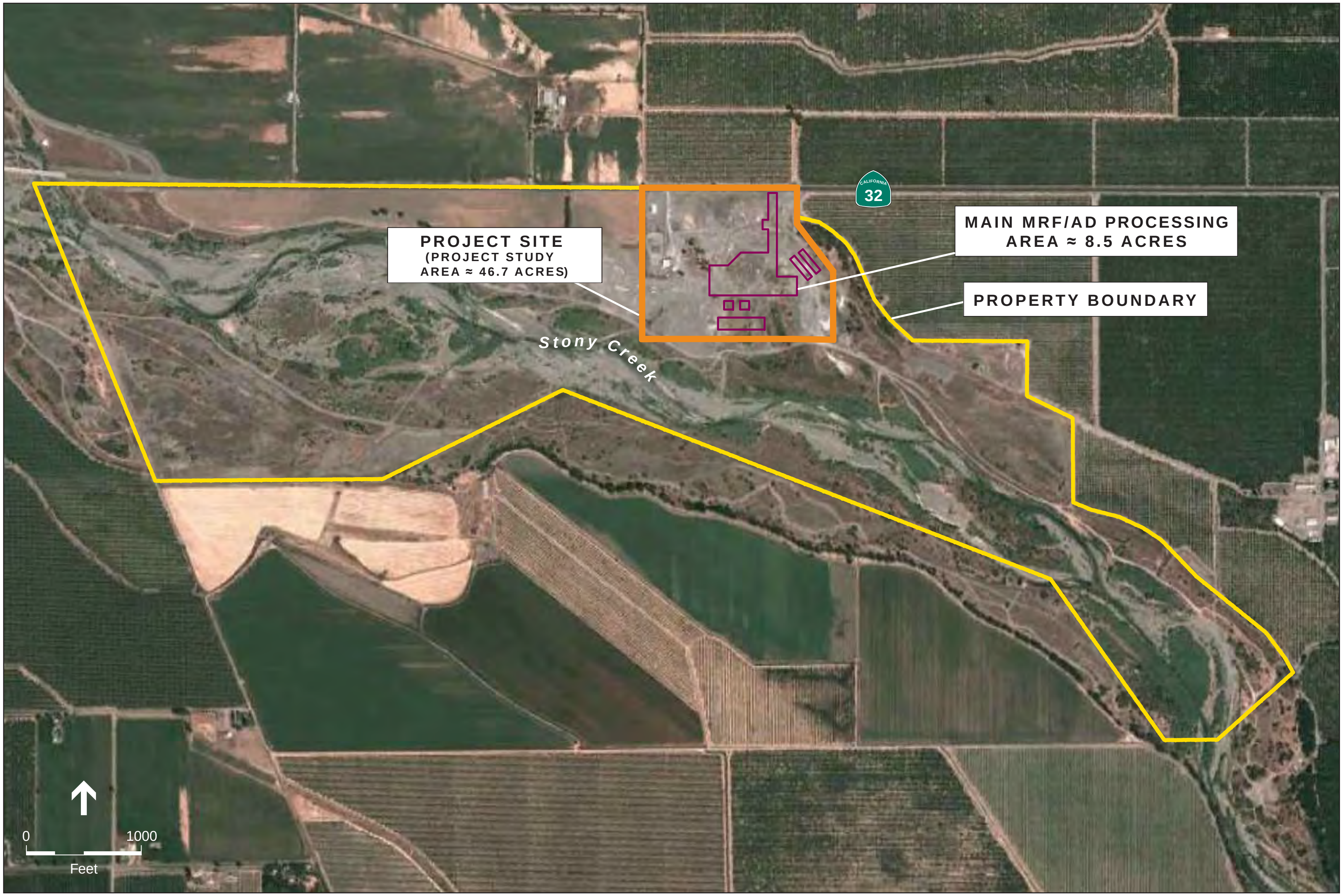
**Figure ES-1**
Regional Location




SOURCE: GCWCF Project Description, 2014

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**Figure ES-2**
Project Site

The Phase I Separation Building (see **Figure ES-3**) would include a dirty MRF. A dirty MRF is a MRF that accepts a mixed waste stream and separates out organic materials and recyclable materials through a combination of manual and mechanical sorting. Incoming materials would be received from waste hauling trucks and private vehicles (private vehicles from Glenn County Only). The modification would add left and right turn lanes. The lanes were recommended in the Transportation Impact Analysis to maintain safety in the area. The turn lanes would provide space for decelerating vehicles (especially trucks) to help ensure that conflicts with through traffic would not develop (Abrams Associates, 2015).

The Project is not designed to have separate recycling trucks but to co-mingle the MSW non-hazardous waste streams (a single-stream system) and use mechanical and manual sorting at the MRF to recover recyclables. The Project would eliminate the requirement for separate recycling trucks. The applicant's detailed Project Description indicated that a large advantage of the GCSWCF system is that it enables communities that use the system to effectively stop separating household waste into recyclable and non-recyclable components because separation of the household waste stream is achieved at the waste conversion facility. This system design would allow for the elimination of the current curbside recycling program in Glenn County, which would enable the County to effectively remove one truck trip to current curbside pickup points (residences) each day, thus reducing residential collection traffic by approximately half. In the NOP Scoping meeting on January 21, 2015, the applicant explained that a single stream system would allow for better overall recycling even though comingling would affect the quality of potentially recyclable materials. KVB representative Ryne Johnson elaborated on this during the public scoping meeting. He stated that the applicant performed a waste characterization study for wastes currently disposed at Glenn County Landfill and found that approximately 30-40 percent (or higher) of materials currently landfilled could be recovered above the materials that are currently recycled. He indicated that mechanical and manual sorting should be more efficient over a community basis even though some material would be lost by contamination. He also stated that overall recovery is expected to be higher than current recovery levels (that use source separation at residences and collection by recycling trucks).

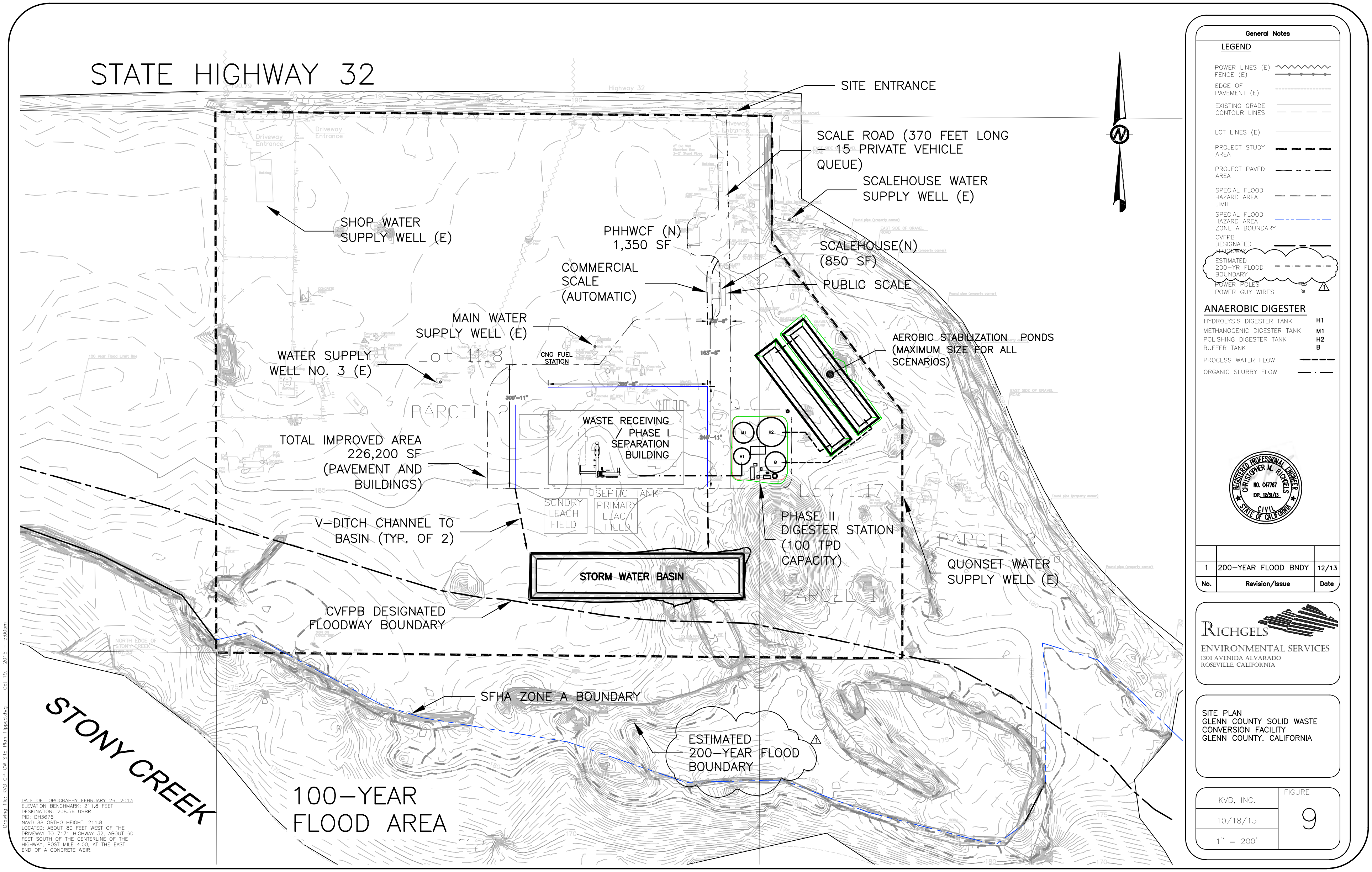
## Project Facilities

Phase I facilities would include:

- Scale house Road
- PHWCF (1,350 sf)
- Weigh scale (850 sf)
- Construction and Demolition Receiving and Processing Area
- Waste Receiving/Phase I Separation Building (the MRF/TS Building) (59,400 sf)
- Three water supply wells

Phase II facilities would include:

- The Anaerobic Digester Station (100 tpd capacity)
- Two aerobic stabilization ponds (each ~15,200 sf maximum)
- Compressed Natural Gas (CNG) production facility
- CNG Vehicle Fueling Station intended for commercial waste hauling fleet vehicles




SOURCE: Richgels Environmental Services; RCH Group, 2015



**Figure ES-3**
Site Plan

## Site Plan

The site plan of the Project is presented in **Figure ES-3**. Vehicles would enter the site from SR 32 at the north end of the site. Vehicles would go directly to the weigh scale, or stop first to drop off household hazardous wastes at the PHHWCF. After the weigh scale, vehicles with construction and demolition debris would go to the Construction and Demolition Receiving and Processing Area. Other vehicles would go to the Waste Receiving/Phase I Separation Building (the MRF/TS). The waste receiving area would be inside the enclosed Phase I MRF/TS building. The north side of the building can provide up to five 20-foot wide openings (a minimum of 14-feet high) for receipt of commercial hauling trucks (packer trucks). The east side of the building would provide up to eight 12-foot wide bays for public and self-haul vehicles (typically pick-up trucks and autos with trailers). This configuration is intended to separate public off-loading activities from off-loading activities for the commercial trucks.

The proposed waste separation (MRF/TS) building would be 180 feet by 330 feet in size. This building would contain the primary mechanical sorting process to separate the organic material in the received MSW from the inorganic fraction and then separate recyclables from the remaining MSW.

# ES.4 Project Operation

The Project has been designed to incorporate demonstrated commercial processes that have undergone the regulatory review and approval processes that are required for facilities to operate in California. While the technologies specified for this Project are in use in permitted facilities in California, the integration of all components would be unique. The process model has two major waste processing/recovery phases:

> **Phase 1** – MRF operations would first remove bulky materials and then separate materials as (1) organic materials for offsite compost feedstock, or offsite AD feedstock, (2) recyclable materials, or (3) residual materials (for landfill disposal).
>
> **Phase 2** – An AD process to produce biogas and digestate (potentially compost feedstock) from organic material. This phase would also generate residual materials (for landfill disposal) from separation of the organic materials provided by Phase 1.

These phases are discussed in more detail below.

## MRF – First Solids Separation (Phase 1, Subphase 1)

The Phase I Separation Building (see **Figure ES-3**) would include a dirty MRF that accepts a mixed waste steam and separates out organic materials and recyclable materials through a combination of manual and mechanical sorting. Incoming materials would be received from waste hauling trucks and private vehicles. The initial sorting would occur on the building floor. These initial (pre-sorting) activities would remove large items like chairs, white goods, wood, metals, etc. from the material stream. During this initial activity, facility staff would also inspect received loads for any household hazardous wastes and separate those materials for delivery to the PHHWCF. After bulky and household hazardous items are removed the remaining materials would be placed on the conveyor to enter the mechanical sorting system.

The mechanical sorting system (conveyor, trommel screens and disc screens) would process the materials so that the materials would go to either (1) the organic conveyor and organics separation process (if the materials are less than 2 inches in diameter [two-inch minus materials]) or (2) second solids separation subphase that would sort the materials to separate recyclable materials from residual wastes (for landfill disposal). The 2-inch minus material would be processed into organic and inorganic fractions as discussed below.

## MRF – Second Solids Separation (Phase 1, Subphase 2)

The second solids separation phase would occur immediately after the small organic materials are removed from the mechanical separation. This subphase first separates two-dimensional fibrous materials (textiles, plastic sheeting, etc.) from recyclable containers. Then this subphase uses manual and mechanical processes to separate materials by commodity types. Facility operations would separate ferrous and non-ferrous metals, plastics (film and container), cardboard, paper, glass, textiles, and grit/debris from the organic material. Recycled materials would be baled for delivery to markets and system residue (trash) would be loaded into transfer trucks for landfill disposal.

## Organic Waste Material and Energy Recovery (Phase 2)

The applicant has identified the CleanWorld High Rate Digestion (HRD) system for the anaerobic digestion process. As mentioned previously, there are currently three commercial scale CleanWorld HRD systems operating in the Sacramento region.

As discussed above, one output of the Phase 1 Subphase 1 is the two-inch minus material that is the feedstock for Phase 2 organic waste material processing and energy recovery. This material is expected to be rich in decomposable organic material. The maximum Project size would be a 100-tpd organic waste HRD system. The CleanWorld HRD system would include receiving and preprocessing, a liquid transfer module, a heat module, digestion tanks, a microturbine to generate electricity for on-site uses, ancillary pumps, and a flare. The digestion tanks would include a 300,000 gallon hydrolysis tank, a 300,000 gallon methanogenic tank, a 600,000 gallon polishing tank, and a 150,000 gallon buffer tank.

### Preprocessing Solid and Liquid Residual Management

During preparation of the organic material for injection into the HRD system, contaminants would be removed from the two-inch (2”) minus feedstock utilizing a wet separation process. The proposed wet separation process is an open vat system. The 2" minus MRF fines are conveyed first to a metals removal system. The remaining 2" minus waste fraction is deposited into an open intake hopper and cleansed with high pressure water jets. Heavy materials (rock, glass, and grit) drop to the bottom of the first water tank and are removed. The remaining material is further separated by removal of floating materials from the remaining largely organic slurry. The palletized unit is a closed loop system with an approximate water volume of less than 500 gallons. Both fresh and recirculated water, from the stabilization ponds and the digester, can be used in the process.

During Phase I operations, this system would separate organic materials for offsite use as a compost feedstock for offsite anaerobic digester facilities. The organic slurry would be processed through a biosolids type screw press[1] to recycle the water back into the separator and load the dewatered organics for hauling offsite. During Phase II operations, the organic slurry would be pumped directly to the onsite AD hydrolysis tank.

Inorganic materials targeted for removal include plastics, metals, rocks, and other debris that would hinder the organic waste digestion process. As part of the preprocessing, these materials would be separated and retained in containers suitable for handling as solid waste or material recovery if possible. Periodically, per regular material shipment schedules, these containers would be serviced and the materials transported to appropriate material handling facilities. Materials destined for landfill disposal would be removed from the facility along with other MRF residuals unsuitable for recycling markets in accordance with the Solid Waste Facility Permit (SWFP) requirements.

## Skid Systems

The AD facility would include two proprietary Modular Liquid Transfer Skids, and a proprietary Modular Heat Skid. The modular skids would be assembled off-site and transported to the site by truck ready for installation. Use of the skids reduces installation and start-up time; and results in less on-site impacts.

### *Modular Liquid Transfer Skid Systems*

Variable Frequency Drive (VFD) controlled grinder pumps are critical to the operation of the AD process, as the microbial communities responsible for the organic decomposition are reliant on a consistent flow of nutrient-rich material to maintain healthy population levels and balance. These pumps are controlled and monitored with a remote monitoring system to ensure that accurate digester loading is maintained.

### *Modular Heating Skid Systems*

In order to maintain thermophilic temperature, a propane gas boiler would be included as an auxiliary heating source to the electrical generation station waste heat recovery system to ensure that adequate heating capacity is available at all times.

## Digester Tanks

CleanWorld's HRD system combines features of both batch and continuous biological processes in a single system and makes it possible to attain efficient and stable production of biogas from a variety of organic solid and liquid wastes including food scraps, food-processing byproducts, crop residues, paper products, grass clippings, and animal wastes. The Project would use a three-staged solids digester capable of steady biogas production from variable feedstock supply.

1 Ref: http://www.bdpindustries.com/products/dsp-screw-press/

The HRD system would be composed of hydrolysis, methanogenic, buffer, and polishing tanks. The buffer tank would give the AD facility flexibility in feedstock loading rates, as well as unloading schedules for effluent. The tank sizes are shown below in **Table ES-1**.

**TABLE ES-1**
**ANAEROBIC DIGESTER TANK FARM (100 TPD CAPACITY)**

| Tank | Diameter (feet) | Height (feet) | Volume (gallons) |
|---|---|---|---|
| Hydrolysis, H1 | 50 | 22 | 300,000 |
| Hydrolysis, H2 | 70 | 22 | 600,000 |
| Methanogenic, M1 | 50 | 22 | 300,000 |
| Buffer Tank, B | 40 | 16 | 150,000 |

When compared to traditional AD systems, the HRD system requires smaller volume tanks, as the material does not need to be hydro-pulped and is held for a shorter period of time, uses less energy to operate, is scalable, relies upon commercially available components, and possesses design features that optimize the bacterial degradation and conversion of organic wastes and minimize digestion time.

Additionally, the system's low parasitic load (electrical requirements) increases system energy efficiency in comparison with traditional, high-liquid AD systems. The HRD system operates at a thermophilic temperature (120-130° F) and destroys pathogens in the waste making the residual materials potentially usable as compost and organic soil amendment products.

### *Hydrolysis Tank*

CleanWorld's digestion technology divides the three stages of anaerobic digestion into three tanks in order to provide the optimum environment for the different bacteria in each stage. In the first stage—hydrolysis—slurry feedstock is consumed by bacteria and converted biologically to organic acids and nutrients that become feedstock for methanogenic microorganisms (the microbes that generate methane as a metabolic byproduct). The solids content in this tank can be up to 15 percent, utilizing CleanWorld's proprietary combination of hydraulic and mechanical mixing technologies to maintain continuous circulation within the tank. The hydrolysis stage of digestion allows for a wide range of solid feedstock to enter the system and become homogenized before entering the methanogenic stage where a more uniform slurry is desired. Up to 40 percent of the biogas from the AD system could be generated in this first stage of digestion.

### *Methanogenesis Tank*

In the second stage—methanogenesis—the organic acids are converted to methane and carbon dioxide. The residual solids are further liquefied and the solids content is substantially reduced in this tank as the organic material is degraded. Separating the hydrolysis and methanogenesis stages of digestion allows each tank to be maintained as an appropriate environment for the acidogens and methanogens inside the respective tanks.

### *Polishing Tank*

The third and final stage of CleanWorld's process is a polishing tank. The liquid from the methanogenesis tank is transferred to the polishing tank where remaining acids are digested to maximize biogas production and to provide longer solids retention time while allowing for removal of liquid to maintain volume balance.

### *Buffer Tank*

The buffer tank can be used to both transfer and store liquids. This allows flexibility in loading rates as well as discharge rates. There are no mixing or heating elements inside the buffer tank, but the ability to transfer to and from this tank to any other stage in the system is built into CleanWorld's liquid transfer system.

Water for initial filling of the tanks would be from the existing onsite main water well shown on **Figure ES-3**. This well would also supply the process and domestic water needs of the facility.

## Digestate

The Project would result in up to approximately 1,030 tons per year of wet digestate solids as a result of the AD process. The digestate would be collected from the bottom of the digestion tanks.

## Stabilization Ponds

CleanWorld estimates a 100-tpd AD facility would generate a maximum of approximately 28,000 gallons of process wastewater per day. This includes approximately 15,000 gallons per day of water injected into the process to maintain appropriate water content. The process water would be treated in onsite aerobic stabilization ponds (see **Figure ES-3**) to reduce Biological Oxygen Demand (BOD) and ammonia to acceptable levels allowing it to be recirculated back into the process. The aerobic stabilization ponds have been sized to allow for complete evaporation of all water during the later summer months, before the following winter rains. The ponds would be classified as Class II impoundments by the RWQCB. Therefore, a double liner barrier system with leak detection will likely be required for the ponds along with groundwater monitoring.

## Stormwater Management

The Project would include a stormwater management system to divert stormwater (precipitation) run-off away from waste contact and capture stormwater from new impervious surfaces. The system would incorporate ditches and swales to convey stormwater. The system would channel stormwater from the Project's new impervious surfaces (pavement and buildings) to a proposed 4.23 acre-foot stormwater basin shown on Figure 2-3. The proposed stormwater basin would be of sufficient capacity to contain stormwater (with infiltration through the onsite permeable soils) and no discharge would occur to Stony Creek.

## Power Generation

CleanWorld has estimated a 100-tpd digestion process (sufficient to accommodate waste from Glenn County and Chico) that would produce approximately 182 million standard cubic feet per year of fuel gas ("biogas"), or roughly 350 standard cubic feet per minute (scfm) in the first year of operations (expected no sooner than 2017/18). The biogas to be produced by this facility would be comprised of approximately 65 percent methane (produced at a rate of 228 scfm), in addition to carbon dioxide, and trace gases such as nitrogen. Using a Low Heating Value (LHV) of 980 British thermal units per cubic foot (Btu/cf) for methane, the energy value of the biomethane fuel is 222,950 Btu/min. Electricity will be generated in an internal combustion (I.C.) engine (a microturbine). Using an energy conversion factor of 41.5%, this system could be expected to generate 1.63 MW of power.

The CP Group has advised that its MRF equipment would require an energy supply of 410 kW for 20 tons per hour of waste processing capacity. CleanWorld has estimated a parasitic load of 74 kW for powering the AD system and 179 kW to operate the CNG fueling station. The total facility equipment instantaneous power demand including 150 kW for building lights and other electrical parasitic load would then be 813 kW. A lower power generator will have slightly lower efficiencies. An 850 kW generator would have a conversion efficiency of 39%. The fuel demand for that supply would be approximately 124,000 Btu/min, or 126 SCFM of biomethane – slightly more than half the amount expected to be produced.

The remaining 102 SCFM of biomethane would be available for CNG production. Assuming the CNG plant is down for an extended time, while the anaerobic digester plant operation continues, would require backup biogas control by means of an enclosed ground flare. The estimated Weekly Bioenergy Reserve (Btu) for the considered Glenn County/Chico scenario is 1,388,049,880 Btu/week or 8.26 MM Btu/hr (Richgels, 2014). This calculation assumes onsite power generation continues to power the facility and the flare, even if the CNG plant is down for an extended period. That reserve energy flow however, was based on a Low Heating Value (LHV) of 980 Btu/cf for methane gas. Converting to the methane high heating value (HHV) of 1,012 Btu/cf implies the flare would have to manage 8.5 MM Btu/hr. A 10 MM Btu/hr biogas flare with a turndown ratio of five[2] would have an operating range between 10 and 2 MM Btu/hr (Richgels, 2014).

The energy content of one gallon of conventional diesel is approximately 128,450 Btu/ga (LHV). The remaining biomethane flow would produce approximately a 1,120 diesel gallon equivalent (DGE) of CNG fuel per day.

## CNG Fueling Station

The Project proponent has been in contact with the Sacramento SATS facility CNG fuel station operator, Atlas Refuel. Atlas Refuel's station is based on Clean Energy technology. Clean Energy builds both private and public, time-fill (aka slow) and "fastfill" fueling stations, serving all types of Clean Energy Natural Gas: CNG (Compressed Natural Gas), LNG (Liquefied Natural Gas) and LNG / CNG (combined Liquefied & Compressed Natural Gas). All stations include a biogas dryer element and twin CNG compressors that compress the biogas to 4,500 psi. The compressed gas is stored in storage vessels (two vessels), which deliver the CNG to the fuel island dispensers.

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[2] Enclosed flares can operate within a range of fuel flow and still maintain required residence time and combustion temperature. A turn down ratio of 5 means the flare could operate between 10 and 2 MM Btu/hr within permit conditions.

The fuel island dispensers can either be slow fill dispensers for overnight recharge of bus fleet vehicles for example or quick fill dispensers similar to commercial gasoline pumps for quick refill of waste or other material hauling vehicles. The quick fill dispenser station (minimum two pumps) is proposed for the GCSWCF CNG fueling station.[3]

## ES.5 Alternatives to the Proposed Project

The purpose of the alternatives analysis in an EIR is to describe a range of reasonable alternatives to the Project that could feasibly attain the objectives of the Project, and to evaluate the comparative merits of the alternatives (CEQA Guidelines Section 15126.6(a)).

Additionally, CEQA Guidelines Section 15126.6(b) requires consideration of alternatives that could avoid or substantially lessen any significant adverse environmental effects of the Project, including alternatives that may be more costly or could otherwise impede the Project's objectives.

The CEQA Guidelines recommend that an EIR should briefly describe the rationale for selecting the alternative to be discussed, identify any alternatives that were considered by the lead agency, but were rejected as infeasible, and briefly explain the reasons underlying the lead agency's determination (CEQA Guidelines Section 15126.6(c)).

The following alternatives are discussed in greater detail in Chapter 5, Alternatives:

1. No Project Alternative
2. Glenn County Landfill Location Alternative
3. Materials Recovery Facility (MRF) Only Alternative

Compared to the alternatives analyzed, the Glenn County Landfill Location Alternative is the environmentally superior alternative because the changes in impacts are both slightly reduced by the two build Alternatives, but the Glenn County Landfill Location Alternative more clearly meets more of the objectives of the Project. However, it should be noted that the original Project would meet all of the Project objectives and could be implemented with mitigation measures that would reduce all of the Project impacts to a level that would be less than significant.

## ES.6 Areas of Controversy

Comments received on the Project include those that were received in response to the EIR Notice of Preparation as well as comments received in 2012 and 2013 during early consultation and review of the Project Description.

The areas of controversy identified included, but are not limited to, the following

- Several commenters expressed concerns about the impact of the Project on water quality. Concerns included the porosity of the soil at the Project site and the quality of the water

[3] Info from https://www.cleanenergyfuels.com/services/engineeringandconstruction/

discharged to land and/or to Stony Creek, including concerns that the water could be contaminated by heavy metals and pharmaceutical waste.

- A general concern expressed by commenters included the amount of traffic that would be generated by the Project on SR 32 and how it would impact surrounding communities.
- Concerns regarding the handling, storage, and transportation of hazardous materials.
- Commenters expressed concerns about litter, dust, and odors that would be generated by the Project, and how they would be mitigated.
- The Hamilton City Fire Protection District commented multiple times, concerning back- up power, water storage, and the additional training and equipment needed for volunteers to respond to possible emergencies at the site.
- A couple of commenters suggested that the Project should be located on property owned by the County, including the existing landfill.

## ES.7 Significant Unavoidable Effects

The Project does not have any significant unavoidable impacts.

## ES.8 Summary of Impacts and Mitigation Measures

**Table ES-2** presents a summary of the environmental impacts that would occur with Project implementation and recommended mitigation measures. The level of significance for each impact was determined using standards of significance presented in the sections of Chapter 3. Significant impacts are those adverse environmental impacts that would meet or exceed the significance thresholds; less-than-significant impacts would not exceed the thresholds.

Table ES-2 presents: (1) environmental impacts; (2) level of significance prior to mitigation measures; (3) recommended mitigation measures; (4) level of significance after mitigation.

**TABLE ES-2**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.1. Air Quality and Greenhouse Gases | | | |
| **Impact 3.1-1:** Conflict With or Obstruct Implementation of the Applicable AQMP. The Project would not conflict with or obstruct implementation of the applicable AQMP. | No mitigation measures are required. | LS | NA |
| **Impact 3.1-2:** Construction of the Project would generate emissions of criteria air pollutants that could contribute to existing nonattainment conditions. | No mitigation measures are required. | LS | NA |
| **Impact 3.1-3:** Operation of the Project would generate emissions of criteria air pollutants that could contribute to existing nonattainment conditions. | No mitigation measures are required. | LS | NA |
| **Impact 3.1-4:** Construction and/or operation of the Project would not expose sensitive receptors to substantial pollutant concentrations. | No mitigation measures are required. | LS | NA |
| **Impact 3.1-5:** Operation of the Project would not create objectionable odors affecting a substantial number of people. | **Mitigation Measure 3.1-5:** Prior to the operation of the MRF and/or AD facilities, the applicant shall develop and implement an Odor Management Plan (OMP) that incorporates equivalent odor reduction controls for digester operations. Odor control strategies that can be incorporated into these plans include, but are not limited to, the following:<br>• A list of potential odor sources;<br>• Identification and description of the most likely sources of odor;<br>• Identification of potential, intensity, and frequency of odor from likely sources;<br>• A list of odor control technologies and management practices that could be implemented to minimize odor releases. These management practices shall include the establishment of the following criteria:<br>– If source separated organics (e.g., from restaurants) are directly transported to the Project site for AD feedstock, then these must be transported to the Project site within sealed containers.<br>– Establish time limit for on-site retention of undigested substrates (i.e., substrates must be put into the digester within 24 hours of receipt).<br>– Provide enclosed, negative pressure buildings for indoor receiving and preprocessing. Treat collected foul air in a biofilter or air scrubbing system. | S | LS |

S = Significant  SU = Significant and Unavoidable  LS = Less than Significant
NA = Not Applicable

**TABLE ES-2 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.1. Air Quality and Greenhouse Gases (cont.) | | | |
| **Impact 3.1-5 (cont.)** | – Establish contingency plans for operating downtime (e.g., equipment malfunction, power outage).<br>– Manage delivery schedule to facilitate prompt handling of odorous substrates.<br>– Handle digestate within enclosed building and/or directly pump to sealed containers for transportation.<br>– Protocol for monitoring and recording odor events.<br>– Protocol for reporting and responding to odor events. | | |
| **Impact 3.1-6:** Implementation of the Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. | No mitigation measures are required. | LS | NA |
| **Impact 3.1-7:** The Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. | No mitigation measures are required. | LS | NA |
| **Impact 3.1-8:** Construction and operation of the Project would not result in a cumulatively considerable increase of criteria pollutant emissions. | No mitigation measures are required. | LS | NA |
| Section 3.2. Biological Resources | | | |
| **Impact 3.2-1:** The Project would have a substantial adverse effect, either directly or through habitat modifications, on nesting raptors and other non-listed special-status nesting birds. | **Mitigation Measure 3.2-1a:** Vegetation Removal Timing Restrictions. If feasible, conduct all vegetation removal and grading activities during the avian non-nesting season (September 1 through January 31). If grading and vegetation removal activities are scheduled to occur during the nesting season, pre-construction bird surveys shall be performed prior to the start of project activities (refer to Mitigation measure 3.2-1b).<br><br>**Mitigation Measure 3.2-1b:** Pre-Construction Nesting Bird Surveys. Pre-construction nesting bird surveys shall be conducted by a qualified wildlife biologist if construction, grading, vegetation removal, or other project-related activities are scheduled during the avian nesting season (February 1 to August 31). During surveys, a qualified biologist shall identify Swainson's hawk nests within 0.5-mile of the project site, nests of all other raptors, including burrowing owl, within 500 feet of the project site, and nests for all other bird species within 250 feet of the project site following CDFW-approved survey protocols. The survey shall be conducted no less than 14 days and no more than | S | LS |

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NA = Not Applicable

**TABLE ES-2 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.2. Biological Resources (cont.) | | | |
| **Impact 3.2-1 (cont.)** | 30 days prior to the beginning of construction, grading, vegetation removal, or other project-related activities. The survey findings shall be submitted to CDFW (via email) at least three days prior to construction.<br><br>For Swainson's hawk, to the extent feasible, survey methodology shall follow guidelines provided in the *Recommended Timing and Methodologist for Swainson's Hawk Nesting Survey in the Central Valley* (Swainson's Hawk Technical Advisory Committee, 2000). For burrowing owl, to the extent feasible, survey methodology shall follow guidelines provided in CDFW's *Staff Report on Burrowing Owl* (CDFG, 2012).<br><br>If pre-construction nesting bird surveys do not identify any nesting raptors or other nesting bird species, no further mitigation will be required. If nesting birds are observed in the search areas defined above, Mitigation Measure 3.2-1c shall be implemented.<br><br>**Mitigation Measure 3.2-1c:** Conduct Nesting Bird Avoidance. If active nests are found within search areas defined in Mitigation Measure 3.2-1b, project-related construction shall be delayed to be conducted outside the nesting season (February 1 through September 1), or no-disturbance buffer zones shall be established to prohibit project-related construction activities near the nest. If nesting individuals are observed, raptors, including burrowing owl, shall be granted a 500-foot no-disturbance buffer zone, and all other migratory birds shall be granted a 250-foot no-disturbance buffer zone. If Swainson's hawk nests are observed within 0.5 miles of the project CDFW shall be contacted to determine appropriate no-disturbance buffer. No-disturbance buffer zones shall be delineated by highly visible temporary fencing and shall remain in place until the young have fledged. No project-related construction activity shall occur within the no-disturbance buffer zone until a wildlife biologist confirms that the nest is no longer active, or unless otherwise permitted by CDFW. | | |
| **Impact 3.2-2:** The Project would have a substantial adverse effect, either directly or through habitat modifications, on Swainson's hawk foraging habitat. | **Mitigation Measure 3.2-2a:** Implement CDFW Guidelines for Swainson's Hawk Foraging Habitat Mitigation. An assessment will be conducted to determine whether active (used during one or more of the last 5 years [CDFG, 1994]) Swainson's hawk nests are present within 10 miles of the Project site. If active nests are present, the project applicant shall compensate to the extent specified by CDFW to replace lost foraging habitat. Habitat compensation ratios will depend on the distance of the affected habitat from known, active nests, as specified in CDGW mitigation guidelines for Swainson's hawk. The publication *Staff Report Regarding Mitigation for Impacts to Swainson's Hawk (Buteo swainsonii) in the Central Valley of California* (CDFG, 1994), recommends mitigation for the removal of suitable Swainson's hawk foraging habitat at a ratio determined by the distance to the nearest nest.<br><br>**Mitigation Measure 3.2-2b:** Limited Use of Rodent Control Measures. Under Project operation, use of rodenticides, herbicides, baited snap traps, or other rodent control practices shall not occur beyond the operations area or the perimeter fencing; rodent control methods shall only be applied to rodent populations within the active operations area. | S | LS |

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NA = Not Applicable

**TABLE ES-2 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.2. Biological Resources (cont.) | | | |
| **Impact 3.2-3:** The Project would have a substantial adverse effect, either directly or through habitat modifications, on American badger. | **Mitigation Measure 3.2-3a:** Conduct Pre-Construction Survey for American Badger. An American badger survey shall be conducted by a qualified wildlife biologist to identify the presence of American badgers. If this species, or potential burrows, are not identified, no further mitigation shall be required. If American badger is identified, they shall be passively relocated using burrow exclusion (e.g., installing one-way doors on burrows) or similar CDFW-approved passive exclusion methods. All relocation activities shall be performed with CDFW coordination and concurrence.<br><br>**Mitigation Measure 3.2-3b:** Implement 20 mile per hour Speed Limit. All project related vehicles shall observe a maximum 20 miles per hour speed limit on project roads.<br><br>**Mitigation Measure 3.2-3c:** Dispose of All Food-Related Trash Items. All food-related trash items (such as wrappers, cans, bottles, and food scraps) shall be disposed or in closed containers and removed daily from the project area. | S | LS |
| **Impact 3.2-4:** The Project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by CDFW, or USFWS. | **Mitigation Measure 3.2-4**. Avoid Environmentally Sensitive Areas (ESA). Prior to ground disturbing activities, a qualified biologist shall clearly delineate all ESAs. To avoid direct impacts to ESAs, no construction or ground disturbing activities should occur within 15 feet of ESAs. | S | LS |
| **Impact 3.2-5:** The Project would not interfere substantially with the movement of any native resident or migratory wildlife corridors, or impede the use of native wildlife nursery site. | No mitigation measures are required. | LS | NA |
| **Impact 3.2-6:** The Project would have indirect impacts to special-status wildlife resulting from support of nuisance species. | **Mitigation Measure 3.2-6:** Implement a "Litter Control and Site Cleanliness Plan." The Project proponent shall prepare and implement a Litter Control and Site Cleanliness Plan to minimize or avoid accumulation of litter or off-site migration of litter. The Litter Control and Site Cleanliness Plan shall also cover cleaning schedule and procedures for operations, facilities, and their equipment, boxes, bins, pits, and other types of containers. The Litter Control and Site Cleanliness Plan shall be approved by Local Enforcement Agency (LEA). | S | LS |
| **Impact 3.2-7:** Construction and operation of the project, in combination with other development, would not result in cumulatively considerable impacts to biological resources. | Implementation of **Mitigation Measures 3.2-1(a-c), 3.2-2(a-b), 3.2-3(a-c), 3.2-4, and 3.2-6.** | S | LS |

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NA = Not Applicable

**TABLE ES-2 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.3. Cultural Resources | | | |
| **Impact 3.3-1:** The Project could result in damage or destruction of known or previously unidentified archeological resources. | **Mitigation Measure 3.3-1:** If prehistoric or historic-era archaeological resources are encountered by construction personnel during Project implementation, all construction activities within 100 feet shall halt and the contractor shall notify the County. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.<br><br>The Applicant shall retain a Secretary of the Interior-qualified archaeologist to inspect the findings within 24 hours of discovery. If it is determined that the Project could damage a historical resource as defined by CEQA, construction shall cease in an area determined by the archaeologist until a mitigation plan has been prepared, approved by the County, and implemented to the satisfaction of the archaeologist (and Native American representative if the resource is prehistoric). In consultation with the County, the archaeologist (and Native American representative) shall determine when construction can commence.<br><br>The mitigation plan shall recommend preservation in place as the preferred alternative. If preservation in place is feasible, this may be accomplished through one of the following means: (1) modifying the construction plan to avoid the resource; or (2) capping and covering the resource before building appropriate facilities on the resource site. If preservation in place is not feasible, a qualified archaeologist shall prepare and implement a detailed treatment plan to recover the scientifically consequential information from and about the resource, which shall be reviewed and approved by the County (and Native American representative) prior to any excavation at the resource site. Treatment for most resources would consist of (but would not necessarily be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the Project. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals. | S | LS |
| **Impact 3.3-2:** Ground-disturbing activities associated with construction of the Project could result in damage to previously unidentified paleontological resources. | **Mitigation Measure 3.3-2:** If paleontological resources are discovered during earth-moving activities the following requirements will be followed: the construction crew shall immediately cease work and the County shall be notified immediately if any paleontological resources (e.g., fossils) are uncovered during construction. All construction must stop in within 100 feet of the find and a paleontologist shall be retained to evaluate the resource and prepare and implement a proposed mitigation plan, including curation, in accordance with Society of Vertebrate Paleontology guidelines (1995). | S | LS |

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NA = Not Applicable

**TABLE ES-2 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.3. Cultural Resources (cont.) | | | |
| **Impact 3.3-3:** Ground-disturbing activities associated with construction of the Project could result in damage to previously unidentified human remains. | **Mitigation Measure 3.3-3:** If human remains are encountered by construction personnel during Project implementation, all construction activities within 100 feet shall halt and the contractor shall notify the District. The applicant shall contact the Glenn County Coroner and affirmatively indicate to the County that no investigation of the cause of death is required. The Native American Heritage Commission (NAHC) will be contacted within 24 hours if the Coroner determines that the remains are Native American. The NAHC will then identify the person or persons it believes to be the Most Likely Descendant, who in turn would make recommendations to the District for the appropriate means of treating the human remains and any associated funerary objects. | S | LS |
| **Impact 3.3-4:** Construction and operation of the proposed Project, in combination with other development, would not result in cumulatively considerable impacts to cultural resources. | Implementation of Mitigation Measures 3.3-1, 3.3-2, and 3.3-3. | LS | LS |
| Section 3.4 Geology, Soils, and Seismicity | | | |
| **Impact 3.4-1:** The Project could expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving groundshaking. | No mitigation measures are required. | LS | LS |
| **Impact 3.4-2:** The Project could expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. | No mitigation measures are required. | LS | LS |
| **Impact 3.4-3:** Construction of the Project could result in substantial soil erosion or the loss of topsoil. | No mitigation measures are required. | LS | LS |
| **Impact 3.4-4:** Proposed improvements could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, potentially resulting in on or off-site landslide, lateral spreading, subsidence, liquefaction, expansive soils, or collapse. | No mitigation measures are required. | LS | LS |

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NA = Not Applicable

**TABLE ES-2 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.4 Geology, Soils, and Seismicity (cont.) | | | |
| **Impact 3.4-5:** The Project site could have soils incapable of adequately supporting the use of the proposed septic system. | No mitigation measures are required. | LS | LS |
| **Impact 3.4-6:** The Project, combined with other past, present, existing, approved, pending, and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to geology, soils or seismicity. | No mitigation measures are required. | LS | LS |
| Section 3.5 Hazardous Materials | | | |
| **Impact 3.5-1:** Implementation of the Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. | **Mitigation Measure 3.5-1:** Prior to final Project design and any earth disturbing activities, the applicant or agency(s) responsible shall conduct an updated Phase I Environmental Site Assessment (ESA) for Project site construction areas. The Phase I ESA shall be prepared by a qualified professional to assess the potential for contaminated soil or groundwater conditions at the project site. The Phase I ESA shall include a review of the 1996 Phase I and II investigations, existing and past land uses through aerial photographs, historical records, interviews of owners and/or operators of the property, observations during a reconnaissance site visit, and review of other relevant existing information that could identify the potential existence of contaminated soil or groundwater in accordance with ASTM Standard e1527-13. The Phase I shall also include a review of the potential presence of hazardous building materials for any onsite structures that may be demolished as part of the Project.<br><br>If the findings of the Phase I ESA recommend further review or sampling, the applicant responsible shall retain a qualified firm to conduct follow-up sampling to characterize the contamination and to identify any required remediation that shall be conducted consistent with applicable regulations prior to any earth disturbing activities. | S | LS |
| **Impact 3.5-2:** The Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. | **Mitigation Measure 3.5-2:** Prior to project approval, the applicant shall prepare and implement a Fire Safety Plan that outlines fire hazards, describes facility operations procedures to prevent ignition of fires, requires regular inspection of fire suppression systems, and provides for worker training in safety procedures as well as protocols for responding to fire incidents. The Fire Safety Plan shall be reviewed by the Hamilton City Fire Protection District and the Glenn County air Pollution Control District (as the CUPA for Glenn County) for compliance with fire codes, handling and storage of hazardous materials, and other applicable County regulations, policies and goals related to fire safety. | S | LS |
| **Impact 3.5-3:** Development of Project could contribute to cumulative impacts related to hazardous materials. | Implement Mitigation Measures 3.5-1 and 3.5-2. | LS | LS |

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NA = Not Applicable

**TABLE ES-2 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.6 Hydrology and Water Quality | | | |
| **Impact 3.6-1:** The Project could degrade water quality. | **Mitigation Measure 3.6-1a:** All chemical holding tanks and vessels shall be equipped with secondary spill/leak containment features that are sized, as a minimum, to hold 100% of the contents of the single largest tank or vessel (if they are completely covered from rain), and the containment volume adjusted up to compensate for any other equipment that reduces the containment volume. Containment areas shall also have automatic leak sensors and audible alarms and should send a signal to the control room should a leak be detected. All tanks and vessels holding process liquids shall be equipped with containment structures or features sufficient to convey overflow to the proposed aerobic stabilization ponds, which shall be designed to include sufficient freeboard to contain any potential overflow from the system, including rainfall.<br><br>**Mitigation Measure 3.6-1b:** The stabilization pond design shall include use of a double-lined geomembrane system with an interstitial leak detection zone that can periodically be sampled to determine if a leak is occurring in the primary liner. The geomembranes shall be underlain by a geosynthetic clay liner (GCL).<br><br>**Mitigation Measure 3.6-1c:** During pre-processing, all water that contacts MRF, construction and demolition area, and digester feedstock, including stormwater from feedstock handling and storage facilities and water from equipment washdown and feedstock wetting, shall be contained until appropriately disposed or utilized. Best Management Practices (BMPs) may be used to reduce loading of sediment, nutrients, trash, organic matter, and other pollutants. These BMPs may include, but are not limited to, trash grates and filters, oil-water separators, mechanical filters such as sand filters, vegetated swales, engineered wastewater treatment wetlands, settling ponds, and other facilities to reduce the potential loading of pollutants into surface waters or groundwater.<br><br>**Mitigation Measure 3.6-1d:** The project applicant shall ensure that (1) drainage from all feedstock loading, unloading, and storage areas is contained onsite or treated to remove trash and stray feedstock, and sediment prior to release as permitted; (2) in all feedstock loading and unloading areas, and all areas where feedstock is moved by front loaders or other uncovered or uncontained transport machinery, the applicant shall ensure that mechanical sweeping and/or equivalent trash control operational procedures are performed at least daily, during operations; and (3) the facility operator shall train all employees involved in feedstock handling so as to discourage, avoid, and minimize the release of feedstock or trash during operations.<br><br>**Mitigation Measure 3.6-1e:** In order to minimize water quality degradation associated with accidental spills, the applicant shall complete and adhere to the requirements of a Spill Prevention, Control, and Countermeasure (SPCC) Plan (SPCC), which is based on the federal SPCC rule. Notification of the SPCC Plan shall be provided to the local Certified Unified Program Agency (CUPA). The SPCC Plan shall contain measures to prevent, contain, and otherwise minimize potential spills of pollutants during facility operation, in accordance with federal, state, and local U.S. EPA requirements. The SPCC Plan shall provide for installation and monitoring of secondary containment and/or leak detection systems to ensure that AD liquids are not accidentally discharged to Stony Creek. Monitoring of these systems shall be in accordance with SPCC Plan requirements. | S | LS |

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NA = Not Applicable

**TABLE ES-2 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.6 Hydrology and Water Quality (cont.) | | | |
| **Impact 3.6-1 (cont.)** | **Mitigation Measure 3.6-1f:** For any proposed discharge to a pond, the applicant shall acquire WDRs from the CVRWQCB. The applicant shall ensure that all ponds and discharges to such ponds adhere to all requirements under applicable WDRs. The need for pond liners in order to protect groundwater quality would be assessed during the CVWQCB's review of the Project, and requirements for pond liners would be included in the WDRs, as warranted. If appropriate, the WDRs would impose requirements for Class II surface impoundments as presented in Title 27 of the California Code of Regulations. Requirements include, but are not limited to, groundwater monitoring, double liner systems with leachate collection, water balance, a preliminary closure plan for clean closure, seismic analysis, and financial assurances. Compliance with WDRs may require the installation of facilities such as tanks and containers to store and process the digestate, the use of filter presses, and implementation of other water quality protection practices. | | |
| **Impact 3.6-2:** Implementation of the Project could increase the risk of flooding onsite or offsite. | **Mitigation Measure 3.6-2:** Prior to issuance of a grading permit, the applicant shall provide to the Glenn County Planning and Public Works Agency a drainage plan complies with all relevant portions of the Glenn County Code, such that onsite and offsite flooding would not occur as a result of the Project drainage system. This includes the ability to capture at least a 10-year flow, and ensure that ponding due to a 100-year flood would not cause damage to the proposed facilities. The Glenn County Engineering Division, as well as, jurisdictional agencies shall confirm that the drainage system is implemented as designed. | S | LS |
| **Impact 3.6-3:** The Project could substantially deplete groundwater supplies. | No mitigation measures are required. | LS | LS |
| **Impact 3.6-4:** Construction and operation of the Project would not result in a cumulatively considerable impact on hydrology, water quality, or groundwater. | No mitigation measures are required. | LS | NA |
| Section 3.7 Noise | | | |
| **Impact 3.7-1:** Project construction could temporarily expose persons to or generate noise levels in excess of the County's noise standards. | No mitigation measures are required. | LS | LS |
| **Impact 3.7-2:** Operation of the Project could expose persons to or generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies. | **Mitigation Measure 3.7-2:** HRD system equipment that would be in operation during the nighttime hours, as defined by the Glenn County Code, shall be required to be attenuated to a level that does not exceed 45 dBA $L_{eq}$ at the nearest residences. Once the construction is complete and the facility is operational, the applicant shall submit to the County a Noise Technical Memorandum from a qualified acoustical consultant showing the nighttime noise levels at the nearest noise sensitive receptor to the Project site while the HRD system equipment is in operation. If post-construction monitoring indicates higher nighttime noise levels from the HRD system equipment at sensitive receptor locations, then | S | LS |

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NA = Not Applicable

**TABLE ES-2 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.7 Noise (cont.) | | | |
| **Impact 3.7-2 (cont.)** | additional noise barriers (such as fences or walls that block any direct line of site to receptors) or sound insulated equipment enclosures would be required to attenuate operations noise to acceptable levels. | | |
| **Impact 3.7-3:** Traffic associated with operation of the Project would result in an increase in ambient noise levels on nearby roadways used to access the Project site. | No mitigation measures are required. | LS | LS |
| **Impact 3.7-4:** Increases in traffic from the Project, in combination with other development, would not result in cumulatively considerable noise increases. | No mitigation measures are required. | LS | LS |
| Section 3.8 Transportation, Traffic and Circulation | | | |
| **Impact 3.8-1:** The Project would not 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, nor would the Project conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures. | No mitigation measures are required. | LS | LS |
| **Impact 3.8-2:** The Project would not substantially increase hazards due to a design feature or incompatible uses. | **Mitigation Measure 3.8-2:** The Project applicant would coordinate with Caltrans for (and would pay its fair share towards) construction of separate left-turn and right-turn lanes on State Route 32 at the Project access intersection. | S | LS |
| **Impact 3.8-3:** The Project would not result in inadequate emergency access. | **Mitigation Measure 3.8-3:** The Project applicant would coordinate with the Hamilton City Fire Protection District for construction of a secondary site driveway (for emergency vehicle access) at the northwest corner of the Project site. | S | LS |
| **Impact 3.8-4:** The Project would not conflict with any adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. | No mitigation measures are required. | LS | LS |

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NA = Not Applicable

**TABLE ES-2 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.8 Transportation, Traffic and Circulation (cont.) | | | |
| **Impact 3.8-5:** Construction activities associated with the Project would result in an increase in traffic to and from the site and could lead to unsafe conditions near the Project site. | No mitigation measures are required. | LS | LS |
| **Impact 3.8-6:** The Project, in combination with past, present, and reasonably foreseeable future projects would not result in a substantial contribution to cumulative transportation impacts. | No mitigation measures are required. | LS | LS |
| Section 3.9 Utilities and Services | | | |
| **Impact 3.9-1:** The Project could have insufficient water supplies available to serve the project from existing entitlements and resources, or need new or expanded entitlements. | No mitigation measures are required. | LS | LS |
| **Impact 3.9-2:** The Project could generate solid waste that would be disposed of at a landfill without sufficient permitted capacity or violate statutes and regulations related to solid waste. | No mitigation measures are required. | LS | LS |
| **Impact 3.9-3:** Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. | No mitigation measures are required. | LS | LS |
| **Impact 3.9-4:** Construction and operation of the Project, in combination with other development, would not result in cumulatively considerable impacts to utilities and services. | No mitigation measures are required. | LS | LS |

S = Significant SU = Significant and Unavoidable LS = Less than Significant
NA = Not Applicable

**TABLE ES-2 (Continued)**
**SUMMARY OF IMPACTS AND MITIGATION MEASURES**

| Environmental Impact | Mitigation Measures | Impact Significance before Mitigation | Impact Significance after Mitigation |
|---|---|---|---|
| Section 3.10 Fire Protection Services | | | |
| **Impact 3.10-1:** The Project could substantially increase demands on fire protection services. | **Mitigation Measure 3.10-1:** The project applicant and/or their architects and engineers shall consult with the Hamilton City Fire Protection District (HCFPD) and the Glenn County Planning and Public Works Agency to determine the specific equipment, supplies, storage, and levels of manpower necessary to sustain acceptable service levels at the Project site and in the HCFPD. | S | LS |
| **Impact 3.10-2:** The Project combined with other related cumulative projects, could have a substantial adverse impact on fire protection services. | Implementation of Mitigation Measure 3.10-1. | S | LS |

S = Significant SU = Significant and Unavoidable LS = Less than Significant
NA = Not Applicable

# CHAPTER 1
Introduction

## 1.1 Introduction

KVB, Inc. (KVB) is proposing to develop the Glenn County Solid Waste Conversion Facility ("Project" or "proposed Project"). The Project would include the construction and operation of a municipal solid waste (MSW) materials recovery facility (MRF), a transfer station (TS), and an anaerobic digestion (AD) facility. These facilities and associated equipment and operations would be used to manage municipal solid waste (MSW) from Glenn County and potentially from the City of Chico. The Draft EIR has been prepared for the County to evaluate the environmental effects of construction and operation of the Project.

## 1.2 Purpose of the EIR

This Draft Environmental Impact Report (EIR) has been prepared in conformance with the California Environmental Quality Act (CEQA) (Public Resources Code sections 21000, et seq.) of 1970 (as amended), and the CEQA Guidelines for Implementing the California Environmental Quality Act (California Code of Regulations, Title 14 sections 15000 et seq.). As described in CEQA Guidelines section 15121(a), an EIR is a public information document that objectively assesses and discloses potential environmental effects of a proposed project, and identifies mitigation measures and alternatives to that project, which would reduce or avoid adverse environmental impacts. CEQA requires that lead, responsible, and trustee agencies consider the environmental consequences of projects over which they have discretionary authority. Glenn County, as the lead agency for the Project, will use the information in this Draft EIR to evaluate the Project's potential environmental impacts; to determine whether any feasible mitigation measures are necessary and available to reduce potentially significant environmental impacts; and to approve, modify, or deny approval of the Project.

## 1.3 Environmental Review and Approval Process

The preparation of an EIR involves multiple steps in which the public is provided the opportunity to review and comment on the scope of the analysis, content of the EIR, results and conclusions presented, and the overall adequacy of the document to meet the substantive requirements of CEQA. The following describes the steps in the environmental review process for the Project.

### 1.3.1 Notice of Preparation

In accordance with sections 15063 and 15082 of CEQA Guidelines, Glenn County prepared a Notice of Preparation (NOP) of an EIR and published it on January 12, 2015. Glenn County provided the NOP to: (1) local, state, and federal agencies; (2) a regional newspaper for legal noticing; (3) land owners within 300 feet of the Project boundaries; and (4) other interested parties. The NOP was circulated for 31 days ending on February 12, 2015. The NOP included Project background information, and a description of proposed facilities. The NOP also identified potential environmental effects. The NOP is included in Appendix A.

Comment letters received in response to the NOP were considered during preparation of this Draft EIR. A public scoping meeting was held at the Glenn County Board of Supervisors' Chambers, 525 West Sycamore Street, Willows, CA, on Wednesday, January 21, 2015 at 11:00 am. The purpose of the public scoping meeting was to provide a forum for the public to learn about the Project and to provide comments on the proposed scope of the EIR analysis.

### 1.3.2 Draft EIR

This Draft EIR will be published and made available to local, regional, state, and federal agencies and to interested organizations and individuals who may want to review and comment on the adequacy of the analysis included in the Draft EIR. Notice of this Draft EIR will also be sent directly to the parties that commented on the NOP. The 45-day public review period for this Draft EIR will be from October 22, 2015 to December 7, 2015. During the public comment period, written comments should be mailed, emailed, or hand delivered to:

Andy Popper
Associate Planner
Glenn County Planning &Public Works Agency
777 North Colusa Street
Willows, CA 95988
Phone: (530) 934-6540
Email: APopper@countyofglenn.net

The Draft EIR will also be available for download from the following internet link:

http://www.countyofglenn.net

Hardcopies of the Draft EIR can be obtained for a fee by contacting the Planning &Public Works Agency. A CD of the Draft EIR can be obtained for no fee.

During the public review period, Glenn County will conduct a public meeting to receive oral comment on the adequacy of the analysis included in the Draft EIR. The public meeting for the Draft EIR will be held November 18, 2015, at 9:00 AM or as soon thereafter as the business of the Planning Commission will allow. The meeting will be held at the Board Supervisor Chambers, Willows Memorial Hall, 525 West Sycamore Street, 2nd Floor, Willows, CA 95988. The Draft EIR is also available for review at the following locations:

**Orland City Library**
333 Mill St.
Orland, CA 95963

**Willows Public Library**
201 N Lassen St.
Willows, CA 95988

**Hamilton City Branch Library**
330 Broadway
Hamilton City, CA 95951

**Board Clerks Office**
525 W Sycamore St.
Willows, CA 95988

**Planning &Public Works Agency**
777 N Colusa St.
Willows, CA 95988

### 1.3.3 Final EIR

Written and oral comments received on the Draft EIR during the public review period will be addressed in a Response to Comments document which, together with the Draft EIR and any changes to the Draft EIR made in response to comments received thereon, will constitute the Final EIR. The Draft EIR and Final EIR together will comprise the EIR for the Project.

### 1.3.4 Mitigation Monitoring and Reporting Plan

Public Resources Code section 21081.6(a) requires lead agencies to "adopt a reporting and mitigation monitoring program for the changes to the project which it has adopted or made a condition of project approval in order to mitigate or avoid significant effects on the environment." The Mitigation Monitoring and Reporting Program (MMRP) will be prepared at the time of the Final EIR for this Project.

### 1.3.5 Approval Process

Before Glenn County makes a decision with regard to the Project, it must first certify that the EIR has been completed in compliance with CEQA, that Glenn County has reviewed and considered the information in the EIR, and that the EIR reflects the independent judgment of Glenn County.

Glenn County also would be required to adopt Findings of Fact, and for those impacts determined to be significant and unavoidable, adopt a Statement of Overriding Considerations, adopt the MMRP, and file a Notice of Determination.

## 1.4 Scope of this EIR

Glenn County identified potentially significant impacts that could result from implementation of the Project in the NOP for this EIR. Based on the NOP (Appendix A) and comments on the NOP, this EIR includes full Sections of Chapter 3 for the following technical issue areas:

- Air Quality and Greenhouse Gas
- Biological Resources
- Cultural and Paleontological Resources

- Geology, Soils, and Seismicity
- Hazardous Materials
- Hydrology and Water Quality
- Noise and Vibration
- Transportation, Traffic, and Circulation
- Fire Protection Services

## 1.5 Organization of the Draft EIR

This Draft EIR is organized as follows:

**Executive Summary.** The Executive Summary presents a summary of the Project description, a description of issues to be resolved, and a summary table listing the impacts that would result from Project implementation, and their level of significance.

**Chapter 1 Introduction.** Chapter 1 describes the intended uses of this EIR, the environmental review and approval process, and document organization.

**Chapter 2 Project Description.** Chapter 2 presents an overview of the Project, outlines the Project objectives, and summarizes the components of the Project.

**Chapter 3 Environmental Analysis.** Chapter 3 describes the existing environmental setting, and discusses the project-specific environmental impacts of the Project.

**Chapter 4 Other CEQA Considerations.** Chapter 4 discusses other CEQA issues, including growth inducing impacts, cumulative impacts, significant unavoidable impacts on the environment, and significant irreversible environmental changes.

**Chapter 5 Alternatives.** Chapter 5 describes alternatives to the Project, along with an analysis of the ability of the alternatives to meet Project objectives and differences in the level of environmental impact(s).

**Chapter 6 Preparers of the EIR.** Chapter 6 provides the names of the Draft EIR authors and subconsultants.

**Chapter 7 Acronyms.** Chapter 7 provides a list of acronyms to assist the readers.

**Appendices.** The appendices include materials that support the findings and conclusions presented in the EIR.

**Agencies or Individuals** consulted during preparation of the EIR are included at the end of every Chapter and at the end of every EIR Section in Chapter 3.

# CHAPTER 2
# Project Description

## 2.1 Introduction

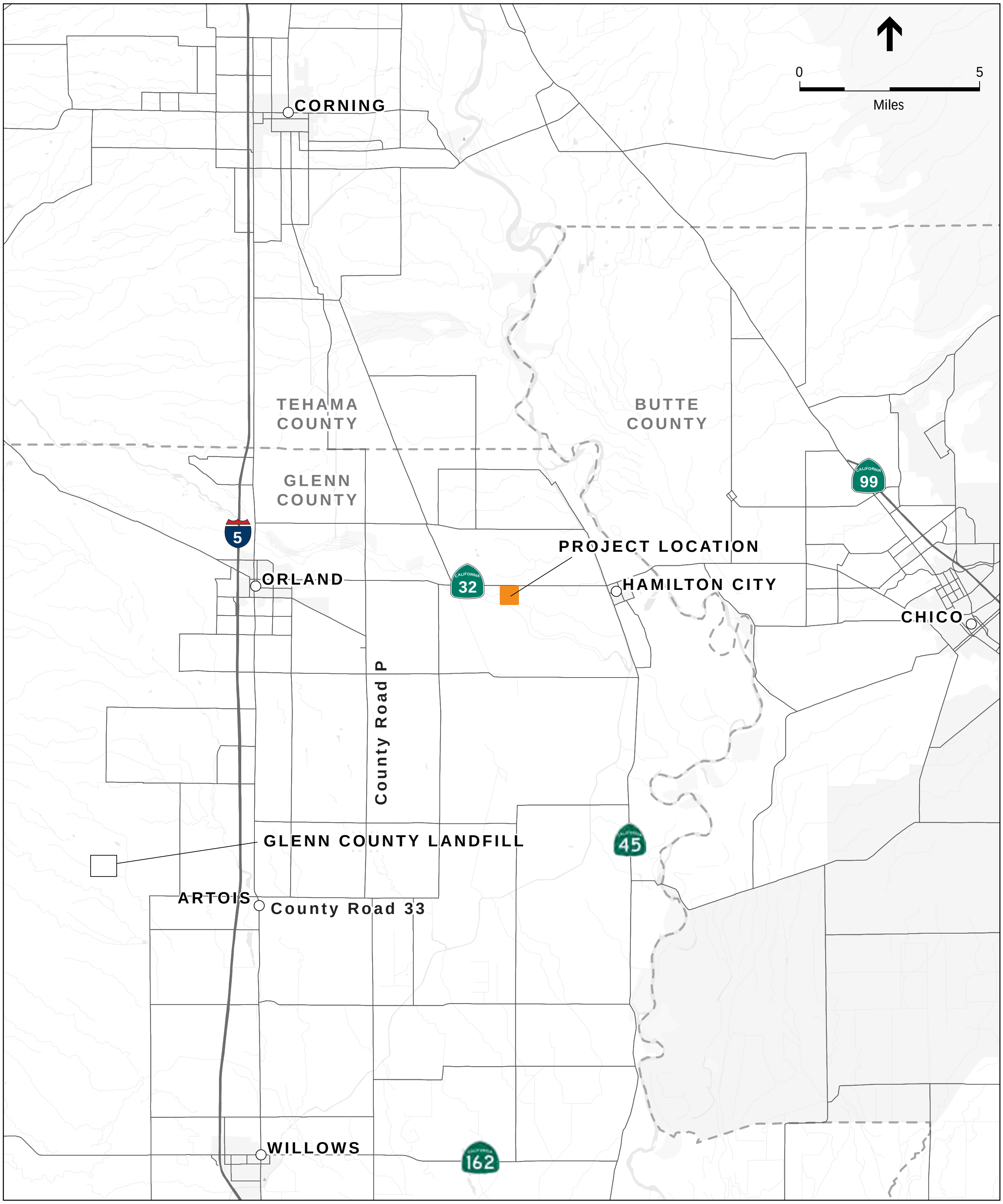
KVB, Inc., (KVB) is proposing to develop the Glenn County Solid Waste Conversion Facility (GCSWCF) (the “Project”). The Project would include the construction and operation of a municipal solid waste (MSW) materials recovery facility (MRF), transfer station (TS) and anaerobic digestion (AD) facility. These facilities and associated facilities, equipment and operations are described in more detail in this Chapter and would be used to manage municipal solid waste (MSW) from Glenn County and potentially from the City of Chico. The Draft EIR has been prepared for the County to evaluate the environmental effects of construction and operation of the Project.

KVB plans to develop the Project in two phases (as described else in the Project Description). Phase 1 would be the construction and operation of the MRF and Phase 2 would be the construction and operation of the AD facility.

This chapter of the Draft EIR presents a description of the Project that includes the Project location, Project features, and a general description of technical and environmental characteristics. This chapter also provides a statement of Project objectives, the intended uses of the EIR, a list of public agencies that are expected to use this EIR, and a list of agreements/approvals/permits that may be required to implement the Project.

## 2.2 Project Background

The existing Glenn County Landfill (see **Figure 2-1**) is at the west end of County Road 33, approximately five miles west of the community of Artois. The Glenn County Landfill is scheduled for closure by approximately December 2016. The County also operates a Permanent Household Hazardous Waste Collection Facility (PHHWCF) at the Glenn County Landfill site.




SOURCE: DeLorme Street Atlas USA, 2000; ESA, 2014

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**Figure 2-1**
Regional Location

In 2008, the County began consideration of expanding the Landfill with preparation of the *Program Environmental Impact Report Landfill Strategic Plan for Glenn County, California.* Three Project options were considered and the No-Project option:

> **Option 1.** Expansion of the Glenn County Landfill. This option would increase capacity at the Glenn County Landfill and allow the Glenn County Landfill to continue to serve the waste-disposal needs of Glenn County. This would include the development of both Phase A (vertical expansion) and Phase B (horizontal expansion) of the Glenn County Landfill.
>
> **Option 2.** Development of a transfer station (this option involves closing the Glenn County Landfill), constructing a transfer station at the site, and using an out-of-county landfill for disposal.
>
> **Option 3.** Development of waste-to-energy (WTE) /conversion technologies (CTs). This option includes a comparison of various WTE/CTs and assumes that an anaerobic digestion CT facility at the Glenn County Landfill site would be the most suitable technology based on the service requirements of the County waste stream.
>
> **Option 4.** No Project Option. The Program EIR also includes a discussion of the activities for the management of solid waste, if the County were to not select one of the other options mentioned above. At some point in the near future, the County would have to close the Glenn County Landfill. In this case, the County would not provide a disposal facility to replace the Glenn County Landfill and collection haulers and self-haul public users would have to travel to disposal facilities outside the County for this service.

The County elected to pursue Option 1, the landfill expansion option and hired consultants to begin the expansion permitting/design process. The existing landfill is unlined and detection of volatile organic compounds (VOCs) at GCLF monitoring wells is an indication that the current landfill is having a localized effect on the groundwater below the landfill (Glenn County, 2008). The Central Valley Regional Water Quality Control Board requested the unlined facility be permanently closed as a groundwater remediation measure before the expanded landfill would be constructed. Estimates completed in 2011 for closing the unlined facility reflected a total projected cost of approximately $10 million.

Since 2007, the County has been making deposits into a “Closure Fund” to cover the cost of closing the Landfill. Currently, the balance of the County’s Closure Fund is approximately $4 million. In addition to the closure cost of the existing unlined facility, County staff reported that closure of the next landfill phase needed to be fully funded. Also, approximately $2 million would be required to construct the first module of the landfill expansion. In light of these significantly increased projected costs, the County revised plans and elected to close the landfill and pursue one of the other options to provide a sustainable waste management program in Glenn County.

KVB began to present information to the Glenn County Board of Supervisors (“the Board”) about waste-to-energy/conversion technology options in early 2009. After receiving substantial information from KVB relating to the system, the Board issued Resolution #2009-49 supporting the Project concept on July 7, 2009. On March 4, 2010, the County issued a Request for Qualifications (RFQ) to select a preferred provider (“Partner”) for the waste conversion project. KVB Inc. was selected as the County's waste conversion Partner in May 2010, as a result of the RFQ process. A Memorandum of Understanding (MOU) was executed between KVB, Inc. and the County on August 31, 2010. On April 17, 2012, the Board received the Pre-Plan & Feasibility Study for an anaerobic digestion facility located on the proposed State Route 32 (SR 32) KVB property and decided to examine the Project proposal in greater detail. This EIR examines the current proposal for a MRF/TS and AD facility located on the KVB proposed property.

## 2.3 Project Objectives

Pursuant to State CEQA Guidelines 15124(b), the Project Description includes this statement of the Project objectives. The objectives are intended to demonstrate the purpose of the Project. The primary objectives of the Project include the following:

- Divert and recycle up to 70 percent of County municipal solid waste from landfill disposal.
- Provide a replacement solid waste management system for the County, up to the currently permitted waste management level of 200 tons per day, due to the planned closure of the Glenn County Landfill.
- Assist the County in complying with State mandates to divert solid waste from landfill disposal.
- Support the *General Plan Energy Element* goal to see the development of renewable energy facilities in Glenn County that support a diversified and stable economic base while preserving valuable agricultural land and protecting public health and safety and the environment.
- Support Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, greenhouse gas (GHG) reduction measures related to the use of anaerobic digestion:
  - *Measure E-3*. Achieve a 33 percent renewable energy mix by 2020 (AD facilities produce biogas, which is a renewable energy source).
  - *Measure RW-3*. High Recycling/ Zero Waste (AD is one of five subcategories listed under this measure).
- Establish a waste recovery facility within the Glenn County Recycling Market Development Zone (RMDZ). The RMDZ program combines recycling with economic development to fuel new businesses, expand existing ones, create jobs, and divert waste from landfills. The RMDZ program provides loans, technical assistance, and free product marketing to businesses in a RMDZ that use materials from the waste stream to manufacture their products. Each RMDZ differs in target materials to be diverted from the waste stream and incentives for using materials from the waste stream.
- Include wastes from Chico that would increase tipping-fee revenues and biogas production that could both directly or indirectly make Phase II (AD facility) more successful.

# 2.4 Project Location and Setting

The main facilities (MRF/AD Processing Area, other associated pavement, aerobic stabilization lagoons, leach fields, and storm water pond) would cover approximately 8.5 acres of Assessor's Parcel Number 037-260-004-9 on the south side of SR 32, approximately three miles west of Hamilton City and five miles east of the City of Orland, in the unincorporated area of Glenn County. Total pavement area would be approximately 250,000 sf (5.7 acres). The Project originally included an additional 37-acre Land Application Area (where digestate could be applied to the land), but that has been removed from the Project. The Project now plans to remove the digestate from the facility and deliver it to local composters (to add to their processing) or, if that is not feasible, or take the digestate to a landfill for disposal. **Figure 2-1** shows the regional location of the Project. The MRF/AD area is to be situated at the location of a previous gravel processing facility, between SR 32 to the north and Stony Creek to the south. **Figure 2-2** is an aerial map showing the location of the MRF/AD Processing facilities, the Project site (Project Study Area ~46.7 acres) and the overall property boundary. The Project site is entirely within Assessor's Parcel Number 037-260-004-9. The Assessor's Parcel Numbers for the entire property boundary are 037-250-010-9, 037-260-004-9, 037-260-005-9, and 037-260-007-9. The property is currently owned by the Project applicant, and is located within the County RMDZ.

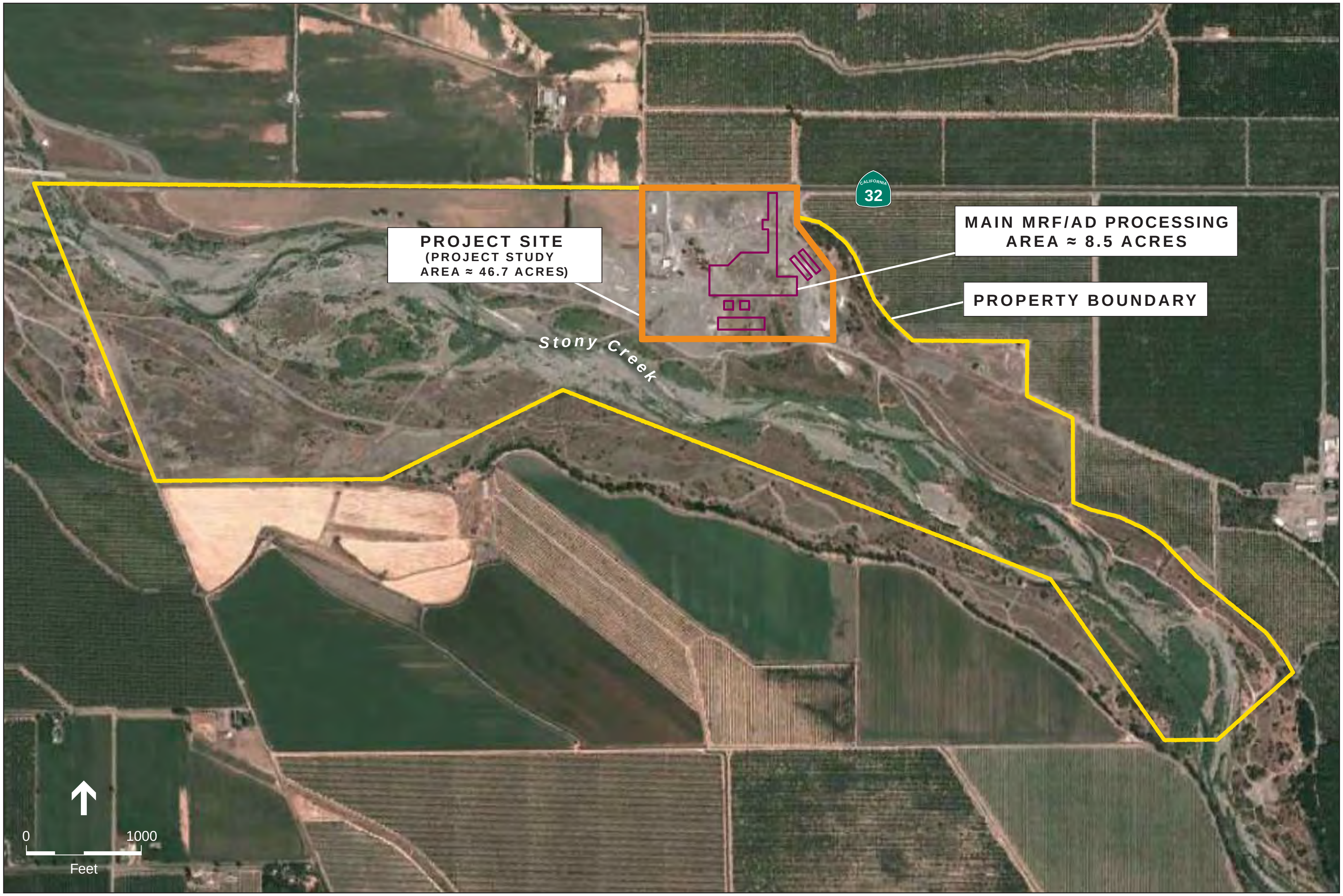
The nearest residence is located approximately one-quarter mile to the northwest of the Project site. The Project site currently has an area zoned Industrial and areas zoned Agricultural. The areas surrounding the Project site are zoned either Agricultural or Industrial. Access to the Project site would be from SR 32.

# 2.5 Project Facilities and Operations

## 2.5.1 Project Overview

The Project plans to receive and process wastes that currently are delivered to the Glenn County Landfill and also relocate the PHHWCF operation. The Glenn County Landfill is currently permitted to receive up to 200 tons per day (tpd) of MSW and 200 vehicles per day. Incoming MSW at the Glenn County Landfill has averaged approximately 20,000 tons per year (tpy) in recent years, an average of approximately 65 tpd (operational days). In addition to wastes from Glenn County, the Project may also receive and process MSW from other jurisdictions, including commercially hauled loads from the City of Chico. General public waste from Chico will not be accepted at the facility. The City of Chico is approximately 13 miles east of the Project site (see **Figure 2-1**). The combined waste streams from Glenn County and Chico would average up to approximately 400 tpd of incoming materials (based on 5 days per week) and peak incoming materials could reach 500 tpd. Yard waste collected in Chico would continue to be processed in Chico and would not be hauled to the Project site.

The Project concept uses local to California technology providers: The CP Group for the MRF equipment and CleanWorld for the AD facility. The CP Group describes their group of companies as the industry leader and supplier of automated turn-key processing and sorting systems for single




SOURCE: GCWCF Project Description, 2014

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**Figure 2-2**
Project Site

stream and dual stream MRFs. CleanWorld is a leader in AD technology with three commercial-scale digesters using the High Rate Digestion (HRD) system installed in the Sacramento region.

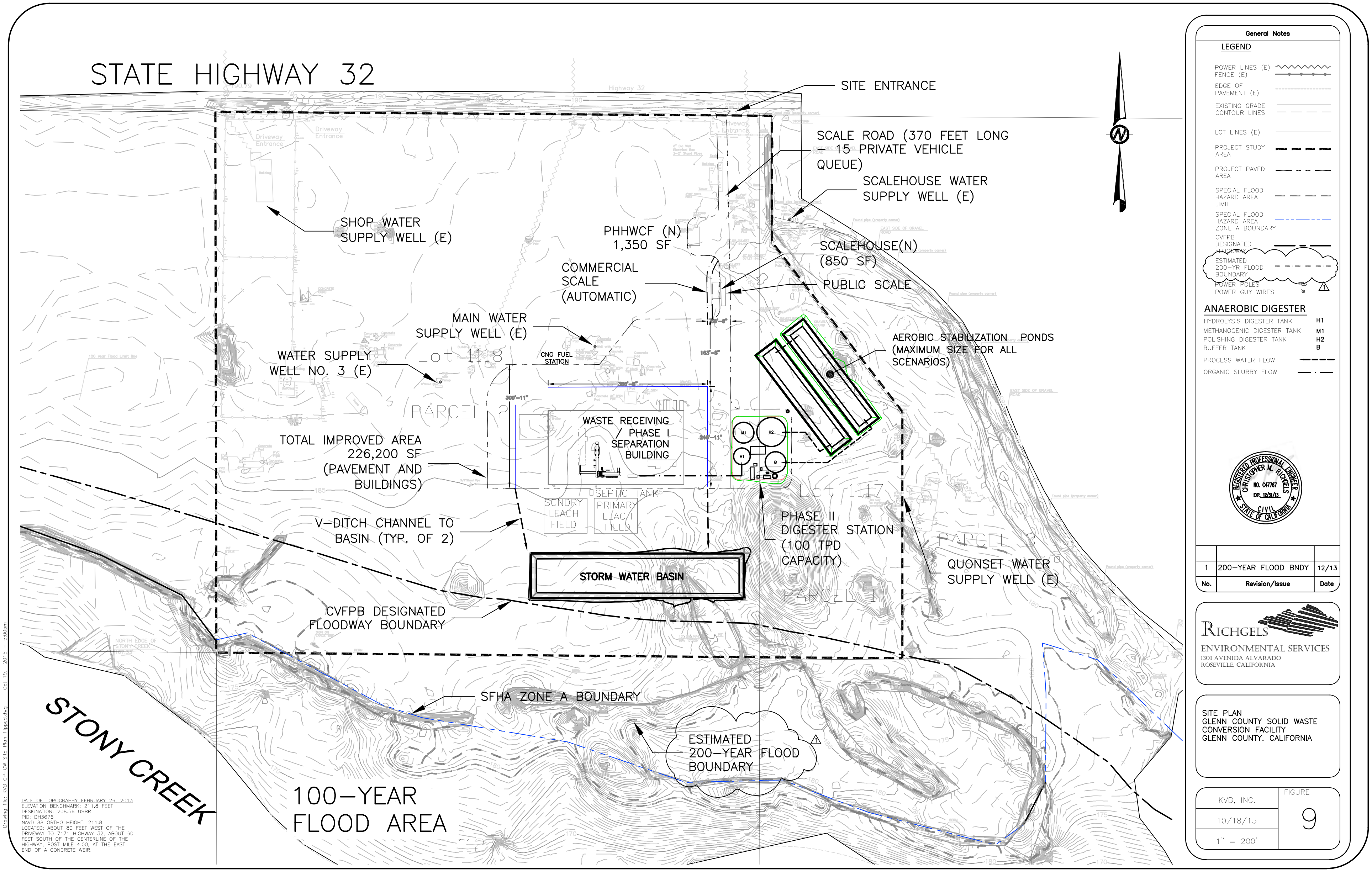
The Phase I Separation Building (see **Figure 2-3** through **2-5**) would include a dirty MRF. A dirty MRF is a MRF that accepts a mixed waste stream and separates out organic materials and recyclable materials through a combination of manual and mechanical sorting. Incoming materials would be received from waste hauling trucks and private vehicles. Proposed roadway modifications for SR 32 at the Project entrance are shown in **Figure 2-6**. The modification would add left and right turn lanes. The lanes were recommended in the Transportation Impact Analysis to maintain safety in the area. The turn lanes would provide space for decelerating vehicles (especially trucks) to help ensure that conflicts with through traffic would not develop (Abrams Associates, 2015).

The Project is not designed to have separate recycling trucks but to co-mingle the MSW non-hazardous waste streams (a single-stream system) and use mechanical and manual sorting at the MRF to recover recyclables. The Project would eliminate the requirement for separate recycling trucks. The applicant's detailed Project Description indicated that a large advantage of the GCSWCF system is that it enables communities that use the system to effectively stop separating household waste into recyclable and non-recyclable components because separation of the household waste stream is achieved at the waste conversion facility. This system design would allow for the elimination of the current curbside recycling program in Glenn County, which would enable the County to effectively remove one truck trip to current curbside pickup points (residences) each day, thus reducing residential collection traffic by approximately half. In the NOP Scoping meeting on January 21, 2015, the applicant explained that a single stream system would allow for better overall recycling even though comingling would affect the quality of potentially recyclable materials. KVB representative Ryne Johnson elaborated on this during the public scoping meeting. He stated that the applicant performed a waste characterization study for wastes currently disposed at Glenn County Landfill and found that approximately 30-40 percent (or higher) of materials currently landfilled could be recovered above the materials that are currently recycled. He indicated that mechanical and manual sorting should be more efficient over a community basis even though some material would be lost by contamination. He also stated that overall recovery is expected to be higher than current recovery levels (that use source separation at residences and collection by recycling trucks).

## 2.5.2 Project Facilities

As shown on **Figure 2-3** and **Figure 2-4,** Phase I facilities would include:

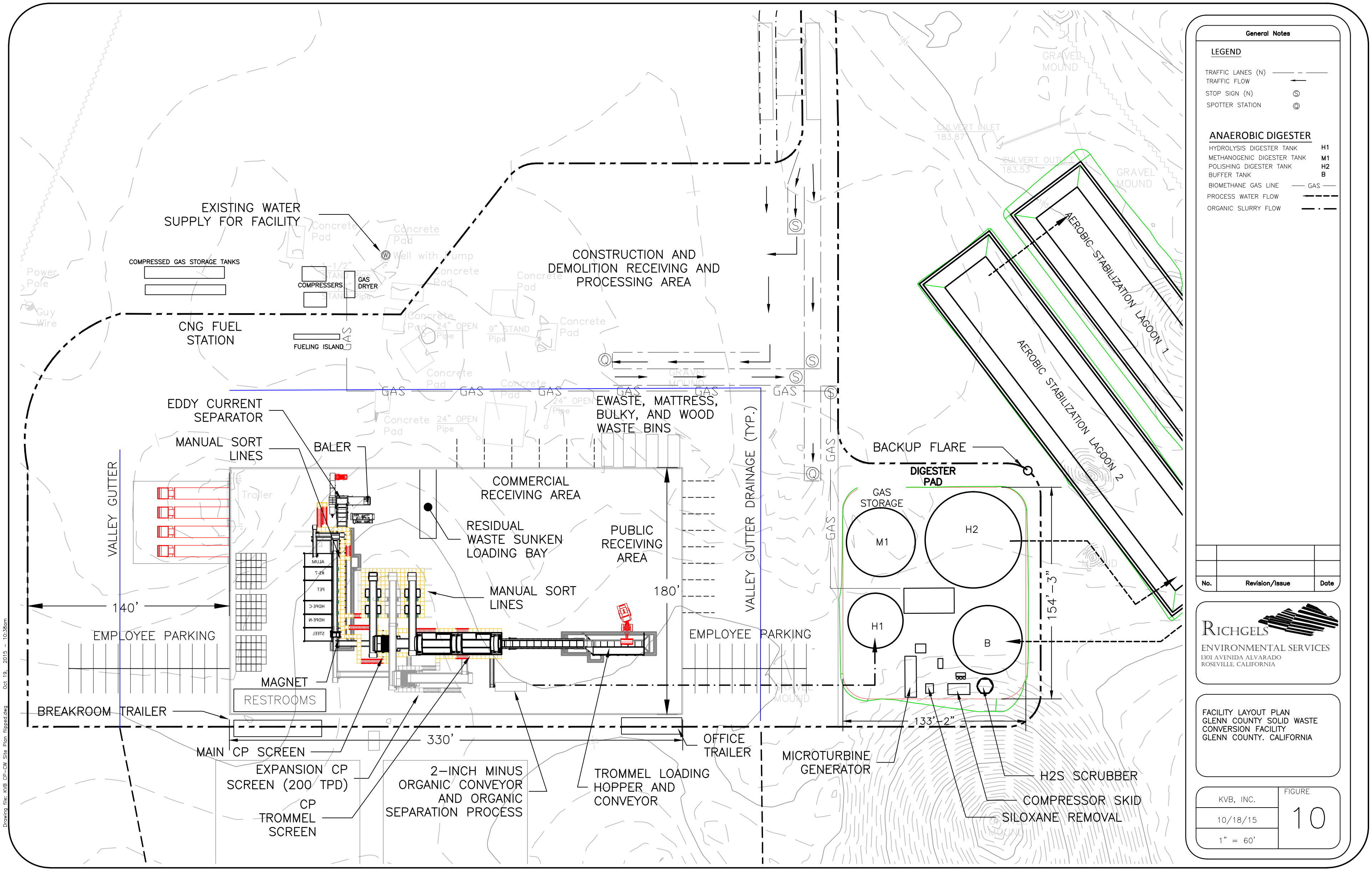
- Scale house Road
- PHWCF (1,350 sf)
- Weigh scale (850 sf)
- Construction and Demolition Receiving and Processing Area
- Waste Receiving/Phase I Separation Building (the MRF/TS Building) (59,400 sf)
- Three water supply wells




SOURCE: Richgels Environmental Services; RCH Group, 2015



**Figure 2-3**
Site Plan




SOURCE: Richgels Environmental Services; RCH Group, 2015

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**Figure 2-4**
Facility Layout

Phase II facilities would include:

- The Anaerobic Digester Station (100 tpd capacity)
- Two aerobic stabilization ponds (each ~15,200 sf maximum)
- Compressed Natural Gas (CNG) production facility
- CNG Vehicle Fueling Station intended for commercial waste hauling fleet vehicles

### 2.5.3 Site Plan

The site plan of the Project is presented in **Figure 2-3**. The proposed facility layout plan is presented on **Figure 2-4**. Vehicles would enter the site from SR 32 at the north end of the site. **Figure 2-6** shows proposed modifications for SR 32 to provide for safe site access. Vehicles would go directly to the weigh scale, or stop first to drop off household hazardous wastes at the PHHWCF. After the weigh scale, vehicles with construction and demolition debris would go to the Construction and Demolition Receiving and Processing Area. Other vehicles would go to the Waste Receiving/Phase I Separation Building (the MRF/TS). The waste receiving area would be inside the enclosed Phase I MRF/TS building. The north side of the building can provide up to five 20-foot wide openings (a minimum of 14-feet high) for receipt of commercial hauling trucks (packer trucks). The east side of the building would provide up to eight 12-foot wide bays for public and self-haul vehicles (typically pick-up trucks and autos with trailers). This configuration is intended to separate public off-loading activities from off-loading activities for the commercial trucks.

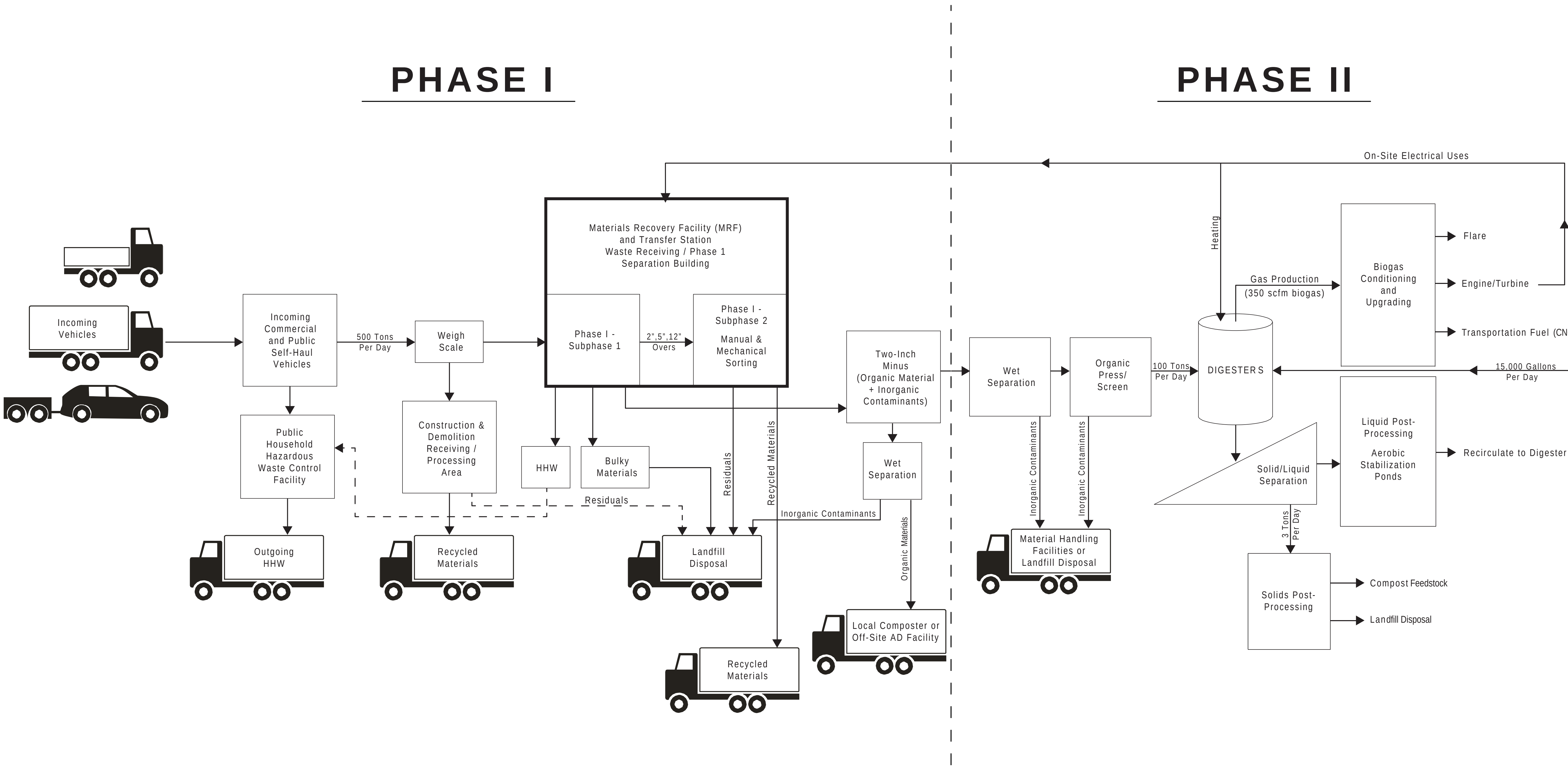
The proposed waste separation (MRF/TS) building would be 180 feet by 330 feet in size. This building would contain the primary mechanical sorting process to separate the organic material in the received MSW from the inorganic fraction and then separate recyclables from the remaining MSW.

## 2.6 Project Operation

The Project has been designed to incorporate demonstrated commercial processes that have undergone the regulatory review and approval processes that are required for facilities to operate in California. While the technologies specified for this Project are in use in permitted facilities in California, the integration of all the components would be unique. The process model has two major waste processing/recovery phases (as shown in **Figure 2-5**):

> **Phase 1** – MRF operations would first remove bulky materials and then separate materials as (1) organic materials for offsite compost feedstock, or offsite AD feedstock, (2) recyclable materials, or (3) residual materials (for landfill disposal).
>
> **Phase 2** – An AD process to produce biogas and digestate (potentially compost feedstock) from organic material. This phase would also generate residual materials (for landfill disposal) from separation of the organic materials provided by Phase 1.

These phases are discussed in more detail below.




SOURCE: RCH Group, 2015



**Figure 2-5**
Material Processing Diagram

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SOURCE: Richgels Environmental Services; RCH Group, 2015



**Figure 2-6**
Facility Entrance Modifications to SR 32

## 2.6.1 MRF – First Solids Separation (Phase 1, Subphase 1)

The Phase I Separation Building (see **Figure 2-3** through **2-5**) would include a dirty MRF that accepts a mixed waste steam and separates out organic materials and recyclable materials through a combination of manual and mechanical sorting. Incoming materials would be received from waste hauling trucks and private vehicles. The initial sorting would occur on the building floor. These initial (pre-sorting) activities would remove large items like chairs, white goods, wood, metals, etc. from the material stream. During this initial activity, facility staff would also inspect received loads for any household hazardous wastes and separate those materials for delivery to the PHHWCF. After bulky and household hazardous items are removed the remaining materials would be placed on the conveyor to enter the mechanical sorting system.

The mechanical sorting system (conveyor, trommel screens and disc screens) would process the materials so that the materials would go to either (1) the organic conveyor and organics separation process (if the materials are less than 2 inches in diameter [two-inch minus materials]) or (2) second solids separation subphase that would sort the materials to separate recyclable materials from residual wastes (for landfill disposal). The 2-inch minus material would be processed into organic and inorganic fractions as discussed below in Section 2.6.3.1.

## 2.6.2 MRF – Second Solids Separation (Phase 1, Subphase 2)

The second solids separation phase would occur immediately after the small organic materials are removed from the mechanical separation. This subphase first separates two-dimensional fibrous materials (textiles, plastic sheeting, etc.) from recyclable containers. Then this subphase uses manual and mechanical processes to separate materials by commodity types. Facility operations would separate ferrous and non-ferrous metals, plastics (film and container), cardboard, paper, glass, textiles, and grit/debris from the organic material. Recycled materials would be baled for delivery to markets and system residue (trash) would be loaded into transfer trucks for landfill disposal.

## 2.6.3 Organic Waste Material and Energy Recovery (Phase 2)

The applicant has identified the CleanWorld High Rate Digestion (HRD) system for the anaerobic digestion process. As mentioned previously, there are currently three commercial scale CleanWorld HRD systems operating in the Sacramento region.

As discussed above, one output of the Phase 1 Subphase 1 is the two-inch minus material that is the feedstock for Phase 2 organic waste material processing and energy recovery. This material is expected to be rich in decomposable organic material. The maximum Project size would be a 100-tpd organic waste HRD system. The CleanWorld HRD system would include receiving and preprocessing, a liquid transfer module, a heat module, digestion tanks, a microturbine to generate electricity for on-site uses, ancillary pumps, and a flare. The digestion tanks would include a

300,000 gallon hydrolysis tank, a 300,000 gallon methanogenic tank, a 600,000 gallon polishing tank, and a 150,000 gallon buffer tank.

### 2.6.3.1 Preprocessing Solid and Liquid Residual Management

During preparation of the organic material for injection into the HRD system, contaminants would be removed from the two-inch (2”) minus feedstock utilizing a wet separation process. The proposed wet separation process is an open vat system. The 2" minus MRF fines are conveyed first to a metals removal system. The remaining 2" minus waste fraction is deposited into an open intake hopper and cleansed with high pressure water jets. Heavy materials (rock, glass, and grit) drop to the bottom of the first water tank and are removed. The remaining material is further separated by removal of floating materials from the remaining largely organic slurry. The palletized unit is a closed loop system with an approximate water volume of less than 500 gallons. Both fresh and recirculated water, from the digester, can be used in the process.

During Phase I operations, this system would separate organic materials for offsite use as a compost feedstock for offsite anaerobic digester facilities. The organic slurry would be processed through a biosolids type screw press[1] to recycle the water back into the separator and load the dewatered organics for hauling offsite. During Phase II operations, the organic slurry would be pumped directly to the onsite AD hydrolysis tank.

Inorganic materials targeted for removal include plastics, metals, rocks, and other debris that would hinder the organic waste digestion process. As part of the preprocessing, these materials would be separated and retained in containers suitable for handling as solid waste or material recovery if possible. Periodically, these containers would be serviced and the materials transported to appropriate material handling facilities. Materials destined for landfill disposal would be removed from the facility along with other MRF residuals unsuitable for recycling markets in accordance with the Solid Waste Facility Permit (SWFP) requirements.

### 2.6.3.2 Skid Systems

The AD facility would include two proprietary Modular Liquid Transfer Skids, and a proprietary Modular Heat Skid. The modular skids would be assembled off-site and transported to the site by truck ready for installation. Use of the skids reduces installation and start-up time; and results in less on-site impacts.

#### *Modular Liquid Transfer Skid Systems*

Variable Frequency Drive (VFD) controlled grinder pumps are critical to the operation of the AD process, as the microbial communities responsible for the organic decomposition are reliant on a consistent flow of nutrient-rich material to maintain healthy population levels and balance. These pumps are controlled and monitored with a remote monitoring system to ensure that accurate digester loading is maintained.

[1] Ref: http://www.bdpindustries.com/products/dsp-screw-press/

### *Modular Heating Skid Systems*

Whether loaded continuously or in batches, the majority of commercial anaerobic digesters treating organic solid wastes are temperature controlled for enhanced degradation stability and rate. The microbes that degrade organic materials have evolved to thrive optimally at two different temperature ranges. Mesophilic microorganisms prefer temperatures of 30 to 40 degrees Celsius (86 to 104° F), while thermophilic microorganisms prefer temperatures of 45 to 55 degrees Celsius (113 to 122° F) (CalRecycle, 2011). CleanWorld's HRD uses thermophilic temperatures. In order to maintain thermophilic temperature, a propane gas boiler would be included as an auxiliary heating source to the electrical generation station waste heat recovery system to ensure that adequate heating capacity is available at all times.

## 2.6.3.3 Digester Tanks

CleanWorld's HRD system combines features of both batch and continuous biological processes in a single system and makes it possible to attain efficient and stable production of biogas from a variety of organic solid and liquid wastes including food scraps, food-processing byproducts, crop residues, paper products, grass clippings, and animal wastes. The Project would use a three-staged solids digester capable of steady biogas production from variable feedstock supply.

The HRD system would be composed of hydrolysis, methanogenic, buffer, and polishing tanks. The buffer tank would give the AD facility flexibility in feedstock loading rates, as well as unloading schedules for effluent. The tank sizes are shown below in **Table 2-1**.

**TABLE 2-1**
**ANAEROBIC DIGESTER TANK FARM (100 TPD CAPACITY)**

| Tank | Diameter (feet) | Height (feet) | Volume (gallons) |
|---|---|---|---|
| Hydrolysis, H1 | 50 | 22 | 300,000 |
| Hydrolysis, H2 | 70 | 22 | 600,000 |
| Methanogenic, M1 | 50 | 22 | 300,000 |
| Buffer Tank, B | 40 | 16 | 150,000 |

When compared to traditional AD systems, the HRD system requires smaller volume tanks, as the material does not need to be hydro-pulped and is held for a shorter period of time, uses less energy to operate, is scalable, relies upon commercially available components, and possesses design features that optimize the bacterial degradation and conversion of organic wastes and minimize digestion time.

Additionally, the system's low parasitic load (electrical requirements) increases system energy efficiency in comparison with traditional, high-liquid AD systems. The HRD system operates at a thermophilic temperature of 49 to 54 degrees Celsius (120-130° F) and destroys pathogens in the waste making the residual materials potentially usable as compost and organic soil amendment products.

### *Hydrolysis Tank*

CleanWorld's digestion technology divides the three stages of anaerobic digestion into three tanks in order to provide the optimum environment for the different bacteria in each stage. In the first stage—hydrolysis—slurry feedstock is consumed by bacteria and converted biologically to organic acids and nutrients that become feedstock for methanogenic microorganisms (the microbes that generate methane as a metabolic byproduct). The solids content in this tank can be up to 15 percent, utilizing CleanWorld's proprietary combination of hydraulic and mechanical mixing technologies to maintain continuous circulation within the tank. The hydrolysis stage of digestion allows for a wide range of solid feedstock to enter the system and become homogenized before entering the methanogenic stage where a more uniform slurry is desired. Up to 40 percent of the biogas from the AD system could be generated in this first stage of digestion.

### *Methanogenesis Tank*

In the second stage—methanogenesis—the organic acids are converted to methane and carbon dioxide. The residual solids are further liquefied and the solids content is substantially reduced in this tank as the organic material is degraded. Separating the hydrolysis and methanogenesis stages of digestion allows each tank to be maintained as an appropriate environment for the acidogens and methanogens inside the respective tanks.

### *Polishing Tank*

The third and final stage of CleanWorld's process is a polishing tank. The liquid from the methanogenesis tank is transferred to the polishing tank where remaining acids are digested to maximize biogas production and to provide longer solids retention time while allowing for removal of liquid to maintain volume balance.

### *Buffer Tank*

The buffer tank can be used to both transfer and store liquids. This allows flexibility in loading rates as well as discharge rates. There are no mixing or heating elements inside the buffer tank, but the ability to transfer to and from this tank to any other stage in the system is built into CleanWorld's liquid transfer system.

Water for initial filling of the tanks would be from the existing onsite main water well shown on **Figure 2-3**. This well would also supply the process and domestic water needs of the facility. Water supply for the Project is discussed further in **Section 2.6.3.5**.

## 2.6.3.4 Digestate Solids

The Project would result in up to approximately 1,030 tons per year of wet digestate solids as a result of the AD process. The digestate would be collected from the bottom of the digestion tanks.

### 2.6.3.5 Stabilization Ponds

CleanWorld estimates a 100-tpd AD facility would generate a maximum of approximately 28,000 gallons of process wastewater per day. This includes approximately 15,000 gallons per day of water injected into the process to maintain appropriate water content. The process water would be treated in onsite aerobic stabilization ponds (see **Figure 2-3** and **Figure 2-4**) to reduce Biological Oxygen Demand (BOD) and ammonia to acceptable levels allowing it to be recirculated back into the process. The aerobic stabilization ponds have been sized to allow for complete evaporation of all water during the later summer months, before the following winter rains. The ponds would be classified as Class II impoundments by the RWQCB. Therefore, a double liner barrier system with leak detection will likely be required for the ponds along with groundwater monitoring.

### 2.6.3.6 Stormwater Management

The Project would include a stormwater management system to divert stormwater run-off away from waste contact and capture stormwater from new impervious surfaces. The system would incorporate ditches and swales to convey stormwater. The system would channel stormwater from the Project's new impervious surfaces (pavement and buildings) to a proposed 4.23 acre-foot stormwater basin shown on Figure 2-3. The proposed stormwater basin would be of sufficient capacity to contain stormwater (with infiltration through the onsite permeable soils) and no discharge would occur to Stony Creek.

### 2.6.3.7 Power Generation

CleanWorld has estimated a 100-tpd digestion process (sufficient to accommodate waste from Glenn County and Chico) that would produce approximately 182 million standard cubic feet per year of fuel gas ("biogas"), or roughly 350 standard cubic feet per minute (scfm) in the first year of operations (expected no sooner than 2017/18). The biogas to be produced by this facility would be comprised of approximately 65 percent methane (produced at a rate of 228 scfm), in addition to carbon dioxide, and trace gases such as nitrogen. Using a Low Heating Value (LHV) of 980 British thermal units per cubic foot (Btu/cf) for methane, the energy value of the biomethane fuel is 222,950 Btu/min. Electricity will be generated in an internal combustion (I.C.) engine (a microturbine). Using an energy conversion factor of 41.5%, this system could be expected to generate 1.63 MW of power.

The CP Group has advised that its MRF equipment would require an energy supply of 410 kW for 20 tons per hour of waste processing capacity. CleanWorld has estimated a parasitic load of 74 kW for powering the AD system and 179 kW to operate the CNG fueling station. The total facility equipment instantaneous power demand including 150 kW for building lights and other electrical parasitic load would then be 813 kW. A lower power generator will have slightly lower efficiencies. An 850 kW generator would have a conversion efficiency of 39%. The fuel demand for that supply would be approximately 124,000 Btu/min, or 126 SCFM of biomethane – slightly more than half the amount expected to be produced.

The remaining 102 SCFM of biomethane would be available for CNG production. Assuming the CNG plant is down for an extended time, while the anaerobic digester plant operation continues, would require backup biogas control by means of an enclosed ground flare. The estimated Weekly Bioenergy Reserve (Btu) for the considered Glenn County/Chico scenario is 1,388,049,880 Btu/week or 8.26 MM Btu/hr (Richgels, 2014). This calculation assumes onsite power generation continues to power the facility and the flare, even if the CNG plant is down for an extended period. That reserve energy flow however, was based on a Low Heating Value (LHV) of 980 Btu/cf for methane gas. Converting to the methane high heating value (HHV) of 1,012 Btu/cf implies the flare would have to manage 8.5 MM Btu/hr. A 10 MM Btu/hr biogas flare with a turndown ratio of five[2] would have an operating range between 10 and 2 MM Btu/hr (Richgels, 2014).

The energy content of one gallon of conventional diesel is approximately 128,450 Btu/ga (LHV). The remaining biomethane flow would produce approximately a 1,120 diesel gallon equivalent (DGE) of CNG fuel per day.

### 2.6.3.8 CNG Fueling Station

The Project proponent has been in contact with the Sacramento SATS facility CNG fuel station operator, Atlas Refuel. Atlas Refuel’s station is based on Clean Energy technology. Clean Energy builds both private and public, time-fill (aka slow) and “fastfill” fueling stations, serving all types of Clean Energy Natural Gas: CNG (Compressed Natural Gas), LNG (Liquefied Natural Gas) and LNG / CNG (combined Liquefied & Compressed Natural Gas). All stations include a biogas dryer element and twin CNG compressors that compress the biogas to 4,500 psi. The compressed gas is stored in storage vessels (two vessels), which deliver the CNG to the fuel island dispensers. The fuel island dispensers can either be slow fill dispensers for overnight recharge of bus fleet vehicles for example or quick fill dispensers similar to commercial gasoline pumps for quick refill of waste or other material hauling vehicles. The quick fill dispenser station (minimum two pumps) is proposed for the GCSWCF CNG fueling station.[3]

## 2.7 Intended Uses of the EIR

The Glenn County Planning & Public Works Agency is the Lead Agency for the preparation of the EIR and has discretionary approval of the Project. This EIR is part of the environmental review process for the GCSWCF Project. The intent of this EIR is to enable the County, responsible agencies, and other interested parties to understand the potential environmental effects of the Project.

CEQA Guidelines §15124(d) state that the Project Description should provide sufficient information needed for evaluation and review of the environmental impact report; including: agencies expected to use the EIR in their decision-making process, a list of permits and other

[2] Enclosed flares can operate within a range of fuel flow and still maintain required residence time and combustion temperature. A turn down ratio of 5 means the flare could operate between 10 and 2 MM Btu/hr within permit conditions.

[3] Info from https://www.cleanenergyfuels.com/services/engineeringandconstruction/

approvals required to implement the Project, a list of related environmental review and consultation requirements, and public agency decisions subject to CEQA.

The EIR is expected to be used for the following purposes:

- To inform the public and governmental decision makers about the potential, significant environmental effects of the Project, and to solicit input on its potential environmental effects.
- To identify the ways that environmental damage can be avoided or significantly reduced.
- To prevent significant, avoidable damage to the environment by requiring changes in the Project through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- To disclose to the public the reasons why a governmental agency approved the Project in the manner the agency chose, if significant environmental effects are involved.
- To provide the Glenn County Planning Commission and/or Glenn County Board of Supervisors with a technically and legally adequate environmental document to be used as one basis for the decision-making processes for the Project; and to provide responsible regulatory agencies with environmental information necessary for issuing permits for the Project.

## 2.8 Required Approvals

The Project would require the following discretionary approvals by the County:

- Certification of a Final EIR;
- Adoption of a Mitigation Monitoring and Reporting Plan (MMRP), Findings, Statement of Overriding Considerations (if necessary); and
- Approval of the Conditional Use Permit

## 2.9 Other Agency Approvals

The Glenn County Health Services Agency has advised that the proposed facility would be permitted as a Large Volume Transfer/Processing Facility under the current regulatory structure. State regulations (California Code of Regulations, Title 14) set minimum standards for the siting, construction, operation, and closure of facilities of this kind, including allowing no more than 48 hours of waste accumulation in an equipment malfunction and repair event, before the operator must begin removing material[4].

Additional subsequent approvals and permits that may be required from other agencies for the development of the Project are identified below.

[4] Regulations: Title 14, Natural Resources—Division 7, CIWMB, Chapter 3. Minimum Standards for Solid Waste Handling and Disposal, Article 6.2 Operating Standards, Section 17410.1. Solid Waste Removal. (2). http://www.calrecycle.ca.gov/Laws/Regulations/Title14/ch3a64.htm

**TABLE 2-2**
**PERMITS AND APPROVALS POTENTIALLY NEEDED FOR IMPLEMENTATION OF THE GLENN COUNTY SOLID WASTE CONVERSION FACILITY**

| Permit | Permitting Authority | Potentially Affected Resources |
|---|---|---|
| State Permits/Approvals | | |
| Transfer/Processing Solid Waste Facility Permit (SWFP) | Glenn County Environmental Health (LEA) and California Department of Resources Recycling and Recovery (CalRecycle) | Waste receiving and processing activities including AD facility |
| General Permit for Storm Water Discharges Associates with Construction and Land Disturbance Activities (CGP) | Central Valley Regional Water Quality Control Board | Construction activity, including demolition resulting in a land disturbance of one acre or more. |
| Waste Discharge Requirements Class II Impoundment | Central Valley Regional Water Quality Control Board | Aerobic Stabilization Lagoons |
| Encroachment Permit | Caltrans (District 3) | Work performed within the State Right of Way |
| Encroachment Permit | Central Valley Flood Control Board CVFCB | Stony Creek Designated Floodway |
| Regional/Local Permit/Approvals | | |
| Authority to Construct | Glenn County Air Pollution Control District (GCAPCD) | Combustion sources. Air quality Authority to Construct (ATC), in compliance with the GCAPCD rules and regulations. AD flare and microturbine air emissions. |
| Permit To Operate | Glenn County Air Pollution Control District (GCAPCD) | Combustion sources. Air quality Permit to Operate (PTO), upon completion of facility construction in compliance with the GCAPCD rules and regulations. AD flare and microturbine air emissions. |
| Conditional Use Permit or similar land use approval | Glenn County | Facilities or activities modifying land uses regulated by the County |
| Building Permit | Glenn County | Building(s) constructed as part of Project |

## 2.10 References

Abrams Associates Traffic Engineering, Inc., 2015. Transportation Impact Analysis Solid Waste Conversion Facility Glenn County, June 2015.

CalRecycle, 2011. Statewide Anaerobic Digester Facilities for the Treatment of Municipal Organic Solid Waste, Final Program Environmental Impact Report SCH No. 2010042100, June 2011.

CalRecycle, 2014. Recycling Market Development Zones, May 2014. http://www.calrecycle.ca.gov/RMDZ/

Glenn County Planning & Public Works Agency, 1993. Glenn County General Plan: Volume I - Policies, June 1993.

Glenn County Planning & Public Works Agency, 2006. Glenn County: General Plan Land Use Map, June 2006.

Glenn County Planning & Public Works Agency, 2006. Glenn County: Title 15, Unified Development Code Map, June 2006.

Glenn County Planning & Public Works Agency, 2008. *Landfill Strategic Plan for Glenn County, California, Program Environmental Impact Report (Draft EIR)*, December, 2008.

Richgels Environmental Services, 2013. Glenn County Waste Conversion Facility Project Description, September 2013.

Richgels Environmental Services, 2014. Glenn County Waste Conversion Facility Project Description Revision 1, September 2014.

# CHAPTER 3
# Environmental Analysis

## 3.0 Introduction to the Analysis

Chapter 3, Environmental Analysis, presents the environmental and regulatory setting, impacts, and mitigation measures for the technical issue areas applicable to the Project. Sections 3.1 through 3.10 present the following resource areas addressed in detailed Sections in this EIR Chapter:

- Air Quality and Greenhouse Gases (Section 3.1)
- Biological Resources (Section 3.2)
- Cultural Resources (Section 3.3)
- Geology, Soils, and Seismicity (Section 3.4)
- Hazardous Materials (Section 3.5)
- Hydrology and Water Quality (Section 3.6)
- Noise and Vibration (Section 3.7)
- Transportation, Traffic and Circulation (Section 3.8)
- Utilities and Services (Section 3.9)
- Fire Protection Services (Section 3.10)

Each section contains, as relevant: (1) identification of the technical issue areas being evaluated in the section; (2) any comments received on the NOP for the issue area; (3) environmental and regulatory setting; (4) standards of significance; (5) method of analysis; (6) *CEQA Guidelines* Appendix G checklist questions that result in no impact so that no further analysis is included in this EIR; and (7) Project impacts and mitigation measures.

The environmental settings present the conditions that currently exist (i.e., at the time of the Notice of Preparation), and provide a point of reference (or baseline) for assessing the environmental impacts of the Project. Each impact and mitigation measure discussion includes an impact statement (in **bold** text), an explanation of the impact (as it relates to the Project), an analysis of the significance of the impact, identification of mitigation measures, and an evaluation of whether the identified mitigation measures would reduce the magnitude of identified impacts. Each impact statement is assigned a number based on the section and the order they appear (for example, 3.3-1, 3.3-2, etc.). Mitigation measures for each impact are numbered consistent with the impact statement they apply to (for example 3.3-1a, 3.3-1b, 3.3-2, etc.).

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# 3.1 Air Quality and Greenhouse Gases

This section characterizes and discusses the potential effects of the Project on air quality and greenhouse gas emissions. The analysis included in this section was developed from information contained in the *CEQA Air Quality Technical Report – Glenn County Municipal Solid Waste Conversion Facility* (ESA, 2015). This section includes a review of the current regulatory framework relevant to air quality and greenhouse gases (GHGs).

The only comments relating to air quality and greenhouse gases received on the Notice of Preparation (NOP) (**Appendix A**), pertained to the potential of dust, odors and health risk impacts from the Glenn County Environmental Health, the Local Enforcement Agency (LEA) and the City of Orland Planning department.

## 3.1.1 Environmental Setting

### Regional Overview

The Project site is located within the northeast corner of Glenn County generally between the City of Orland and Hamilton City. From an air quality perspective, the Project site is located within the Sacramento Valley Air Basin (SVAB). The SVAB includes Shasta, Tehama, Glenn, Butte, Colusa, Yolo, Solano (north-east portion), Sacramento, Sutter, Placer (south-east portion), and Yuba (south-east portion) counties.

### Regional Climate

The climate of the SVAB is Mediterranean in character, with mild, rainy winter weather from November through March and warm to hot, dry weather from May through September. Sacramento Valley temperatures range from 20 to 115 degrees Fahrenheit and the average annual rainfall is 20 inches. The topographic features giving shape to the SVAB are the Coast Range to the west, the Sierra Nevada to the east, and the Cascade Range to the north. These mountain ranges channel winds through the SVAB, but also inhibit the dispersion of pollutant emissions.

The predominant annual and summer wind pattern in the Sacramento Valley is the sea breeze commonly referred to as the "Delta breeze." These cool winds originate from the Pacific Ocean and flow through a sea-level gap in the Coast Range called the Carquinez Strait. In the winter (December to February), northerly winds predominate. Wind directions in the Sacramento Valley are influenced by the predominant wind flow pattern associated with each season. During about half the days from July through September, however, a phenomenon called the "Schultz Eddy," which is a large isotropic vertical-axis eddy on the north side of the Carquinez Strait that prevents the Delta breeze from transporting pollutants north and out of the Sacramento Valley and causes the wind pattern to circle back south, which keeps air pollutants in the Sacramento Valley. This phenomenon's effect exacerbates the pollution levels in the area and increases the likelihood of violating state or federal standards.

The vertical and horizontal movement of air is an important atmospheric component involved in the dispersion and subsequent dilution of air pollutants. Without movement, air pollutants can collect and concentrate in a single area, increasing the associated health hazards. For instance, in the winter, the SVAB typically experiences calm atmospheric conditions that result in stagnant air and increased air pollution. As a result, persistent inversions occur frequently in the SVAB, especially during autumn and early winter, and restrict the vertical dispersion of pollutants released near ground level.

## Criteria Air Pollutants

As required by the Federal Clean Air Act (FCAA) passed in 1970, the U.S. EPA has identified six criteria air pollutants that are pervasive in urban environments and for which state and national health-based ambient air quality standards have been established. The U.S. EPA calls these pollutants "criteria air pollutants" because the agency has regulated them by developing specific public health- and welfare-based criteria as the basis for setting permissible levels. Ozone, carbon monoxide (CO), nitrogen dioxide ($NO_2$), sulfur dioxide ($SO_2$), particulate matter, and lead are the six criteria air pollutants. Notably, particulate matter is measured in two size ranges: $PM_{10}$ for particles less than 10 microns in diameter, and $PM_{2.5}$ for particles less than 2.5 microns in diameter.

### Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG, also sometimes referred to as volatile organic compounds or VOC by some regulating agencies) and $NO_x$. The main sources of ROG and $NO_x$, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through the photochemical reaction process. Ozone causes eye irritation, airway constriction, and shortness of breath and can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema.

### Carbon Monoxide

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicle engines; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue, impair central nervous system function, and induce angina (chest pain) in persons with serious heart disease. Very high levels of CO can be fatal.

### Particulate Matter (PM10 and PM2.5)

$PM_{10}$ and $PM_{2.5}$ consist of particulate matter that is 10 microns or less in diameter and 2.5 microns or less in diameter, respectively (a micron is one-millionth of a meter). $PM_{10}$ and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities are more local in nature, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility.

#### Nitrogen Dioxide ($NO_2$)

$NO_2$ is a reddish brown gas that is a byproduct of combustion processes. Automobiles and industrial operations are the main sources of $NO_2$. Aside from its contribution to ozone formation, $NO_2$ can increase the risk of acute and chronic respiratory disease and reduce visibility. $NO_2$ may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels.

#### Sulfur Dioxide ($SO_2$)

$SO_2$ is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. $SO_2$ is also a precursor to the formation of particulate matter, atmospheric sulfate, and atmospheric sulfuric acid formation that could precipitate downwind as acid rain. The maximum $SO_2$ concentrations recorded in the Project area are well below federal and state standards. Accordingly, the region is in attainment status with both federal and state $SO_2$ standards.

#### Lead

Leaded gasoline (phased out in the United States beginning in 1973), lead based paint (on older houses and cars), smelters (metal refineries), and manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects, which puts children at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline was eliminated. Ambient lead concentrations are only monitored on an as-warranted, site-specific basis in California.

### *Non-Criteria Air Pollutants*

#### Toxic Air Contaminants (TACs)

Air quality regulations also focus on toxic air contaminants (TACs), or hazardous air pollutants (HAPs) in federal terminology. A TAC is an air pollutant that may cause or contribute to an increase in mortality or serious illness, or that may pose a hazard to human health. TACs are usually present in very low concentrations quantities in the ambient air; however, their high toxicity or health risk may pose a threat to public health even at low concentrations. The ambient background of TACs is the combined result of many diverse human activities, including gasoline stations, automobiles, dry cleaners, industrial operations, hospital sterilizers, and painting operations. In general, mobile sources contribute more significantly to health risks than do stationary sources.

There is growing evidence that indicates that exposure to emissions from diesel-fueled engines, about 95 percent of which come from diesel-fueled mobile sources, may result in cancer risks that exceed those attributed to other measured TACs. In 1998, the California Office of Environmental Health Hazard Assessment (OEHHA) issued a health risk assessment that included estimates of the cancer potency of diesel particulate matter (DPM). Because DPM cannot be directly monitored in the ambient air, however, estimates of cancer risk resulting from DPM exposure must be based on concentration estimates made using indirect methods (e.g., derivation from ambient measurements of a surrogate compound).

### Odorous Emissions

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting and headache). The ability to detect odors varies considerably among the population and overall is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. Known as odor fatigue, a person can become desensitized to almost any odor and recognition only occurs with an alteration in the intensity. The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors. Odor impacts should be considered for any proposed new odor sources located near existing receptors, as well as any new sensitive receptors located near existing odor sources. Generally, increasing the distance between the receptor and the odor source will mitigate odor impacts.

## Monitoring Data

The California Air Resources Board (CARB) regional air quality monitoring network provides information on ambient concentrations of criteria air pollutants. CARB operates one ambient air monitoring station within Glenn County. The nearest monitoring site (located within Glenn County) is north of the City of Willows, at 720 N. Colusa Street.

The monitoring site measures ozone and $PM_{10}$. **Table 3.1-1** presents a five-year summary of air pollutant (concentration) data collected at this monitoring station for ozone and $PM_{10}$.

While the data gathered at these monitoring stations may not necessarily reflect the unique meteorological environment of the Project site nor the proximity of site-specific stationary and street sources, they do present the nearest available benchmark and provide the reader with a reference point to what the pollutants of greatest concern are in the region and the degree to which the area is out of attainment with specific air quality standards.

## Attainment Status

Although the FCAA established the National Ambient Air Quality Standards (NAAQS), individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already adopted its own air quality standards when federal standards were established, and because of the unique atmospheric conditions in California, there is considerable diversity between the state standards and NAAQS, as shown in **Table 3.1-2**. California ambient standards tend to be at least as protective as NAAQS and are often more stringent.

**TABLE 3.1-1**
**SUMMARY OF AIR QUALITY MONITORING DATA (2010–2014)**
**FROM THE WILLOWS-720 N. COLUSA STREET MONITORING LOCATION**

| Pollutant | Applicable Standard | Number of Days Standards Were Exceeded and Maximum Concentrations Measured[a] | | | | |
|---|---|---|---|---|---|---|
| | | 2010 | 2011 | 2012 | 2013 | 2014 |
| Ozone | | | | | | |
| Days 1-hour State Std. Exceeded | >0.09 ppm[a] | 0 | 0 | 0 | 0 | 0 |
| Max. 1-hour Conc. (ppm) | | 0.076 | 0.082 | 0.078 | 0.085 | 0.081 |
| Days 8-hour National Std. Exceeded | >0.075 ppm[b] | 0 | 0 | 0 | 0 | 0 |
| Days 8-hour State Std. Exceeded | >0.07 ppm[a] | 0 | 1 | 0 | 1 | 1 |
| Max. 8-hour Conc. (ppm) | | 0.064 | **0.073** | 0.069 | **0.072** | **0.072** |
| Suspended Particulates (PM10) | | | | | | |
| Estimated Days Over 24-hour National Std. | >150 μg/m$^3$ [b] | 0 | 0 | 0 | 0 | 0 |
| Estimated Days Over 24-hour State Std. | >50 μg/m$^3$ [a] | 0 | 0 | 18.7 | 0 | 13.2 |
| Max. 24-hour Conc. National/State (μg/m$^3$) | | **45.2/44.5** | 48.1/49.1 | **84.0/86.5** | 44.6/43.9 | **74.1/76.4** |
| National Annual Average (μg/m$^3$) | >20 μg/m$^3$ [a] | 20 | 19 | 22.3 | 19.1 | 21.8 |

NOTES:

**Bold** values are in excess of applicable standard. "NA" indicates that data is not available.
conc. = concentration; ppm = parts per million; ppb=parts per billion;
μg/m$^3$ = micrograms per cubic meter

[a] State standard, not to be exceeded.
[b] National standard, not to be exceeded.

SOURCE: California Air Resources Board, 2015.

In 1988, California passed the California Clean Air Act (CCAA) (California Health and Safety Code Sections 39600 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or nonattainment, but based on state ambient air quality standards rather than the federal standards. As indicated in **Table 3.1-3**, Glenn County is designated as being nonattainment for the $PM_{10}$ California ambient air quality standards and is designated either as attainment or unclassified for the remaining criteria pollutants. The CCAA requires each air district in which state air quality standards are exceeded to prepare a plan that documents reasonable progress towards attainment. A 3-year update is required to be completed by each air district.

## Climate Change/Global Warming

"Global warming" and "global climate change" are the terms used to describe the increase in the average temperature of the earth's near-surface air and oceans since the mid-20th century and its projected continuation. Warming of the climate system is now considered to be unequivocal (IPCC, 2007). Natural processes and human actions have been identified as the causes of this warming. The International Panel on Climate Change (IPCC) has concluded that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward. After 1950, however, increasing greenhouse gas concentrations resulting from human activity such as fossil fuel burning and deforestation are believed to be responsible for most of the observed temperature increase. Increases in greenhouse gas (GHG) concentrations in the earth's atmosphere are thought

**TABLE 3.1-2**
**STATE AND NATIONAL CRITERIA AIR POLLUTANT STANDARDS, EFFECTS, AND SOURCES**

| Pollutant | Averaging Time | State Standard | National Standard | Pollutant Health and Atmospheric Effects | Major Pollutant Sources |
|---|---|---|---|---|---|
| Ozone | 1 hour | 0.09 ppm | --- | High concentrations can directly affect lungs, causing irritation. Long-term exposure may cause damage to lung tissue. | Formed when reactive organic gases (ROG) and nitrogen oxides ($NO_X$) react in the presence of sunlight. Major sources include on-road motor vehicles, solvent evaporation, and commercial / industrial mobile equipment. |
| | 8 hours | 0.07 ppm | 0.075 ppm | | |
| Carbon Monoxide | 1 hour | 20 ppm | 35 ppm | Classified as a chemical asphyxiant, carbon monoxide interferes with the transfer of fresh oxygen to the blood and deprives sensitive tissues of oxygen. | Internal combustion engines, primarily gasoline-powered motor vehicles. |
| | 8 hours | 9.0 ppm | 9 ppm | | |
| Nitrogen Dioxide | 1 hour | 0.18 ppm | 100 ppb | Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. | Motor vehicles, petroleum refining operations, industrial sources, aircraft, ships, and railroads. |
| | Annual Avg. | 0.030 ppm | 0.053 ppm | | |
| Sulfur Dioxide | 1 hour | 0.25 ppm | 75 ppb | Irritates upper respiratory tract; injurious to lung tissue. Can yellow the leaves of plants, destructive to marble, iron, and steel. Limits visibility and reduces sunlight. | Fuel combustion, chemical plants, sulfur recovery plants, and metal processing. |
| | 3 hours | --- | 0.5 ppm | | |
| | 24 hours | 0.04 ppm | 0.14 ppm | | |
| | Annual Avg. | --- | 0.030 ppm | | |
| Respirable Particulate Matter ($PM_{10}$) | 24 hours | 50 ug/m$^3$ | 150 ug/m$^3$ | May irritate eyes and respiratory tract, decreases in lung capacity, cancer and increased mortality. Produces haze and limits visibility. | Dust and fume-producing industrial and agricultural operations, combustion, atmospheric photochemical reactions, and natural activities (e.g., wind-raised dust and ocean sprays). |
| | Annual Avg. | 20 ug/m$^3$ | --- | | |
| Fine Particulate Matter ($PM_{2.5}$) | 24 hours | --- | 35 ug/m$^3$ | Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and results in surface soiling. | Fuel combustion in motor vehicles, equipment, and industrial sources; residential and agricultural burning; Also, formed from photochemical reactions of other pollutants, including $NO_X$, sulfur oxides, and organics. |
| | Annual Avg. | 12 ug/m$^3$ | 12 ug/m$^3$ | | |
| Lead | Monthly Ave. | 1.5 ug/m$^3$ | --- | Disturbs gastrointestinal system, and causes anemia, kidney disease, and neuromuscular and neurological dysfunction. | Present source: lead smelters, battery manufacturing & recycling facilities. Past source: combustion of leaded gasoline. |
| | Quarterly | --- | 1.5 ug/m$^3$ | | |
| Hydrogen Sulfide | 1 hour | 0.03 ppm | No National Standard | Nuisance odor (rotten egg smell), headache and breathing difficulties (higher concentrations) | Geothermal Power Plants, Petroleum Production and refining. It is a contaminant in biogas that is generated by anaerobic digesters. |
| Sulfates | 24 hour | 25 ug/m$^3$ | No National Standard | Breathing difficulties, aggravates asthma, reduced visibility | Produced by the reaction in the air of $SO_2$. |
| Visibility Reducing Particles | 8 hour | Extinction of 0.23/km; visibility of 10 miles or more | No National Standard | Reduces visibility, reduced airport safety, lower real estate value, discourages tourism. | See $PM_{2.5}$. |

ppm = parts per million; ug/m$^3$ = micrograms per cubic meter.

SOURCE: California Air Resources Board, 2013, 2009.

**TABLE 3.1-3**
**GLENN COUNTY ATTAINMENT STATUS**

| Pollutant | Averaging Period | National | | State | |
|---|---|---|---|---|---|
| | | AAQS[1] | Attainment status[2] | AAQS[3] | Attainment Status[2] |
| CO | 1-hour | 35 ppm | Attainment | 20 ppm | Unclassifed |
| | 8-hour | 9 ppm | Attainment | 9 ppm | Unclassifed |
| NO2 | 1-hour | 0.100 ppm | Attainment | 0.18 ppm | Attainment |
| | Annual | 0.053 ppm | Attainment | 0.03 ppm | Attainment |
| Ozone | 1-hour | N/A | N/A | 0.09 ppm | Attainment |
| | 8-hour | 0.075 ppm | Attainment | 0.07 ppm | Attainment |
| PM10 | 24-hour | 150 $\mu g/m^3$ | Attainment | 50 $\mu g/m^3$ | Nonattainment |
| | Annual | N/A | N/A | 20 $\mu g/m^3$ | Nonattainment |
| PM2.5 | 24-hour | 35 $\mu g/m^3$ | Attainment | N/A | N/A |
| | Annual | 12 $\mu g/m^3$ | Attainment | 12 $\mu g/m^3$ | Attainment |
| SO2 | 1-hour | 0.075 ppm | Attainment | 0.25 ppm | Attainment |
| | 3-hour | 0.5 ppm | Attainment | N/A | N/A |
| | 24-hour | 0.14 ppm | Attainment | 0.04 ppm | Attainment |
| | Annual | 0.03 ppm | Attainment | N/A | N/A |

SOURCE: Source: California Air Resources Board, 2014; Environmental Protection Agency, 2015

to be the main cause of human-induced climate change. Certain gases in the atmosphere naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected back into space. This is sometimes referred to as the “greenhouse effect” and the gases that cause it are called “greenhouse gases.” Some GHGs occur naturally and are necessary for keeping the earth’s surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride ($SF_6$) are the principal GHGs. When concentrations of these gases exceed natural concentrations in the atmosphere, the greenhouse effect may be intensified. $CO_2$, $CH_4$, and $N_2O$ occur naturally, and are also generated through human activity. Emissions of $CO_2$ are largely by-products of fossil fuel combustion, whereas $CH_4$ results from off-gassing associated with agricultural practices and landfills. Other human-generated GHGs include fluorinated gases such as SFCs, PFCs, and $SF_6$, which have much higher heat-absorption potential than $CO_2$, and are byproducts of certain industrial processes.

$CO_2$ is the reference gas for climate change because it is the predominant GHG emitted. The effect that each of the aforementioned gases can have on global warming is a combination of the mass of their emissions and their global warming potential (GWP). GWP indicates, on a pound-for-pound basis, how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of $CO_2$. For example, $CH_4$ and

$N_2O$ are substantially more potent GHGs than $CO_2$, with GWPs of 21 and 310 times that of $CO_2$, respectively.

In emissions inventories, GHG emissions are typically reported in terms of pounds or metric tons of $CO_2$ equivalents ($CO_2e$). $CO_2e$ are calculated as the product of the mass emitted of a given GHG and its specific GWP. While $CH_4$ and $N_2O$ have much higher GWPs than $CO_2$, $CO_2$ is emitted in such vastly higher quantities that it accounts for the majority of GHG emissions in $CO_2e$, both from residential developments and human activity in general.

### *Sensitive Receptors*

A sensitive receptor is generally defined as a facility that houses or attracts children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants, and there is reasonable expectation of continuous human exposure according to the averaging period for the ambient air quality standard. The area surrounding the Project site is rural with few sensitive receptors. However, there is a single-family residence located within approximately one quarter of a mile northwest of the Project site, north of State Route 32 (SR 32). This sensitive receptor could be affected if any of the operations create significant increase in criteria pollutant emissions onsite and along SR 32. All other sensitive receptors are located beyond 5,000 feet from the Project site.

# 3.1.2 Regulatory Setting

## Federal

The federal CAA enacted in 1970 and amended twice thereafter (including the 1990 amendments), establishes the framework for modern air pollution control. The CAA directs the EPA to establish ambient air standards for six pollutants: ozone, CO, lead, $NO_2$, particulate matter, and $SO_2$. The standards are divided into primary and secondary standards—the former to protect human health within an adequate margin of safety, and the latter to protect environmental values, such as plant and animal life.

The primary legislation that governs federal air quality regulations is the Clean Air Act Amendments of 1990, which delegates primary responsibility for clean air to the EPA. The EPA develops rules and regulations to preserve and improve air quality, as well as delegating specific responsibilities to state and local agencies.

The CAA requires states to submit a state implementation plan (SIP) for areas in nonattainment for federal standards. The SIP, which is reviewed and approved by the EPA, must demonstrate how the federal standards will be achieved. Failing to submit a plan or secure approval could lead to denial of federal funding and permits. In cases where the SIP is submitted by the state but fails to demonstrate achievement of the standards, the EPA is directed to prepare a federal implementation plan.

## State

Responsibility for achieving California's air quality standards, which are more stringent than federal standards, is placed on the ARB and local air districts (e.g., Glenn County Air Pollution Control District (GCAPCD)), and is to be achieved through district-level air quality management plans that will be incorporated into the SIP. In California, the EPA has delegated authority to prepare SIPs to the ARB, which in turn has delegated that authority to individual air districts.

The ARB has traditionally established state air quality standards, maintaining oversight authority in air quality planning, developing programs for reducing emissions from motor vehicles, developing air emission inventories, collecting air quality and meteorological data, and approving SIPs. Responsibilities of air districts include overseeing stationary source emissions, approving permits, maintaining emissions inventories, maintaining air quality stations, overseeing agricultural burning permits, and reviewing air quality–related sections of environmental documents required by CEQA.

### *California Air Resources Board Climate Change Scoping Plan*

Pursuant to AB 32, the ARB adopted a Climate Change Scoping Plan in December 2008 (CARB 2008) outlining measures to meet the 2020 GHG reduction goal. In order to meet this goal, California must reduce its GHG emissions by 30% below projected 2020 business-as-usual emissions levels. The 2008 Scoping Plan recommends measures that California may implement such as new fuel regulations, to reduce statewide GHG emissions. It estimates that a reduction of 174 million metric tons (MMT) of $CO_2e$ from the transportation, energy, agriculture, forestry, and other sources could be achieved if California implements all of the measures. An update to the Scoping Plan, published in 2014, lays out a set of new actions, including specific recommended actions with lead agency assignments and anticipated due dates. Some of the actions are near-term, while others are focused on longer-term efforts.

### *California Clean Air Act*

The CCAA substantially added to the authority and responsibilities of air districts. The CCAA designates air districts as lead air quality planning agencies, requires air districts to prepare air quality plans, and grants air districts authority to implement transportation control measures. The CCAA focuses on attainment of the state ambient air quality standards, which for certain pollutants and averaging periods are more stringent than the comparable federal standards.

The CCAA requires designation of attainment and nonattainment areas with respect to state ambient air quality standards. The CCAA also requires that local and regional air districts expeditiously adopt and prepare an air quality attainment plan if the district violates state air quality standards for CO, $SO_2$, $NO_2$, or ozone. These plans are specifically designed to attain these standards and must be designed to achieve an annual 5% reduction in districtwide emissions of each nonattainment pollutant or its precursors. No locally prepared attainment plans are required for areas that violate the state $PM_{10}$ standards.

The CCAA requires that the state air quality standards be met as expeditiously as practicable but, unlike the federal CAA, does not set precise attainment deadlines. Instead, the act established increasingly stringent requirements for areas that will require more time to achieve the standards.

The Air Quality and Land Use Handbook (CARB, 2005) provides ARB's recommendations for the siting of new sensitive land uses (including residences) near freeways, distribution centers, ports, refineries, chrome-plating facilities, dry cleaners, and gasoline stations. The handbook recommends that new development be placed at distances from such facilities.

### *Assembly Bill 1493*

In 2002, Governor Gray Davis signed AB 1493. AB 1493 required that ARB develop and adopt, by January 1, 2005, regulations that achieve "the maximum feasible reduction of greenhouse gases emitted by passenger vehicles and light-duty trucks and other vehicles determined by ARB to be vehicles whose primary use is noncommercial personal transportation in the State."

### *Executive Order S-3-05*

Executive Order S-3-05, which was signed by Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total GHG emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

### *Assembly Bill 32 – California Global Warming Solutions Act*

In September 2006, Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions that will be phased in starting in 2012. To implement the cap, AB 32 directs ARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources.

### *Senate Bill 1368*

SB 1368 (Perata, Chapter 598, Statutes of 2006) is the companion bill of AB 32 and was signed by Governor Schwarzenegger in September 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a GHG emission performance standard for baseload generation from investor-owned utilities. CPUC adopted a GHG Emissions Performance Standard in January 2007. The California Energy Commission (CEC) adopted consistent regulations for implementing and enforcing SB 1368 for the state's publicly-owned utilities in August 2007. These standards cannot exceed the GHG emission rate from a baseload combined-cycle natural gas-fired plant. The legislation further requires that all electricity provided to California, including imported electricity, must be generated from plants that meet the standards set by the CPUC and CEC.

## Local

### *Glenn County General Plan*

The Project would be constructed and operational within the Glenn County. The Glenn County General plan was adopted on June 15, 1993. The Air Quality section (Section 5.2.4) of the General Plan provides information and policy guidance to Glenn County to protect and enhance local air quality (Glenn County, 1993). The relevant goals and policies are listed below.

Goal PSG-4: Protection and enhancement of air quality.

Policy PSP-35: Review development requests to determine the impact such development will have on the existing air quality and for compliance with the air pollution reduction measures specified in the Glenn County Air Quality Attainment Plan.

Policy PSP-36: Promote jobs/housing balance when evaluating development projects.

Policy PSP-37: Encourage design of new development which minimizes automobile trips and maximizes other modes of transportation.

### *Glenn County Air Pollution Control District*

The air pollution control agency for Glenn County is the Glenn County Air Pollution Control District (GCAPCD). GCAPCD encompasses all of Glenn County and has principal responsibility for developing plans for meeting the state and federal ambient air quality standard; developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards; implementing permit programs established for the construction, modification, and operation of sources of air pollution; and enforcing air pollution statutes and regulations governing non-vehicular sources.

GCAPCD rules and regulations that apply to the Project include but are not limited to the following:

> *District Rules, Section 51: New Source Review (NSR):* The purpose of this rule is to establish pre-construction review requirements for new and modified stationary sources of air pollution for use of Best Available Control Technology (BACT), analysis of air quality impacts, and to ensure that the operation of such sources does not interfere with the attainment or maintenance of ambient air quality standards. This rule requires no net increase in emissions, pursuant to Section 40918 of the California Health & Safety Code, from new or modified stationary sources which emit, or have the potential to emit, 25 tons per year or more of any non-attainment pollutant or its precursors.

> *District Rules, Section 50: Authorization to Construct:* Any person building, erecting, altering or replacing any article, machine, equipment or other contrivance, the use of which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants, shall first obtain a written "authorization to construct" for such construction from the Air Pollution Control Officer. The Air Pollution

Control Officer shall not approve such construction unless the applicant demonstrates to the satisfaction of the Air Pollution Control Officer that the source can be expected to comply with all applicable state and district regulations. An Authority to Construct shall expire upon the issuance of a Permit to Operate or two years from the date of issuance unless construction has commenced physically on the site and has been, and is being diligently pursued toward completion.

*District Rules, Section 76: Visible Emissions:* A person shall not discharge into the atmosphere from any single source of emission whatsoever, any air contaminant for a period or periods aggregating more than three minutes in any one hour which is: (A) As dark or darker in shade as that designated as No. 2 on the Ringlemann Chart, as published by the United States Bureau of Mines, or (B) of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection "A" above.

*District Rules, Section 78: Nuisance:* A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public of which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. Air contaminants shall not be declared a nuisance except by a court of competent jurisdiction or the District Hearing Board upon its own motion or motion of the Air Pollution Control Officer.

*District Rules, Section 85: Particulate Matter Concentration:* Except for emissions from agricultural operations, no person shall discharge into the atmosphere from any source particulate matter in excess of 0.3 grains per cubic foot of gas at standard conditions. When the source involves a combustion process, the concentration must be calculated to 12 per cent carbon dioxide ($CO_2$). In measuring the combustion contaminants from incinerators used to dispose of combustible refuse by burning, the carbon dioxide ($CO_2$) produced by combustion of any liquid or gaseous fuels shall be excluded from the calculation to 12 per cent of carbon dioxide ($CO_2$).

*District Rules, Section 86: Dust and Fumes Total Emissions:* Except for emissions from agricultural operations, no person shall discharge in any one hour from any source dust or fumes in total quantities in excess of the amounts shown in the table provided in the the Section 86.

*District Rules, Section 89: Sulfur Oxides*: No person shall discharge into the atmosphere from any single source of emission whatsoever, any sulfur oxides in excess of 0.2 percent by volume (2000 ppm) collectively calculated as sulfur dioxide ($SO_2$).

*District Rules, Section 90: Reduced Sulfur Emission Standards:* No person shall cause or permit the emission of air contaminants from any premises which will result in ground-level concentrations of TRS, expressed as hydrogen sulfide, in excess of 0.03 ppm for a period of 60 minutes.

## 3.1.3 Impacts and Mitigation Measures

### Significance Criteria

Significance thresholds are used to determine whether impacts associated with a Project are significant. Appendix G of the State CEQA Guidelines (14 CCR 15000) lists the following criteria for determining significance of air quality impacts from a Project:

- Conflicts with or obstructs implementation of the applicable air quality plan;
- Violates any air quality standard or contributes substantially to an existing or projected air quality violation;
- Results in a cumulatively considerable net increase of any criteria pollutant for which the project is nonattainment under applicable federal or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Exposes sensitive receptors to substantial pollutant concentrations; or
- Creates objectionable odors affecting a substantial number of people.
- Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment
- Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs

The State CEQA Guidelines further state that the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the determinations above. Currently, the GCAPCD has not established its own set of CEQA air quality significance thresholds, but based on an email correspondence with District staff, the District uses the Shasta County Air Quality Management District's (SCAQMD) significance thresholds to evaluate air quality impacts of projects in Glenn County (Ledbetter pers. comm.). The SCAQMD adopted a "Protocol for Review" (CEQA Protocol) that details the procedures it uses to implement CEQA (SCAQMD, 2003). As the GCAPCD uses the SCAQMD to evaluate air quality impacts under CEQA, the SCAQMD thresholds of significance are identified below and an impact related to air quality was considered significant if emissions would exceed the threshold values indicated in **Table 3.1-4**.

**TABLE 3.1-4**
**SHASTA COUNTY AIR QUALITY MANAGEMENT DISTRICT**
**THRESHOLDS OF SIGNFICANCE**

| Level | ROG (pounds per day) | NOx (pounds per day) | $PM_{10}$ (pounds per day) |
|---|---|---|---|
| A | 25 | 25 | 80 |
| B | 137 | 137 | 137 |

SOURCE: SCAQMD, 2003

As shown in Table 3.1-4, if a project has emissions that are less than the Level A thresholds, only feasible standard mitigation measures (SMMs) are required. If a project has emissions that exceed the Level A thresholds, the Project applicant must apply all feasible mitigation measures for construction and/or operation from the lists of recommended SMMs and appropriate best available mitigation measures (BAMMs) as determined by the County. The appropriate type and number of BAMMs applied to a project are based on the unique characteristics of the project and BAMMs will be selected from a list of measures kept updated by the Shasta County Planning Department and the SCAQMD.

If a project has emissions that exceed the Level B thresholds, the project applicant must apply special BAMMs, in addition to the required SMMs and BAMMs. If a project's emissions are reduced to a level below the threshold of 137 pounds per day for ROG, $NO_X$, and $PM_{10}$, an MND may be appropriate if other impacts are not anticipated. If project emissions are in excess of the Level B Category in Table 3.1-4, project emissions are considered significant and emission offsets are required by the SCAQMD.

As previously stated, the GCAPCD has not established its own set of CEQA air quality significance thresholds, but rather, uses the SCAQMD significance thresholds to evaluate air quality impacts of projects in Glenn County. Therefore, the thresholds of significance, as obtained from the SCAQMD CEQA Protocol and applied herein, are summarized in **Table 3.1-5**.

**TABLE 3.1-5**
**SHASTA COUNTY AQMD THRESHOLDS OF SIGNIFICANCE**

| Impact | Significance Threshold | Description |
|---|---|---|
| Construction Emissions | Mitigation of Fugitive $PM_{10}$ Construction Emissions | Shasta AQMD CEQA Protocol – Implementation of effective and comprehensive construction $PM_{10}$ control measures that can be reasonably implemented to significantly reduce $PM_{10}$ emissions from construction. |
| Operational Emissions | 137 lb//day NOx<br>137 lb//day PM10<br>137 lb//day ROG | Shasta AQMD CEQA Protocol – Level B threshold of significance |
| GHG Emissions | Project Conforms with AB 32 Scoping Plan | Electricity Measure E3 – 33% electricity used in California generated from renewable resources. |
| | | Recycling/Waste Measure RW-3 – Reduce GHG emissions from landfills and manufacturing process. |
| Toxic Air Contaminant Health Impacts | Cancer Risk > 10 in a million Non-Cancer HI > 1.0 | Shasta AQMD CEQA Protocol |
| Odors | Any project with the potential to frequently expose members of the public to objectionable odors will be deemed to have a significant impact. | Shasta AQMD CEQA Protocol – Projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate should be evaluated. |

## Methodology

The analysis presented within this section is based on both qualitative and quantitative approaches for determining air quality impacts associated with construction, operation, and maintenance of the Project. The *CEQA Air Quality Technical Report – Glenn County Municipal Solid Waste Conversion Facility* (**Appendix D** of this EIR) (ESA, 2015), which was prepared in accordance with the SCAPCD's and Shasta County Planning Department's Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports (SCAPCD, 2003) documents, was used to assess the Project's impacts related to air quality.

## Impact Analysis

**Impact 3.1-1: Conflict With or Obstruct Implementation of the Applicable AQMP. The Project would not conflict with or obstruct implementation of the applicable AQMP. (Less than Significant)**

A significant air quality impact may occur if a project is not consistent with the applicable AQMP or would in some way obstruct the implementation of the policies or attainment of the goals of that plan.

The Air Pollution Control Districts and Air Quality Management Districts (Districts) for the counties located in the northern portion of the Sacramento Valley Air Basin (These include the Counties of Shasta, Tehama, Glenn, Butte, Colusa, Yuba and Sutter) together comprise the Northern Sacramento Valley Planning Area (NSVPA). The NSVPA Districts prepared and adopted a uniform air quality attainment plan for the purpose of achieving and maintaining healthful air quality throughout the Northern Sacramento Valley Air Basin. The 2012 Triennial Air Quality Attainment Plan addresses the progress made in implementing the 2012 Triennial Air Quality Attainment Plan and proposes modifications to the strategies necessary to attain the California ambient air quality standard for the 1-hour ozone standard at the earliest practicable date (NSVPA, 2012). The 2012 Plan identifies those portions of the NSVPA designated as "nonattainment" for the State ambient air quality standards and discusses the health effects related to the various air pollutants. The Plan identifies the air pollution problems that are to be cooperatively addressed on as many fronts as possible in order to make the region a healthier place to live, now and in the future. The 2012 Plan focuses on the adoption and implementation of control measures for stationary sources, area wide sources, and indirect sources, and addresses public education and information programs. The 2012 Plan identifies 18 control measures to reduce ozone emissions in the NSVPA. None of the nine control measures that Glenn County has adopted are applicable to the MSW Conversion Facility. Furthermore, of the nine remaining control measures, Glenn County APCD plans to adopt only two—Architectural Coatings and Internal Combustion Engines—that are applicable to the MSW Conversion Facility. The applicant will use architectural coatings that meet any applicable limits on ROG content. The generator engine will satisfy BACT and thus should comply with any future prohibitory rule governing internal combustion engines. This impact is less than significant.

**Mitigation:** None required.

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**Impact 3.1-2: Construction of the Project would generate emissions of criteria air pollutants that could contribute to existing nonattainment conditions. (Less than Significant)**

Construction-related emissions arise from a variety of activities including (1) grading, excavation, and other earth moving activities; (2) travel by construction equipment and employee vehicles, especially on unpaved surfaces; (3) exhaust from construction equipment; (4) architectural coatings; and (5) asphalt paving. Construction of the Project would temporarily generate ROG, CO, $NO_X$, $PM_{10}$ and $PM_{2.5}$ emissions. In addition, construction equipment and construction-worker commute vehicles would also generate criteria air pollutant emissions. Criteria pollutant emissions of ROG and NOx from these emissions sources would incrementally add to regional atmospheric loading of ozone precursors during the construction period.

Construction of the Project is anticipated to begin in early 2016 and would consist of two construction phases. Phase 1 would include the construction of the structures associated with the material recovery facility (MRF) and would begin in early 2016 and last approximately six months. Phase 2 would include the construction of the structures associated with the anaerobic digestion (AD) facility and would begin shortly after the completion of Phase 1. For this analysis, it is assumed that construction of Phase 2 would begin in 2017 and would be completed in approximately six mouths. Construction mass emission rates for both Phases 1 and 2 are summarized in **Table 3.1-6**.

**TABLE 3.1-6**
**MAXIMUM CONSTRUCTION EMISSIONS**

| Pollutant | Maximum Phase 1 Construction Emissions, year 2016 | | Maximum Phase 2 Construction Emissions, year 2017 | |
|---|---|---|---|---|
| | Daily (lbs/day) | Annual (tpy) | Daily (lbs/day) | Annual (tpy) |
| CO | 22.6 | 1.5 | 40.8 | 2.0 |
| $NO_x$ | 25.8 | 1.6 | 51.9 | 2.1 |
| $PM_{10}$ | 7.3 | 0.2 | 21 | 0.2 |
| $PM_{2.5}$ | 4.3 | 0.1 | 12.5 | 0.2 |
| ROG | 33.5 | 1.2 | 60.1 | 2.1 |
| $SO_x$ | 0.03 | 0.002 | 0.05 | 0.003 |
| $CO_2e$ | 3,201.1 | 182.2 | 4,508.5 | 258.4 |

NOTES: $CO_2e$ emissions are in metric tons per year.
SOURCE: ESA, 2015

The SCAQMD CEQA Protocol does not contain significance thresholds for construction emissions but, rather, emphasizes the minimization of fugitive construction $PM_{10}$ impacts to levels that can be considered less than significant. The SCAQMD requires “the implementation of effective and comprehensive [fugitive construction $PM_{10}$] control measures” that can be reasonably implemented to significantly reduce $PM_{10}$ emissions from construction. The SCAQMD provides planning jurisdictions with suggested mitigation measures to reduce fugitive construction $PM_{10}$ impacts to a level considered less-than-significant. The Project would incorporate construction mitigating project features including replacing ground cover, watering unpaved roads and exposed areas, cleaning paved roads, and reducing vehicle speeds on unpaved roads. These mitigating project features would reduce fugitive construction $PM_{10}$ by 56%. The implementation of these mitigating project features would reduce construction $PM_{10}$ impacts to less-than-significant levels.

**Mitigation:** None required.

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**Impact 3.1-3: Operation of the Project would generate emissions of criteria air pollutants that could contribute to existing nonattainment conditions. (Less than Significant)**

The Project would consist of two operational phases. Phase 1 would include a MRF that would first remove bulky materials and then separate materials as organic materials for the AD facility, recyclable materials or residual materials (for landfill disposal). Phase 2 includes the AD facility that would produce methane fuel gas, a CNG fueling station, and soil amendments from the organic materials provided by Phase 1. The operational air quality impacts associated with each of these phases are discussed below:

Operational emissions include direct stationary sources, indirect mobile source (e.g., truck traffic) and area sources (e.g., landscaping equipment). Though the SCAQMD CEQA Protocol addresses each separately, direct and indirect mobile/area source emissions are addressed together herein. The SCAQMD CEQA Protocol requires mitigation measures for operational, and indirect emissions. The SCAQMD CEQA Protocol establishes a two-tier threshold that dictates the level of mitigation required.

At a minimum, a project must implement feasible standard mitigation measures (SMM). If the indirect emissions exceed the Level A thresholds, a project must also implement appropriate best available mitigation measures (BAMM) as determined by the Lead Agency. If the indirect emissions exceed the Level B thresholds after applying all feasible mitigation, a project is considered to have a significant air quality impact. The maximum operational emissions from the Project are compared against the significance thresholds in **Table 3.1-7**. Results and assumptions of the Maximum Daily Operational Emissions can be found in Appendix D.

**TABLE 3.1-7**
**NET EMISSIONS INCREASE OF OPERATIONAL EMISSIONS FROM THE PROJECT**

| Pollutant | Maximum Daily Operational Emissions (lb/day)[1] | Significance Threshold | | Significant? |
|---|---|---|---|---|
| | | Level A[2] | Level B[2] | |
| NOx | 127 | 25 | 137 | No |
| PM10 | 14 | 80 | 137 | No |
| ROG | 12 | 25 | 137 | No |

NOTES:
1 Results and assumptions of the Maximum Daily Operational Emissions can be found in Appendix D.
2 Shasta AQMD CEQA Protocol
3 Exceedance of Level B significance threshold would result in a significant impact.

SOURCE: ESA, 2015

As shown in Table 3.1-7, operational emissions from the MSW Conversion Facility would exceed the Level A significance threshold for NOx and would be below all other pollutant emissions shown under the Level A and B significance thresholds. However, the Project would have the following BAMM as part of the Project's final design and layout during operation: (1) the generator engine will be equipped with a three-way catalyst that will control NOx and ROG emissions to levels commensurate with BACT; (2) A $FeCl_2$ injection system will remove aqueous sulfide from the anaerobic reactors, thus controlling $H_2S$ levels in the biogas; and (3) a $FeCl_2$ injection system will remove aqueous sulfide from the anaerobic reactors, thus controlling $H_2S$ levels in the biogas. Therefore, operational emissions generated by the Project would result in a less than significant impact.

**Mitigation:** None required.

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**Impact 3.1-4: Construction and/or operation of the Project would not expose sensitive receptors to substantial pollutant concentrations. (Less than Significant)**

Section 78 of the District regulations prohibits the discharge of air contaminants that cause injury, detriment, nuisance, or annoyance to the public or endanger the comfort, repose, health, or safety of the public. Section 78 gives the District the authority to require an applicant to perform a health risk assessment to demonstrate that the TAC emissions from a project will not result in unacceptable risks to the public. The SCAQMD CEQA Protocol further identifies risk thresholds for sensitive receptors of 10 in a million for excess cancer risk and 1 for hazard indices associated with either chronic or acute non-cancer effects.

Given the remote location of the Project—at least two and a half miles from either Orland or Hamilton City— and the fact that there are no neighboring sensitive receptors (i.e., schools, hospitals, day care centers) located within one-quarter of the Project, no significant health risk impacts are anticipated. According to CARB's *Air Quality and Land Use Handbook* (CARB, 2005), the health risk screening distance for a distribution center is 500 feet. A distribution center would have similar operational features as the MRF portion of the Project (e.g., idling trucks, off-road vehicles). The nearest sensitive receptor to the Project site is located beyond 500 feet away. Furthermore, the proposed generator engine will be equipped with a three way catalyst to control ROG emissions, including air toxics such as formaldehyde and benzene that are byproducts of the combustion of gaseous fuels. The three-way catalyst is a mitigating Project feature that constitutes BACT for toxics, or T-BACT. Additionally, the emergency biogas flare will provide 98% destruction efficiency for any toxics present in the biogas, which also constitutes T-BACT. The Project would generate small amounts of biogas that, once burned, would generate negligible quantities of air toxics. Accordingly, health risks to sensitive receptors associated with air toxics emissions from the Facility would be less than significant.

**Mitigation:** None required.

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**Impact 3.1-5: Operation of the Project would not create objectionable odors affecting a substantial number of people. (Significant)**

Factors that affect odor impacts include the proposed MRF and AD facility design, sensitive receptor proximity, and exposure duration. Anaerobic digestion is the biological decomposition of organic matter in the absence of molecular oxygen. As a result, odorous compounds, such as ammonia and $H_2S$, are generated and could be released into the environment. The anaerobic digestion process occurs naturally in marshes, wetlands and is the principal decomposition process in landfills. However, in the operation of AD facilities, the digestion process occurs in a closed system. VOCs are broken down through the anaerobic digestion process, and exhaust is generally processed in a more controlled environment. During Project operation, there is the potential for odors to be produced in several areas of the MRF and AD facilities, these areas include:

- The tipping floor where incoming MSW is received and deposited;
- The MRF processing and conveying equipment that comes in contact with organics in the waste stream;
- Temporary storage area for residual organics and contaminated inorganics that do not pass through the final 2-inch screen;
- The Royal Flush wet organics separation process tank;
- The AD system tanks and interconnecting piping system;
- The $H_2S$ removal system vessel and piping;
- The combustion microturbine and combustion flare;
- The screw press that dewaters the digestate generated from the AD system tanks;
- The dewatered solids from the screw press that are temporarily stored on-site, loaded into roll-off boxes and hauled off-site; and,
- The aerobic stabilization ponds.

Section 78 of the District regulations prohibits the discharge of air contaminants that cause injury, detriment, nuisance, or annoyance to the public or endanger the comfort, repose, health, or safety of the public. The SCAQMD CEQA Protocol states the following:

> *Any project with the potential to frequently expose members of the public to objectionable odors will be deemed to have a significant impact. Odor impacts on residential areas and other sensitive receptors, such as hospitals, day-care centers, schools, etc., warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate, such as recreational facilities, work sites, and commercial areas.*

The Protocol further recommends that an analysis of potential odor impacts be conducted for projects that would potentially generate odorous emissions and are proposed to be located near existing sensitive receptors or other land uses where people may congregate. The collection transport, storage, and pre-processing activities of the potentially odiferous MSW and/or organic substrates for digestion and the resultant digestate could produce nuisance odors at AD facilities. In addition, the siting of these digester facilities could lead to objectionable odors at the nearest sensitive receptor located within one-quarter of a mile northwest of the Project site. Depending on the wind patterns, these receptors may be subjected to offensive odors during Project operations. Accordingly, odor impacts to sensitive receptors could be significant.

### Mitigation Measures

**Mitigation Measure 3.1-5:** Prior to the operation of the MRF and/or AD facilities, the applicant shall develop and implement an Odor Management Plan (OMP) that incorporates equivalent odor reduction controls for digester operations. Odor control strategies that can be incorporated into these plans include, but are not limited to, the following:

- A list of potential odor sources;
- Identification and description of the most likely sources of odor;
- Identification of potential, intensity, and frequency of odor from likely sources;
- A list of odor control technologies and management practices that could be implemented to minimize odor releases. These management practices shall include the establishment of the following criteria:
  - If source separated organics (e.g., from restaurants) are directly transported to the Project site for AD feedstock, then these must be transported to the Project site within sealed containers.
  - Establish time limit for on-site retention of undigested substrates (i.e., substrates must be put into the digester within 24 hours of receipt).
  - Provide enclosed, negative pressure buildings for indoor receiving and preprocessing. Treat collected foul air in a biofilter or air scrubbing system.
  - Establish contingency plans for operating downtime (e.g., equipment malfunction, power outage).
  - Manage delivery schedule to facilitate prompt handling of odorous substrates.
  - Handle digestate within enclosed building and/or directly pump to sealed containers for transportation.
  - Protocol for monitoring and recording odor events.
  - Protocol for reporting and responding to odor events.

**Impact Significance After Mitigation:** Implementation of Mitigation Measure 3.1-5 would reduce odor emissions generated during Project operations by requiring the applicant to develop and implement an OMP. This would reduce this impact to a less-than-significant level.

**Impact 3.1-6: Implementation of the Project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. (Less than Significant)**

GHG emissions are evaluated as a cumulative impact only rather than as a project-specific impact. Global warming is considered a world-wide problem that is not caused by any single source of emissions but is instead the result of cumulative world-wide GHG emissions. Consequently, the Project is only evaluated for its contribution to world-wide cumulative emissions.

The SCAQMD has not established a numerical threshold of significance for GHGs associated with construction activities or operational activities. In November 2012, SCAQMD prepared the *Shasta Regional Climate Action Plan* (RCAP) (SCAQMD, 2012). The RCAP contains goals, policies and implementation measures intended to reduce GHG emissions throughout Shasta County. However, the RCAP comment does not address emissions associated with a solid waste conversion facility. Given that there are no adopted plans, policies or programs in place at the local level to address GHGs, the analysis of this impact addresses the Project's consistency with State-level efforts to reduce GHGs.

In order to determine whether the Project would generate GHG emissions that may have a significant impact on the environment, Shasta County has relied on the Inclusion Thresholds for Covered Entities, as described in Section 95812 of the Cap and Trade regulations adopted by CARB in 2011 (Title 17, California Code of Regulations). As described in Section 95812(c)(1), the applicability threshold for a covered entity (facility) is 25,000 metric tons or more of $CO_2e$ per data year. The Cap and Trade Program is one of the state's primary tools for reducing GHG emissions and ensuring compliance with AB 32. Given the extensive research and resources that went into the development of the GHG Mandatory Reporting Rule and cap and trade programs adopted by CARB, the U.S. EPA greenhouse gas reporting rule, and the fact that the 25,000 metric ton threshold would capture approximately 94 percent of GHG emissions associated with stationary sources in California (CAPCOA, 2008), Shasta County has determined that the use of the 25,000 metric tons/year of $CO_{2e}$ threshold is the most appropriate quantitative threshold to apply to the Project.

Implementation of the Project would result in the generation of 5,998 metric tons/year total operational GHG emissions during the operation of the MRF and AD facilities, including vehicle trips. As described previously in this chapter, this analysis is based on full operation of the Project, which is described in the *CEQA Air Quality Technical Report – Glenn County Municipal Solid Waste Conversion Facility* (ESA, 2015) (Appendix D). Table 3.1-9 summarizes the operational greenhouse gas emissions generated by the Project. Detailed results and assumptions can be found in Appendix D.

As shown in **Table 3.1-8**, operation of the Project would result in approximately 5,998 metric tons of direct $CO_2e$ emissions per year. The greenhouse gas emissions would not exceed the applied 25,000 metric tons of $CO_{2e}$ per year and would not result in a significant impact.

**TABLE 3.1-8**
**ANNUAL OPERATIONAL GHG EMISSIONS**

| Pollutant | Maximum Yearly Operational Emissions (tons per year)[1] | | | |
|---|---|---|---|---|
| | Stationary Sources | Mobile Sources | Area Sources | Totals |
| $CO_2e$ | 49 | 5,904 | 45 | 5,998 |

NOTES:
1 Results and assumptions of the Maximum Daily Operational Emissions can be found in Appendix D.

SOURCE: ESA, 2015

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### Impact 3.1-7: The Project would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. (Less than Significant).

As discussed in Impact 3.1-6, the GHG emissions generated by the Project during both construction and operations are expected to be below the recommended GHG significance threshold of 25,000 metric tons of $CO_{2e}$ per. As such, the Project would not conflict with any plans, policies, or programs adopted to reduce GHG emissions, and the Project would not conflict with the goals established by AB 32. In addition, the Project would comply with the following CARB Climate Change Scoping Plan measures:

> *Electricity Measure E-3 of the Scoping Plan* – Measure E-3 addresses opportunities to reduce GHG emissions from fossil fuel combustion for electricity generation. The Scoping Plan established a target of 33% of electricity used in California being generated from renewable resources by 2020. Landfill gas is a renewable fuel. As such, the biogas that will be generated by the AD facility would constitute a renewable fuel. The MSW Conversion Facility will satisfy most of its electrical energy demands with electricity generated on-site by the proposed generator engine. Therefore, though the electrical generating capacity of the MSW Conversion Facility is small (less than 200 kW), the MSW Conversion Facility nonetheless would contribute towards the 2020 goal of 33% electricity generation from renewable resources.
>
> *Recycling/Waste Measure RW-3 of the Scoping Plan* – Measure RW-3 addresses opportunities to reduce GHG emissions from landfills, manufacturing processes (raw material extraction, pre-processing, and manufacturing), and agriculture through reduced demand for water and fertilizer.
>
> Although landfill operators have implemented landfill gas recovery systems designed to capture and burn landfill gas, these collection systems are not 100% effective. $CH_4$, which constitutes approximately 65% of landfill gas, is a GHG with a global warming potential 21 times that of $CO_2$. GHG emissions resulting from fugitive $CH_4$ emissions not captured by a landfill gas recovery system can be substantial. Thus, the Scoping Plan has identified increased recycling and waste recovery as a GHG control measure. California already exceeds the mandated waste diversion rate of 50%. The Project would increase the recovery of recyclable materials from the MSW generated in Glenn County. KVB estimates that more than 70% of the MSW steam will be recovered for beneficial use in the form of recycled metals/glass/plastic/ paper, compost, and biogas. Therefore, the MSW

Conversion Facility would contribute towards the goal of higher recycling and waste recovery to reduce landfill waste that will generate fugitive $CH_4$ emissions.

More thorough recycling of MSW components would yield recycled materials whose manufacturing is less energy intensive – and, thus, lower GHG emitting – than manufacturing from raw materials. The Arrow Feasibility Study estimated that as much as 40% of the MSW stream contains recyclable components, not including compost (Arrow, 2012). The Project would efficiently recover recyclable material that can be manufactured into useful products that would displace products manufactured from raw materials, with the inherently higher GHG emissions associated with raw material extraction and pre-processing.

Based upon Impact 3.1-5 and the discussion above, development of the Project would not result in a substantial increase in GHG emissions and would not impair the State's ability to implement AB 32. This impact would be less than significant.

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## *Cumulative Impact*

### Geographic Context

The geographic context for changes in the air quality environment due to development of the Project would be both regional and local. Ozone would be the primary criteria pollutant of regional concern, and the cumulative context would be comprised of the SVAB. There are no known cumulative projects near the Project site that would be constructed or operational at the same time as the Project. As previously discussed in Impact 3.1-6, GHG emissions are evaluated as a cumulative impact only; rather than as a project-specific impact. Consequently, the Impact discussion 3.1-6 above represents the cumulative impact analysis for global climate change and is not discussed further.

**Impact 3.1-8: Construction and operation of the Project would not result in a cumulatively considerable increase of criteria pollutant emissions. (Less than Significant)**

Cumulative impacts can result from individually minor but collectively significant impacts, meaning that the Project's incremental effects are considerable when viewed in connection with the effects of past, current and probable future projects. Therefore, the Project must be evaluated over time and in conjunction with other related past, present and reasonably foreseeable future projects whose impacts might compound or interrelate with those of the project being assessed. Cumulative impacts may be either regional or local in nature.

As discussed previously in Impact 3.1-2 and 3.1-3, local air quality impacts associated with the Project will be negligible. Therefore, the Project would contribute negligibly to any broader cumulative impacts associated with multiple projects. Regional impacts associated with direct stationary source emissions, indirect construction emissions, and indirect operational emissions were evaluated previously in Impact 3.1-1 and compared against regional significance thresholds. While these thresholds are applied to the Project's emissions alone, they may also be regarded as thresholds for cumulative impacts. Emissions from these activities would not contribute significantly to regional air quality impacts. In addition, the Project would comply with the existing AQMP and would comply with all applicable air district rules and regulations. Therefore, the Project's criteria pollutant emissions would not be considered a cumulatively considerable contribution to regional air quality and would result in a less-than-significant cumulative impact.

**Mitigation:** None required.

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# 3.2 Biological Resources

This section characterizes and discusses the potential effects of the Project on biological resources and identifies mitigation measures to avoid or reduce those impacts, where appropriate. Additionally, the following discussion summarizes the current regulatory status relevant to biological resources. The analysis was based upon a review of potentially occurring special-status species,[1] wildlife habitats, vegetation communities, and jurisdictional waters of the U.S. and waters of the state. The results of the assessment are based on field surveys, literature searches, and database queries of the California Department of Fish and Wildlife's (CDFW) Natural Diversity Database (CNDDB), the U.S. Fish and Wildlife Service (USFWS) list of federal endangered species, and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants. A formal wetland delineation was not conducted at the project site; however, potential wetlands and other waters of the U.S. and waters of the state were noted and informally mapped. Sources of reference data reviewed for this evaluation included the following:

- Glenn County 1993 General Plan EIR (Glenn County, 1993);
- Hamilton City, California United States Geological Survey (USGS) 7.5-minute topographic quadrangle (USGS, 1969);
- USFWS IPac Trust Resources Report for the Glenn County Solid Waste Conversion Facility detailing federal endangered and threatened species, critical habitats, migratory birds, national wildlife refuges, and wetland resources that may be affected by the Project (USFWS, 2015);
- CNDDB list of special-status species occurrences within 10 miles of the Project site (CDFW, 2015);
- CNPS list of rare and endangered plants known to occur in the Hamilton City, California and eight surrounding USGS 7.5-minute topographic quadrangles (CNPS, 2015).
- *Biological Resources Assessment for the Proposed Municipal Waste Conversion Facility, Glenn County, California* (Golden Hills Consulting, 2015)

Comments relating to biological resources were received on the Notice of Preparation (NOP) (**Appendix A**), including the concern that the solid waste facilities can attract rodents, birds, and other animals to the area, and that the Project site must be evaluated for the presence of jurisdictional waters, including jurisdictional waters of the U.S. and waters of the state, and any potential impacts to those waters should be minimized.

[1] Species that are protected pursuant to Federal or State endangered species laws, or have been designated as Species of Special Concern by California Department of Fish and Wildlife, or species that are not included on any agency listing by meet the definition of rare, endangered or threatened species of the CEQA Guidelines section 15380(b), are collectively referred to as "special-status species."

## 3.2.1 Environmental Setting

### Regional Setting

The Great Central Valley floristic region encompasses an area bounded roughly to the west and east by the Coast Ranges and the Sierra Nevada Mountains, and is split into two subregions, the Sacramento Valley, and San Joaquin Valley subregion. The Project site is located within the Sacramento Valley which extends from northern extent of the Great Central Valley near the convergence of the Coast Ranges and the Cascade Ranges, to the Sacramento-San Joaquin Delta (Baldwin et al., 2015). Climate of the region consists of hot summers and mild winters with precipitation occurring mostly during winter. Mean monthly temperatures range from 48.8º Fahrenheit to 75.3º Fahrenheit. Average annual rainfall is approximately 19.95 inches with nearly 90 percent occurring between November and April (Western Regional Climate Center, 2015).

The Project site is located in Glenn County, which is a predominantly rural county with agriculture being the primary land use. Croplands are found in the areas of prime agricultural soil in the eastern third of the county along the floodplain of the Sacramento River. Grazing lands are found primarily in the central foothills and to the west in the Glenn County portion of the Coast Ranges.

Lower Stony Creek runs along the south side of the project area. Stony Creek is the second largest tributary to the Sacramento River on the west side of the Sacramento Valley. The watershed is roughly divided into Upper Stony Creek and Lower Stony Creek, with Black Butte Reservoir forming the boundary. Lower Stony Creek drains a 38 square mile area, flowing predominately in a southeast direction from Black Butte Reservoir below Black Butte Dam to the confluence of the Sacramento River over a distance of approximately 24 miles.

### Project Site

The Project site is located approximately three miles west of Hamilton City and 5.5 miles east of Orland and is generally bound by State Route 32 (SR 32) to the north, the Stony Creek levee to the west and south, and a stand of mixed ruderal and upland riparian vegetation to the east.

The Project site is located on the Hamilton City 7.5-minute USGS topographic quadrangle. The Project site consists of light industrial in the western portion of the site (primarily consisting of a gravel hauling business and associated infrastructure), and a level, graveled area in the northwest portion of the site that until approximately 1999 was occupied by cement and gravel mining facility.

Elevations within the project site range from approximately 150 to 200 feet above mean sea level. The topography of the project site is characterized by generally flat terrain that gently slopes from west to east.

### *Wildlife Habitat and Vegetation Types*

Wildlife habitats are generally described in terms of vegetation types along with landform, disturbance regime, and other unique environmental characteristics. This section is organized into wildlife habitats based on CDFW's *A Guide to Wildlife Habitats of California* (Mayer and Laudenslayer, 1988) that is used in CDFW's California Wildlife Habitat Relationships System (CWHR). The CWHR habitat classification scheme has been developed to support the CWHR System, a wildlife information system and predictive model for California's regularly occurring birds, mammals, reptiles and amphibians.

Vegetation types are assemblages of plant species that occur together in the same area and are repeated across landscapes, and are defined by species composition and relative abundance. Vegetation alliances are the scientifically derived hierarchical class that corresponds best with plant communities and are designed to be the unit for conservation of rare or threatened plant communities (Sawyer et al., 2009). Vegetation alliances presented in this section correspond with the vegetation classification system presented in Sawyer, Keeler-Wolf, and Evans' *A Manual of California Vegetation, Second Edition* (2009). Wildlife habitats generally correspond to vegetation types. Within Sawyer, Keeler-Wolf, and Evans' vegetation classification system, a crosswalk is provided to help correlate vegetation alliances with wildlife habitats. The descriptions below make use of the crosswalk.

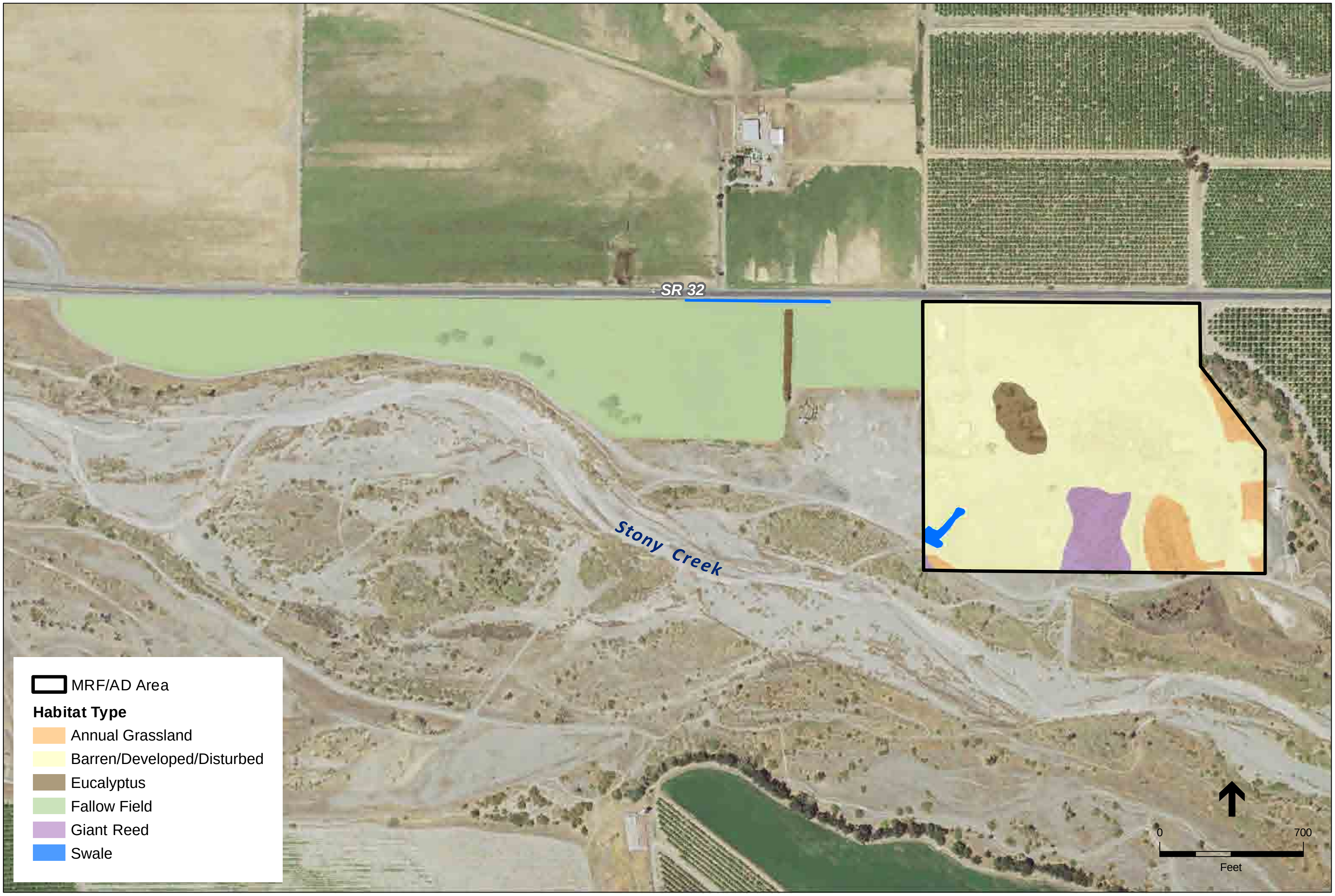
A description of wildlife habitats present within the Project site is presented below. Where applicable, related vegetation alliances are listed following the wildlife habitat description and are based on the alliance descriptions presented by Sawyer, Keeler-Wolf, and Evans (2009). It should be noted that habitat types occurring in the Project site are dominated by weed plants, or non-native plants. These vegetation types are referred to as "semi-natural stands," and are not grouped into vegetation alliances. Similarly, barren areas are not a described vegetation type.

Vegetation communities and wildlife habitats were identified in a previous report by Golden Hills Consulting (2015), and were reviewed and verified by ESA. Habitat types within the project site are shown in **Figure 3.2-1** and **Table 3.2-1**. Habitat types include Annual Grassland, Agricultural, Barren, Eucalyptus, Giant Reed, Swale, and Disturbed/Developed.

**TABLE 3.2-1**
**HABITATS PRESENT WITHIN THE PROJECT SITE**

| Habitat Type | Acres |
|---|---|
| Annual Grassland | 3.48 |
| Barren/Developed/Disturbed | 38.67 |
| Eucalyptus | 1.45 |
| Giant Reed | 2.72 |
| Swale | 0.23 |
| Total | 46.55 |

SOURCE: (Golden Hills Consulting, 2015).




SOURCE: USDA, 2014; ESA, 2015

Glenn County Solid Waste Conversion Facility EIR . 130954

**Figure 3.2-1**
Habitat Map

### Annual Grassland

Annual grassland is generally found in open areas in valleys and foothills throughout coastal and interior California. It typically occurs on soils consisting of fine-textured loams or clays that are somewhat poorly drained. This vegetation type is dominated by non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, that have replaced native perennial grasslands, scrub, and woodland as a result of human disturbance. Common species present within the Project site include wild oats (*Avena fatua*), slender oat (*Avena barbata*), hare barley (*Hordeum murinum* var. *leporinum*), ripgut brome (*Bromus diandrus*), yellow star thistle (*Centaurea solstitialis*), field mustard (*Brassica rapa*), Italian thistle (*Carduus pycnocephalus*), foxtail fescue (*Vulpia myuros*), Russian thistle (*Salsola tragus*), sow thistle (*Sonchus oleraceus*), upright pepper grass (*Lepidium strictum*), and plantain (*Plantago lanceolata*). Red gum eucalyptus (*Eucalyptus camaldulensis*) and valley oak (*Quercus lobata*) trees are sparsely scattered within this habitat.

At the southeastern edge of the Project site, there is an area undergoing secondary succession from riparian to grassland vegetation. Based on Google Earth® imagery, prior to 1999, the area was a shallow quarry pond used by the gravel and cement facility that supported riparian vegetation. By 2003, the pond had been abandoned, and since then has become largely filled in due to time and erosional processes. Field surveys indicated riparian vegetation in this area had degraded significantly between 2013 and 2015, with most of the Fremont cottonwoods (*Populus fremontii)* and willows (*Salix* sp.) in a state of deterioration. The area is naturally converting to Annual Grassland, and no longer functions as riparian habitat (Golden Hills Consulting, 2015).

Common wildlife species that occur in this habitat include the western fence lizard (*Sceloporus occidentalis*) and common garter snake (*Thamnophis sirtalis*). Mammals typically found in this habitat include black-tailed jackrabbit (*Lepus californicus*), California ground squirrel (*Otospermophilus beecheyi*), Botta's pocket gopher (*Thomomys bottae*), western harvest mouse (*Reithrodontomys megalotis*), California vole (*Microtus californicus*), and coyote (*Canis latrans*). Common birds found in Annual Grassland habitats include horned lark (*Eremophila alpestris*), western meadowlark (*Sturnella neglecta*), red-winged blackbird (*Agelaius phoeniceus*), and barn owl (*Tyto alba*). This habitat is important foraging habitat for raptor species, including the state-listed Swainson's hawk (*Buteo swainsoni*).

## *Vegetation Alliances*

- *Avena* (*barbata, fatua*) Wild oats grassland
- *Bromus* (*diandrus*, *hordaeceus*) Annual brome grassland
- *Brassica nigra* Upland mustards

### Barren/Developed/Disturbed

This habitat is defined as having less than two percent vegetation. Barren/Developed/Disturbed areas in the Project site include those areas where scraping and leveling has occurred during gravel-hauling and Ready-Mix activities, and also includes buildings onsite. Vegetation in this area is extremely sparse, but does include species common to Annual Grassland habitat in low densities.

While this habitat has little to no vegetation, some bird species, including killdeer (*Charadrius vociferous*) and other plovers rely on open ground covered with sand or gravel for constructing small scrape nests. There are no vegetation alliances associated with this habitat type.

#### Eucalyptus

The dominant plant species in this habitat is the red gum eucalyptus tree. Other associated species on the Project site include Fremont cottonwood and valley oak. Within this habitat there is not a shrub subcanopy. Plant species composition within the understory is consistent with those present in Annual Grassland habitat.

Common wildlife species found within this habitat include crow (*Corvus brachyrhynchos)*, raven (*Corvus corax*), barn owl, and red-tailed and red-shouldered hawks (*Buteo jamaicensis* and *B. lineatus*, respectively). Red gum eucalyptus trees are important as roosts, perches, and nest sites for a number of bird species, particularly raptors. A number of small vertebrate species, including alligator lizard (*Elgaria multicarinata*), gopher snake (*Pituophis catenifer*), and woodrat (*Neotoma* sp.) occur in the understory layers of this habitat.

#### Giant Reed

Giant Reed habitat occurs along a portion of the southeastern site border. The dominant plant species in this habitat is giant reed (*Arundo donax*). Other species present in the area include tamarisk (*Tamariz parviflora*) and coyote brush (*Baccharis pilularis*). The understory is consistent with Annual Grassland habitat being composed primarily of annual grasses and weed species, but also includes filarees (*Erodium cicutarium and E. botrys*), rose clover (*Trifolium hirtum*), burr clover (*Medicago polymorpha*), wild lettuce (*Lactuca serriola*), turkey mullein (*Croton setiger*), and woolly mullein (*Verbascum thapsus*).

Both giant reed and tamarisk are identified by the California Invasive Plant Council (Cal-IPC) as highly invasive species. Additionally, the Lower Stony Creek Restoration Plan identifies these species as invasive non-native plant species that are targeted for eradication (GCRCD, 2010).

#### Swale

A stormwater detention area located in the southwest corner of the Project Study Area seasonally retains water. Though it may contain rainwater runoff, irrigation runoff, surface water, and/or have saturated soils during a portion of the growing season, this isolated feature is not a potential waters of the U.S.; however, it may be classified as a waters of the state (Golden Hills Consulting, 2015a and b). Species within this area are similar to those in annual grassland habitat, but additionally contain willow (*Salix* sp.) and horseweed (*Erigeron canadensis*).

### Special-Status Species, Natural Communities, and Critical Habitat

Special-status species are legally protected under the California Endangered Species Act (CESA) and the federal Endangered Species Acts (FESA) or other regulations or are species that are considered sufficiently rare by the scientific community to qualify for such listing. These species are in the following categories:

1. Species listed or proposed for listing as threatened or endangered under FESA (50 Code of Federal regulations [CFR] 17.12 [listed plants], 17.11 [listed animals] and various notices in the Federal Register [FR] [proposed species]);
2. Species that are candidates for possible future listing as threatened or endangered under FESA (61 FR 40, February 28, 1996);
3. Species listed or proposed for listing by the State of California as threatened or endangered under CESA (15 California Code of Regulations [CCR] 670.5);
4. Plants listed as rare or endangered under the California Native Plant Protection Act (CNNP) (California Fish and Game Code, Section 1900 et seq.);
5. Animal species of special concern to CDFW;
6. Animals fully protected under FGC (FGC Sections 351 [birds], 4700 [mammals], and 5050 [reptiles and amphibians];
7. Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15280 provides that plant or animal species may be treated as “rare or endangered” even if not on one of the official lists (State CEQA Guidelines, Section 15380); and
8. Plants considered under CNPS to be “rare, threatened or endangered in California” (Rank 1A, 1B, and 2 in CNPS, 2013) as well as CNPS Rank 3 and 4 plant species[2].

A list of special-status species that have the potential to occur within the vicinity of the study area was compiled based on data in the CNDDB, the USFWS (2015) *List of Federal Endangered and Threatened Species that Occur in or may be Affected by the Project*, and the CNPS Inventory of Rare and Endangered Plants. A list of special-status species, their general habitat requirements, and an assessment of their potential to occur with the project area is provided below in **Table 3.2-2** and in Appendix B. Recorded observations of special-status species within five miles of the Project site are shown in **Figure 3.2-2**. **Table 3.2-2** lists special-status plants and animals with medium to high potential to occur within the study area. The “Potential for Occurrence” category is defined as follows:

- **Unlikely:** The project site and/or surrounding area do not support suitable habitat for a particular species, or the project site is outside of the species known range.
- **Low Potential:** The project site and/or immediate area only provide limited amounts and low quality habitat for a particular species. In addition, the known range for a particular species may be outside of the immediate project area.

[2] Rank 3 and 4 plants may be analyzed under CEQA §15380 if sufficient information is available to assess potential impacts to such plants. Factors such as regional rarity vs. statewide rarity should be considered in determining whether cumulative impacts to a Rank 3 or 4 plant are significant even if individual project impacts are not. CNPS Rank 3 and 4 may be considered regionally significant if for example, the occurrence is located at the periphery of the species’ range, or exhibits unusual morphology, or occurs in an unusual habitat/substrate. For these reasons, CNPS Rank 3 and 4 plants should be included in the special-status species analysis. Rank 3 and 4 plants are also included in the CNDDB Special Plants Bryophytes, and Lichens List [Refer to the current online published list available at: http://www.dfg.ca.gov/biogeodata].

- **Medium Potential:** The project site and/or immediate area provide suitable habitat for a particular species.
- **High Potential:** The project site and/or immediate area provide ideal habitat conditions for a particular species and/or known populations occur in immediate area and/or within the project site.

Conclusions regarding habitat suitability and species occurrence are based on reconnaissance surveys, as well as the analysis of existing literature and databases described previously.

Database queries identify 33 regionally occurring special-status wildlife species. Of these, 16 species were eliminated from further consideration based upon a lack of suitable habitat within the project area, or the project area being outside of the species' known range. Thirteen special-status wildlife species have medium or high potential to occur in the project area and four species have low potential to occur in the project area. Species with a medium or high potential to occur are identified in Table 3.2-2 and are described in detail below. Only species classified as having a medium or high potential for occurrence were considered in the impact analysis. Database queries identify 24 regionally occurring special-status plant species. Of these, thirteen special-status plant species were eliminated from further consideration based upon a lack of suitable habitat within the project area and the remaining seven plant species are considered to have low potential to occur in the Project site.

## *Birds*

### Tricolored Blackbird

Tricolored blackbird is a CDFW Species of Special Concern. Tricolored blackbird is a medium-sized, mostly black/dark brown with red wing patches, with males having an additional white color on their wing patch. This species is a year-ling resident of the California Central Valley. Tricolored blackbirds are found in freshwater marshes, and uplands near water and nest in dense thickets of vegetation, including bulrush, willows, blackberries, and thistles. A colony of approximately 1,400 nests was observed on-site in 2005; however, subsequent surveys in 2011 and 2014 did not identify this species (CDFW, 2015). This species is considered to have a moderate potential to occur on-site.

### Short-eared Owl

Short-eared owl is a CDFW Species of Special Concern. Short-eared owl is a medium-sized, mottled brown and white owl with a large buff wing patch on outer wing that is visible in flight. This species is a winter migrant of the California Central Valley, present between Septembers through April. Short-eared owl generally occur in open, treeless areas with elevated perches, and dense vegetation for roosting and nesting. Such habitat is generally available on-site; however, this species has not been observed on the Project site and was not detected during reconnaissance surveys.

**TABLE 3.2-2**
**POTENTIALLY AFFECTED SPECIES**

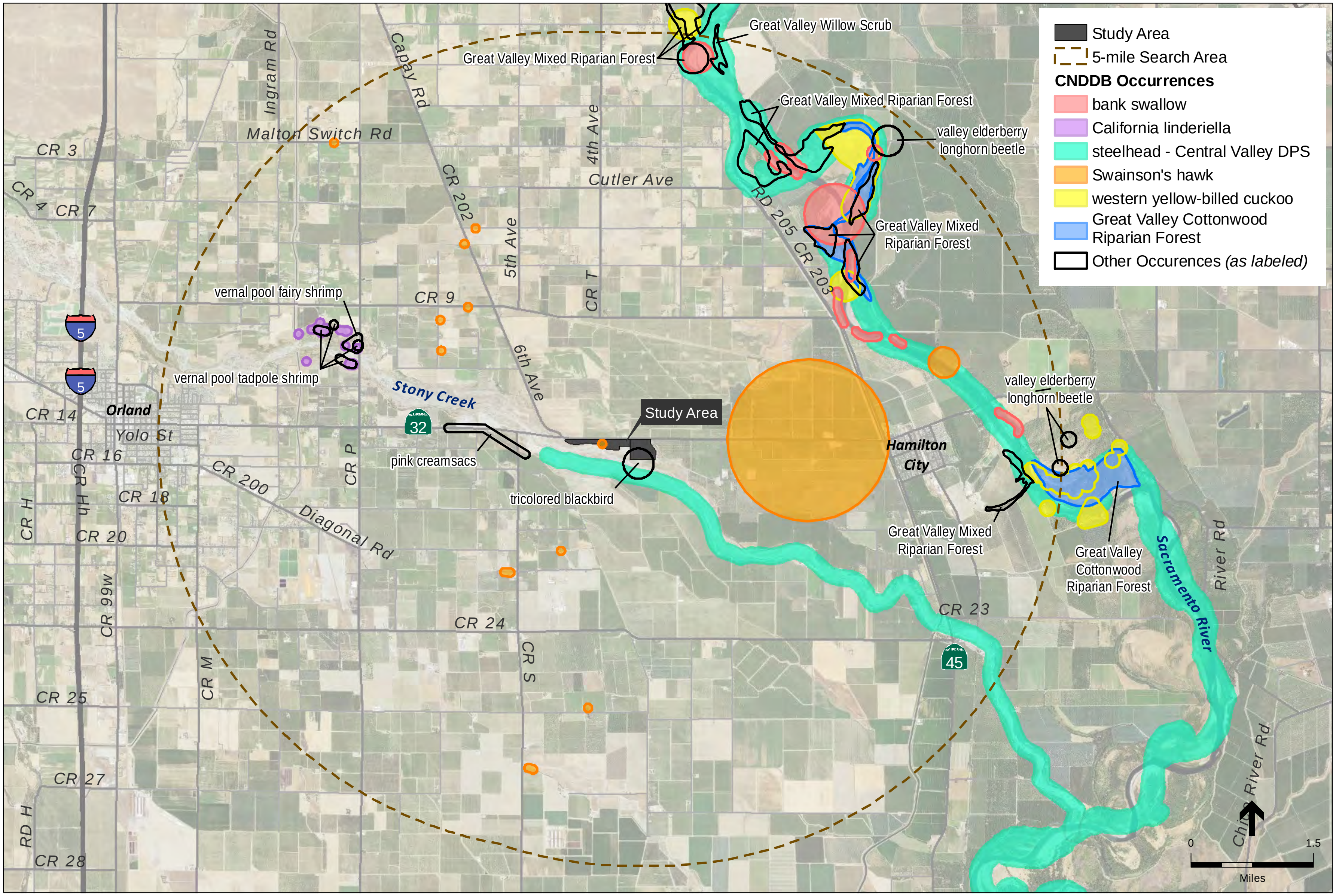
| Species | Status Federal/ State | Suitable Habitat | Potential for Project to Effect |
|---|---|---|---|
| Birds | | | |
| *Agelaius tricolor* Tricolored blackbird | --/SSC | Nests near freshwater, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herb; forages in grassland and cropland habitats. | **Medium**. Suitable nesting habitat is presented adjacent to Project site and suitable foraging habitat is within Project site. A colony of approximately 1,400 nests was observed on-site in 2005; however, subsequent surveys in 2011 and 2014 did not identify this species (CDFW, 2015). |
| *Asio flammeus* Short-eared owl | --/SSC | Roosts, nests, and forages in open areas, grasslands, prairies, dunes, and meadows, irrigated pasture, and wetlands. | **Medium**. Suitable nesting and foraging habitat is present within and adjacent to the Project site. This species was not observed during reconnaissance surveys. |
| *Athene cunicularia* Burrowing owl | --/SSC | Forages in open plains, grasslands, and prairies; typically nests in abandoned small mammal burrows. | **Medium.** Suitable nesting and foraging habitat present in Project site within the annual grassland habitat onsite. This species was not observed during reconnaissance surveys. |
| *Buteo swainsoni* Swainson's hawk | --/ST | Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations. | **High.** Suitable nesting and foraging habitat present within and adjacent to the Project site. Swainson's hawks successfully nested on agricultural land adjacent to the Project site in 2003 and were observed on the Project site during 2013 field surveys (CDFW, 2015). |
| *Charadrius montanus* Mountain plover | --/SSC | Short grasslands, plowed fields, and sagebrush areas, avoids high and dense cover. Forages on the ground. Feeds on large insects, especially grasshoppers. Does not nest in California. | **Medium**. Suitable foraging habitat is present within the Project site. This species does not nest in California. |
| *Elanus leucurus* White-tailed kite | --/FP | Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching. | **High**. Suitable nesting habitat occurs within the Project site. Additionally, nesting is recorded in the CNDDB greater than 2 miles from the project site. This species was not observed during reconnaissance surveys. |
| *Lanius ludovicianus* Loggerhead shrike | --/SSC | Open habitats in lowlands, and foothills with scattered shrubs, trees, or other perches; nests in densely-foliaged shrubs and trees. | **High**. Suitable nesting and foraging habitat is present within the Project site. This species was not observed during reconnaissance surveys. |
| Mammals | | | |
| *Taxidea taxus* American badger | --/SSC | Most abundant in drier open stage of most shrub, forest, and herbaceous habitats, with friable soils. Use dense vegetation and rocky areas for cover and den sites. Prefer forest interspersed with meadows or alpine fell-fields. | **Medium**. Suitable habitat is present within and adjacent to the Project site. No nearby records. |

**STATUS CODES:**

Federal
FE = Endangered
FT = Threatened
FC = Candidate
BEPA = Bald Eagle Protection Act
BCC = USFWS Bird of Conservation Concern

State
CE = Endangered
CT = Threatened
FP = Fully Protected
SSC = (CA) Department of Fish and Wildlife Species of Special Concern

SOURCE: CDFW, 2015; USFWS, 2015




SOURCE: USDA, 2014; CDFW, 2015; ESA, 2015

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**Figure 3.2-2**
Special-status Species Occurrences within a 5-mile Search Radius

### Burrowing Owl

The burrowing owl is a CDFW Species of Special Concern. This species is a small, long-legged, ground-dwelling bird, well-adapted to open, relatively flat expanses. Burrowing owls require underground burrows or other cavities for nesting during the breeding season and for roosting and cover, year-round. Burrows used by owls are typically dug by other species, including California ground squirrel. Natural rock cavities, debris piles, culverts, pipes, and artificial burrows are also used for nesting and roosting. Preferred habitat is generally typified by short, sparse vegetation with few shrubs, level to gentle topography and well drained soils. Grassland, shrub steppe, and desert are the natural habitat types used by these species. In addition, burrowing owl may occur in some agricultural areas, ruderal grassy fields, vacant lots, and pastures. This species is a year-round resident of California, breeding typically between February and September (CDFG, 2012). Neither owls nor active burrows were observed in the Project site during field surveys, though this species could be present as suitable habitat for this species is present in the Project site (CDFW, 2015; Golden Hills Consulting, 2015).

### Swainson's Hawk

Swainson's hawk is a State threatened species. Swainson's hawk is a mostly seasonal resident of the California Central Valley, traveling between wintering grounds in open pampas and agricultural areas of South America, and summer breeding grounds in northwestern Canada, the western U.S., and Mexico. In the California Central Valley, Swainson's hawk nest between March and August in scattered trees along riparian habitats adjacent, or within easy fly distance to foraging areas. Alfalfa fields, fallow fields, low-growing row or field crops (including beet and tomato), dry-land and irrigated pasture, rice land (during the non-flooded period), and cereal grain crops (including corn after harvest) are the primary foraging areas for this species. Swainson's hawk prey include small mammals, birds, and insects. Large eucalyptus, oak, and other trees in the Project area provide potential nesting and perching habitat for this species, and foraging habitat within the Project site is abundant (CDFG, 1994). Swainson's hawk successfully nesting on agricultural land adjacent to the Project site in 2003 (CDFW, 2015), and this species was observed during surveys performed by Golden Hills Consulting (2015).

### Mountain Plover

Mountain plover is a CDFW Species of Special Concern. Mountain plover, a medium sized to large shorebird, is a winter resident from September to March. This species occurs seasonally occurs in short grasslands with low, herbaceous or scattered shrub vegetation, and plowed fields of the California Central Valley. The mountain plover does not nest in California. It is possible that plovers could forage in the Project area; however, nesting is not anticipated.

### White-Tailed Kite

White-tailed kite is a CDFW fully protected species. White-tailed kite is a year-round resident of California in coastal and valley lowlands. This species nests and roosts in groves of dense, broad-leaved deciduous trees most frequently near foraging areas. Breeding occurs from February to October. Open grasslands, meadows, farmland, and wetland areas with dense populations of small mammals, birds, insects, reptiles, and amphibians are this species' primary foraging areas

(CDFW, 1988–2005). Nesting kites could seasonally be present on or near the Project site, as nesting and foraging habitat is present on-site.

#### Loggerhead Shrike

The loggerhead shrike is a CDFW Species of Special Concern. Loggerhead shrike is a small, thick-bodied grey bird with a black mask and white flashes in the black wings. This species is a common resident in lowlands and foothills and prefers open habitats with scattered shrubs, trees, and other suitable perches. Loggerhead shrike feed on insects, birds, mammals, amphibians, reptiles, fish, and carrion. Though this species was not observed during reconnaissance surveys, suitable nesting and foraging habitat is present within the Project site. Therefore, loggerhead shrike are considered to have a moderate potential to occur on-site.

### *Mammals*

#### American Badger

The American badger is a CDFW Species of Special Concern. American badger is an uncommon, permanent resident of California. This species is found in dry open stages of shrub, forest, and grassland habitats with friable soils. Mating occurs in summer and early fall. American badgers feed on small mammals, reptiles, insects, birds, eggs, and carrion. This species could be present, particularly within grasslands areas, as denning and foraging habitat is present on the Project site.

### *Designated Critical Habitat*

The FESA (see Section 3.3.3 below) requires the federal government to designate critical habitat for any species it lists under the FESA. Critical habitat is defined as: (1) specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation. Critical habitat may include an area not currently used by an endangered or threatened species, but that will be needed for species recovery. The project site is not located within designated critical habitat for any listed species.

Proposed designated critical habitat for the western distinct population segment of the yellow-billed cuckoo occurs along the Sacramento River approximately 2.5 miles east of the Project site (79 FR 48548, August 15, 2014). Stony Creek, located south of the Project site, has been designated as critical habitat for the California Central Valley steelhead and Central Valley spring-run Chinook salmon distinct population segments (70 FR 52488, September 2, 2005).

### *Sensitive Natural Community*

A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is in other ways of special concern to local, State, or federal agencies. Most sensitive natural communities are given special consideration because they perform important ecological functions, such as maintaining water quality and providing essential habitat for plants and wildlife. Some plant communities support a unique or diverse assemblage of plant species and therefore are considered sensitive from a botanical standpoint. CEQA identifies the elimination of such communities as a significant impact.

For the purpose of this EIR, sensitive natural communities include:

1. Areas of special concern to federal, state, or local resource agencies;
2. Areas regulated under Section 404 of the FCWA;
3. Areas protected under Section 402 of the Clean Water Act; and
4. Areas protected under state and local regulations and policies.

CDFW formerly tracked sensitive natural communities in the CNDDB. Due to funding cuts, no new occurrences of sensitive natural communities have been added to the CNDDB since the mid-1990s, although the database continues to include older mapped occurrences. The CNDDB identifies five regionally occurring sensitive natural communities that occur within the vicinity of the project area (CDFW, 2015); however, none of these natural communities occur within the project site.

Additionally, the CDFW's *List of California Terrestrial Natural Communities* (CDFG, 2010) ranks vegetation alliances in California according to their degree of rarity imperilment (as measured by rarity, trends, and threats). All alliances are listed with a G (global) and S (state) rank. Alliances with State ranks of S1-S3 are considered of special concern by the CDFW, and all associations within them are also considered to be highly imperiled. CDFW guidance recommends all alliances with State ranks of S1-S3 be considered and analyzed under CEQA. Vegetation alliances within the Project site are not considered of special concern by CDFW and are therefore not considered sensitive natural communities under CEQA regulations.

### *Wildlife Movement Corridors*

Wildlife corridors are established migration routes commonly used by resident and migratory species for passage from one location to another. Maintaining the continuity of established wildlife corridors is important to: a) sustain species with specific foraging requirements, b) preserve a species' distribution potential, and c) retain diversity among many wildlife populations. Habitat loss, fragmentation, and degradation resulting from a change in land use or habitat conversion can alter the use and viability of wildlife movement corridors. According to Beier and Loe (1992), wildlife habitat corridors should fulfill several functions. They should maintain connectivity for daily movement, travel, mate-seeking, and migration; plant propagation; genetic interchange; population movement in response to environmental change or natural disaster; and recolonization of habitats subject to local extirpation.

Stony Creek, adjacent to the Project site, serves as an important wildlife corridor for both terrestrial and aquatic species. Stony Creek contains spawning and rearing habitat for the California Central Valley distinct population segment of steelhead and spring-run Chinook salmon. Additionally, terrestrial species, both special-status (e.g., American badger) and common (e.g., black-tailed deer, raccoon, coyote), may use the Stony Creek corridor as foraging and movement habitat.

# 3.2.2 Regulatory Setting

## Federal

### *Federal Endangered Species Act*

The FESA protects threatened and endangered plants and animals and their critical habitat. Candidate species are those proposed for listing; these species are usually treated by resource agencies as if they were actually listed during the environmental review process. Procedures for addressing impacts to federally listed species follow two principal pathways, both of which require consultation with the USFWS, which administers the FESA for all terrestrial species. The first pathway, Section 10(a) incidental take permit, applies to situations where a non-federal government entity must resolve potential adverse impacts to species under FESA. The second pathway, Section 7 consultation, applies to projects directly undertaken by a federal agency or private projects requiring a federal permit or approval.

### *Migratory Bird Treaty Act*

The MBTA enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs.

### *Clean Water Act*

The federal Clean Water Act (CWA) was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States (U.S.). The CWA serves as the primary federal law protecting the quality of the nation’s surface waters, including lakes, rivers, and coastal wetlands.

#### Section 404

CWA Section 404 regulates the discharge of dredged and fill materials into waters of the U.S. Waters of the U.S. refers to oceans, bays, rivers, streams, lakes, ponds, and wetlands. Applicants must obtain a permit from the U.S. Army Corps of Engineers (USACE) for all discharges of dredged or fill material into waters of the U.S., before proceeding with a proposed activity. Waters of the U.S. are under the jurisdiction of USACE and the Environmental Protection Agency (EPA).

Compliance with CWA Section 404 requires compliance with several other environmental laws and regulations. USACE cannot issue an individual permit of verify the use of a general nationwide permit until the requirements of FESA and the National Historic Preservation Act (NHPA) have been met. In addition, USACE cannot issue or verify any permit until a water quality certification or waiver of certification has been issued pursuant to CWA Section 401.

#### Section 401

Under CWA Section 401, applicants for a federal license or permits to conduct activities which may result in the discharge of a pollutant into waters of the U.S. must obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect State water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401.

## State

### Regional Water Quality Control Board

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) (together "Boards") are the principal State agencies with primary responsibility for the coordination and control of water quality. In the Porter-Cologne Water Quality Control Act (Porter-Cologne), the Legislature declared that the "state must be prepared to exercise its full power and jurisdiction to protect the quality of the waters in the state from degradation..." (California Water Code section 13000). Porter-Cologne grants the Boards the authority to implement and enforce the water quality laws, regulations, policies and plans to protect the groundwater and surface waters of the state. Waters of the state determined to be jurisdictional would require, if impacted, waste discharge permitting and/or a Clean Water Act Section 401 certification (in the case of the required USACE permit). The enforcement of the State's water quality requirements is not solely the purview of the Boards and their staff. Other agencies (e.g., the CFDW) have the ability to enforce certain water quality provisions in State law.

### California Endangered Species Act

Under CESA, CDFW has the responsibility for maintaining a list of endangered and threatened species (Fish and Game Code [FGC] 2070). Sections 2050 through 2098 of the FGC outline the protection provided to California's rare, endangered, and threatened species. Section 2080 of the FGC prohibits the taking of plants and animals listed under the CESA. Section 2081 established an incidental take permit program for State-listed species. CDFW maintains a list of "candidate species" which are species that CDFW formally notices as being under review for addition to the list of endangered or threatened species.

Pursuant to the requirements of CESA, an agency reviewing a proposed project within its jurisdiction must determine whether any State-listed endangered or threatened species may be present in the project study area and determine whether the proposed project will have a potentially significant impact on such species. In addition, CDFW encourages informal consultation on any proposed project that may impact a candidate species.

Project-related impacts to species on the CESA endangered or threatened list would be considered significant. State-listed species are fully protected under the mandates of the CESA. "Take" of protected species incidental to otherwise lawful management activities may be authorized under FGC Section 206.591. Authorization from CDFW would be in the form of an Incidental Take Permit.

### Fully Protected Species

Certain species are considered *fully protected*, meaning that the code explicitly prohibits all take of individuals of these species except for take permitted for scientific research. Section 5050 lists fully protected amphibians and reptiles, Section 5515 lists fully protected fish, Section 3511 lists fully protected birds, and Section 4700 lists fully protected mammals.

It is possible for a species to be protected under the FGC, but not fully protected. For instance, mountain lion (*Puma concolor*) is protected under Section 4800 et seq., but is not a fully protected species.

### Protection of Birds and Their Nests

Under Section 3503 of the FGC, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 of the code prohibits take, possession, or destruction of any birds in the orders Falconiformes (hawks) or Strigiformes (owls), or of their nests and eggs. Migratory non-game birds are protected under Section 3800, while other specified birds are protected under Section 3505.

### Stream and Lake Protection

CDFW has jurisdictional authority over streams and lakes and the wetland resources associated with these aquatic systems under FGC Sections 1600 et seq. through administration of lake or streambed alteration agreements. Such agreements are not a permit, but rather a mutual accord between CDFW and the project proponent. FGC Section 1600 et seq. was repealed and replaced in October of 2003 with the new Section 1600–1616 that took effect on January 1, 2004 (Senate Bill No. 418 Sher). Under the new code, CDFW has the authority to regulate work that will "substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river lake or stream." CDFW enters into a streambed alteration agreement with the project proponent and can impose conditions in the agreement to minimize and mitigate impacts to fish and wildlife resources. Because CDFW includes under its jurisdiction streamside habitats that may not qualify as wetlands under the federal CWA definition, CDFW jurisdiction may be broader than USACE jurisdiction.

Waters of the State of California are typically delineated to include the streambed to the top of the bank and adjacent areas that would meet any one of the three wetland parameters in the USACE definition (vegetation, hydrology, and/or soils). Whereas federal jurisdiction requires meeting all three parameters, in practice meeting one parameter, or even the presence (rather than dominance) of wetland plants in an area associated with a jurisdictional streambed would qualify an area as waters of the state. CDFW jurisdiction is not limited to navigable waters or tributaries to navigable waters, however, isolated wetlands and wetlands not associated with a streambed are not subject to CDFW jurisdiction.

#### Native Plant Protection Act

State listing of plant species began in 1977 with the passage of the California Native Plant Protection Act (NPPA), which directed the CDFW to carry out the legislature's intent to "preserve, protect, and enhance endangered plants in this state." The NPPA gave the California Fish and Game Commission the power to designate native plants as endangered or rare and to require permits for collecting, transporting, or selling such plants. CESA expanded on the original NPPA and enhanced legal protection for plants. CESA established threatened and endangered species categories, and grandfathered all rare animals—but not rare plants—into the act as threatened species. Thus, three listing categories for plants are employed in California: rare, threatened, and endangered.

### *California Native Plant Society*

The California Native Plant Society (CNPS) maintains a list of plant species native to California that have low numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. Potential impacts to populations of CNPS-listed plants may receive consideration under CEQA review. The following identifies the definitions of the CNPS listings:

Rank 1A: Plants presumed extirpated in California and either rare or extinct elsewhere.

Rank 1B: Plants Rare, Threatened, or Endangered in California and elsewhere.

Rank 2A: Plants presumed extirpated in California, but more common elsewhere.

Rank 2B: Plants Rare, Threatened, or Endangered in California, but more common elsewhere.

Rank 3: Plants about which more information is needed - A Review List.

Rank 4: Plants of limited distribution - A Watch List.

## Local

### *Glenn County Tree Ordinance*

In 1993 Glenn County adopted a Tree Ordinance to provide policies and plans for the planting, maintenance, replacement, preservation, and removal of trees on public property and to provide policies on how to manage and remove nuisance and diseased trees. The Glenn County Tree Ordinance was enacted with the following goals: enhance wildlife habitat, prevent increases in air pollution and carbon dioxide levels in the air, minimize increases in temperatures in parks and along streets with natural tree cover, maintain moisture levels in the air of parks and land with natural tree cover, protect and enhance the aesthetic qualities of the community, prevent soil erosion, minimize conflicts with other public infrastructure, and protect the public safety, welfare and health of the community.

### *Glenn County General Plan*

The following policies from the 1993 General Plan are relevant to biological resources. These policies guide the location, design, and quality of development to protect biological resources such as wildlife habitat, open space corridors, and ecosystems.

#### Policies

Policy NRP-39: Approach the retention and enhancement of important habitat by preserving areas or systems which will benefit a variety of species or resources rather than focusing on individual species, resources, or properties.

Policy NRP-40: Consider sponsoring habitat conservation plans pursuant to the Federal Endangered Species Act when sensitive species are encountered in areas proposed for development.

Policy NRP-41: Biological resources: Preserve natural riparian habitat, especially along Stony Creek and the Sacramento River and Butte Creek.

Policy NRP-42: Eliminate the E-M (Extractive Industrial) Zone from areas containing natural riparian vegetation/habitat and replace it with a category affording greater protection to streamcourses and riparian habitats.

Policy NRP-43: Support programs that expand public hunting or outdoor educational opportunities in Glenn County, including beneficial agricultural practices and pay-to-hunt enterprises.

Polity NRP-44: Recognize that retention of natural areas is important to maintaining adequate populations of wildlife which is, in turn, important to the local economy.

Policy NRP-45: Encourage development of hunting opportunities in the county in an effort to offset the costs of natural habitat preservation while assuring that such activities are consistent with the public health and safety.

Policy NRP-46: Promote protection of native biological habitats of local importance such as riparian forests, foothill oak woodlands, Stony Gorge, and Black Butte Reservoirs.

Policy NRP-47: Recognize and protect areas of unique biological importance identified on Figure 3-14 when reviewing development related proposals.

Policy NRP-48: Study the feasibility of establishing buffer areas separating incompatible residential and other commercial development from the Sacramento National Wildlife Refuge and other areas of unique biological importance.

Policy NRP-49: Coordinate with State and federal agencies, private landowners, and private preservation/conservation groups in habitat preservation and protection of rare, endangered, threatened and special concern species, to ensure consistency in efforts and to encourage joint planning and development of areas to be preserved.

Policy NRP-50: Recognize the Sacramento River corridor, the Sacramento National Wildlife Refuge, migratory deer herd areas, naturally occurring wetlands, and stream courses such as Butte and Stony Creeks as areas of significant biological importance.

Policy NRP-51: Coordinate with wildlife agencies, the Army Corps of Engineers and the State Lands Commission during review of development permits.

Policy NRP-52: Utilize the Sacramento River Marina Carrying Capacity Study findings when reviewing proposals for development along the Sacramento River.

Policy NRP-53: Direct development away from naturally occurring wetlands to the extent such policy is consistent with the concept of compact and contiguous development.

Policy NRP-54: Coordinate closely with the Mendocino National Forest, if development proposals are forthcoming for private lands within the Forest.

Policy NRP-55: Seek membership on the Sacramento Valley Bioregion Regional Council proposed to be created by State and federal land management agencies.

Policy NRP-56: Provide notice to the Board of Supervisors prior to any final public or nonprofit agency decision to acquire land (fee title acquisition) or establish and easement for wildlife habitat and/or riparian habitat protection.

Policy NRP-57: Oppose additional fee title purchases of land by State and federal land management agencies that do not provide payments in-lieu of taxes.

Policy NRP-58: Advocate full federal funding of the federal Refuge Revenue Sharing Act.

Policy NRP-59: Advocate a property tax replacement program applicable to lands diminished in value by easements purchased by State and federal land management agencies.

Policy NRP-60: Work with State, federal, and private agencies to ensure payment of in-lieu taxes.

Policy NRP-61: Support efforts to improve water availability and management when the potential exists to benefit fish and wildlife in cooperation with Glenn County agricultural water users.

Policy NRP-62: Support the coexistence of agricultural: wildlife and wildlife uses, and cooperation of persons involved in agriculture and wildlife habitat preservation, in areas of wildlife habitat potential.

Consistent with Policies NRP-39, 40, 41, 43, 44, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 61, and 62, the Project would not hinder, restrain, or prevent Glenn County from recognizing the importance of, participating in, or promoting participation in, collaborative or individual conservation, restoration efforts, projects, or programs with State, federal or private landowners to protect fish and wildlife species, and sensitive natural communities within the region. Additionally, the Project site does not contain any sensitive plant communities, including riparian habitat, therefore the Project would not conflict with NRP-42.

Consistent with Policies NRP-56, 57, 58, 59, and 60, the Project would not constrain the Counties goal to realize maximum tax revenues from the federal Refuge Revenue Sharing Act, restrict cooperation with State, federal, and private agencies to ensure payment of in-lieu taxes, nor does the Project propose to purchase additional fee title purchases of land by State and federal land management agencies that do not provide payments in-lieu of taxes, or oppose any property tax replacement program applicable to lands diminished in value by easements purchased by State and federal land management agencies.

## 3.2.3 Impacts and Mitigation Measures

### Significance Criteria

The Project would result in a significant impact on the environment if it would:

1. 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 CDFW, or USFWS (Impacts ;
2. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by CDFW, or USFWS;
3. 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;
4. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with an established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
5. Conflict with any local policies or ordinances protecting biological resources, such as tree preservation policy or ordinance; or
6. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

### Methodology

The impact analysis focuses on foreseeable changes to the baseline condition in the context of the significance criteria presented above. In concluding the following impact analysis, three principal components of the Guidelines outlined above were considered:

- Magnitude of the impact (e.g., substantial/not substantial);
- Uniqueness of the affected resource (i.e., rarity of the resource); and
- Susceptibility of the affected resource to perturbation (i.e., sensitivity of the resource).

The evaluation of the significance of the following impacts considered the interrelationship of these three components. For example, a relatively small magnitude impact to a State or federally listed species would be considered significant if the species is exceptionally rare or believed to be highly susceptible to disturbance. Conversely, a plant community such as California annual grassland is not necessarily rare or sensitive to disturbance. Therefore, a much larger magnitude of impact would be required to result in a significant impact.

This analysis assumes the entire Project site could be disturbed by construction related activities, including facility construction and supporting roadways.

## Impacts Not Evaluated Further

The Project would not result in impacts related to the following criteria:

> **The Project would conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.**

The project area is located within the scope of the *Lower Stony Creek Watershed Restoration Plan* (Glenn County Resource Conservation District, 2010), which identifies management concerns and restoration solutions for the Lower Stony Creek watershed. The Project would not result in conflicts with the *Lower Stony Creek Watershed Restoration Plan*, therefore, no impact would occur. The Project site is not located within any other adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or state habitat conservation plan.

> **The Project would conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.**

As discussed above, Glenn County has enacted a Tree Ordinance, to provide policies and plans for planting, maintenance, replacement, preservation, and removal of trees in parks, along streets, and in public areas to provide policies for nuisance and diseased trees. There are no trees along SR 32, nor is the Project site considered a public space, therefore the Glenn County Tree Ordinance would not apply to trees onsite.

> **The Project would have a substantial adverse effect on federally protected wetlands, and waters of the U.S. 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.**

There are no federally protected wetlands or waters of the U.S, as defined by Section 404 of the Clean Water Act located within the Project site. There is one swale area, classified as waters of the state within the southwest corner of the project site. This resource is discussed under Impact 3.2-4.

## Impacts and Mitigation Measures

**Impact 3.2-1: The Project would have a substantial adverse effect, either directly or through habitat modifications, on nesting raptors and other non-listed special-status nesting birds. (Less than Significant with Mitigation)**

Portions of the project site may support nesting birds, including, but not limited to, Swainson's hawk, burrowing owl, tricolored blackbird, short-eared owl, white-tailed kite, loggerhead shrike, and mountain plover. Nesting birds and raptors are protected under California FGC Section 2080 (i.e., killing of a listed species), Sections 3503, 3503.5, and 3800 (i.e., take, possession, or destruction of birds, their nests or eggs), and Section 3513 of the MBTA (16 USC, Section 703 Supp. I 1989).

### Construction

Human disturbances and noise from construction activities have the potential to cause nest abandonment and death of young or loss of reproductive success at active nests located near project activities. Loss of, or nest site disturbance which results in nest abandonment, loss of young, or reduced health and vigor of eggs and/or nestlings (resulting in reduced survival rates), or the direct removal of vegetation that supports nesting birds, may result in the killing of nestlings or fledgling bird species, and would be considered a significant impact.

### Operation

See discussion for Impact 3.2-5 regarding lighting and noise impacts and 3.2-6 regarding presence of nuisance species during Project operation.

### Mitigation Measures

**Mitigation Measure 3.2-1a:** Vegetation Removal Timing Restrictions. If feasible, conduct all vegetation removal and grading activities during the avian non-nesting season (September 1 through January 31). If grading and vegetation removal activities are scheduled to occur during the nesting season, pre-construction bird surveys shall be performed prior to the start of project activities (refer to Mitigation measure 3.2-1b).

**Mitigation Measure 3.2-1b:** Pre-Construction Nesting Bird Surveys. Pre-construction nesting bird surveys shall be conducted by a qualified wildlife biologist if construction, grading, vegetation removal, or other project-related activities are scheduled during the avian nesting season (February 1 to August 31). During surveys, a qualified biologist shall identify Swainson’s hawk nests within 0.5-mile of the project site, nests of all other raptors, including burrowing owl, within 500 feet of the project site, and nests for all other bird species within 250 feet of the project site following CDFW-approved survey protocols. The survey shall be conducted no less than 14 days and no more than 30 days prior to the beginning of construction, grading, vegetation removal, or other project-related activities. The survey findings shall be submitted to CDFW (via email) at least three days prior to construction.

For Swainson’s hawk, to the extent feasible, survey methodology shall follow guidelines provided in the *Recommended Timing and Methodologist for Swainson’s Hawk Nesting Survey in the Central Valley* (Swainson’s Hawk Technical Advisory Committee, 2000). For burrowing owl, to the extent feasible, survey methodology shall follow guidelines provided in CDFW’s *Staff Report on Burrowing Owl* (CDFG, 2012).

If pre-construction nesting bird surveys do not identify any nesting raptors or other nesting bird species, no further mitigation will be required. If nesting birds are observed in the search areas defined above, Mitigation Measure 3.2-1c shall be implemented.

**Mitigation Measure 3.2-1c:** Conduct Nesting Bird Avoidance. If active nests are found within search areas defined in Mitigation Measure 3.2-1b, project-related construction shall be delayed to be conducted outside the nesting season (February 1 through September 1), or no-disturbance buffer zones shall be established to prohibit project-related construction activities near the nest. If nesting individuals are observed, raptors, including burrowing owl, shall be granted a 500-foot no-disturbance buffer zone, and all other migratory birds shall be granted a 250-foot no-disturbance buffer zone. If Swainson’s hawk nests are observed within 0.5 miles of the project CDFW shall be contacted to determine appropriate no-disturbance buffer. No-disturbance buffer zones shall be delineated by highly visible temporary fencing and shall remain in place until the young have fledged. No project-related construction activity shall occur within the no-disturbance buffer zone until a wildlife biologist confirms that the nest is no longer active, or unless otherwise permitted by CDFW.

**Impact Significance After Mitigation:** Implementation of Mitigation Measures 3.2-1(a -c) would reduce impacts to nesting bird species by restricting construction to occur outside the nesting bird season (February 1 through August 31), or requiring pre-construction surveys to identify any nesting birds, and, if found, observing no-disturbance zones around nest sites, and therefore would reduce impacts to nesting birds during construction activities to less than significant levels.

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**Impact 3.2-2: The Project would have a substantial adverse effect, either directly or through habitat modifications, on Swainson's hawk foraging habitat. (Less than Significant with Mitigation)**

Suitable foraging habitat is necessary to provide an adequate energy source for breeding Swainson's hawk adults, including support of nestlings and fledglings. If prey resources are not sufficient, of if adults must hunt long distances from nest sites; this may result in reduced adult or nestling vigor, or increased likelihood of disease and/or starvation.

### Construction

Project construction may result in permanent impacts to up to, approximately 3.48 acres of annual grassland habitat, which is considered suitable foraging habitat for Swainson's hawk (CDFG, 1994). Removal of habitat that causes potential stress leading to potential harm to Swainson's hawk is considered a significant impact.

### Operations

Rodent control is typically required at solid waste facilities. Common rodent control measures include agrichemical product application (i.e., rodenticides and herbicides) or baited snap traps. Small fossorial mammals, such as California ground squirrel, Botta's pocket gopher, and field mice are in important prey base for foraging raptors. A reduction in prey abundance and availability of small fossorial mammals at the Project site and surrounding areas as a result of facility rodent control measures could result in a potentially significant impact.

### Mitigation Measures

**Mitigation Measure 3.2-2a:** Implement CDFW Guidelines for Swainson's Hawk Foraging Habitat Mitigation. An assessment will be conducted to determine whether active (used during one or more of the last 5 years [CDFG, 1994]) Swainson's hawk nests are present within 10 miles of the Project site. If active nests are present, the project applicant shall compensate to the extent specified by CDFW to replace lost foraging habitat. Habitat compensation ratios will depend on the distance of the affected habitat from known, active nests, as specified in CDGW mitigation guidelines for Swainson's hawk. The publication *Staff Report Regarding Mitigation for Impacts to Swainson's Hawk (Buteo swainsonii) in* *the Central Valley of California* (CDFG, 1994), recommends mitigation for the removal of suitable Swainson's hawk foraging habitat at a ratio determined by the distance to the nearest nest.

**Mitigation Measure 3.2-2b:** Limited Use of Rodent Control Measures. Under Project operation, use of rodenticides, herbicides, baited snap traps, or other rodent control practices shall not occur beyond the operations area or the perimeter fencing; rodent control methods shall only be applied to rodent populations within the active operations area.

**Impact Significance After Mitigation:** Implementation of Mitigation Measures 3.2-2(a and b) would reduce impacts to foraging raptors, including Swainson's hawk and burrowing owl, by replacing foraging habitat lost by Project facility construction and restricting the use to rodenticides to active operations areas. This will allow small mammal colonies to persist where feasible, and be available for Swainson's hawk, outside of the active operations area. Maintaining an active prey base within the Project site, outside of the operations area shall further encourage Swainson's hawk, or other foraging raptors to utilize grasslands, and other habitats onsite.

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**Impact 3.2-3: The Project would have a substantial adverse effect, either directly or through habitat modifications, on American badger. (Less than Significant with Mitigation)**

Annual grassland habitat within the Project site supports potentially suitable foraging and denning habitat for American badger.

### Construction

Suitable burrows for American badger could be removed or disturbed during construction activities. Removal or disturbance of an occupied burrow, or vehicle strikes, and the subsequent harm to individual American badgers would be considered a significant impact.

The project may result in the loss of up to 3.48 acres of annual grassland habitat, which provides suitable habitat for American badger. However, due to the close proximity of the Project site to Stony Creek, this impact, and the relative abundance of annual grassland habitat in the area, loss of 3.48 acres of annual grassland habitat is not considered a significant impact.

### Operation

Noise and light during Project operation may result in disturbance to American badger, as discussed in Impact 3.2-5. Please refer to that discussion for additional information.

### Mitigation Measures

**Mitigation Measure 3.2-3a:** Conduct Pre-Construction Survey for American Badger. An American badger survey shall be conducted by a qualified wildlife biologist to identify the presence of American badgers. If this species, or potential burrows, are not identified, no further mitigation shall be required. If American badger is identified, they shall be passively relocated using burrow exclusion (e.g., installing one-way doors on burrows) or similar CDFW-approved passive exclusion methods. All relocation activities shall be performed with CDFW coordination and concurrence.

> **Mitigation Measure 3.2-3b:** Implement 20 mile per hour Speed Limit. All project related vehicles shall observe a maximum 20 miles per hour speed limit on project roads.

> **Mitigation Measure 3.2-3c:** Dispose of All Food-Related Trash Items. All food-related trash items (such as wrappers, cans, bottles, and food scraps) shall be disposed or in closed containers and removed daily from the project area.

**Impact Significance After Mitigation:** Implementation of Mitigation Measures 3.2-3(a-c) would reduce impacts to American badger by requiring pre-construction surveys to identify any individuals, or dens present, and, if found, excluding or removing badgers from harm's way, require all project related vehicles travel at low speeds within the area to minimize the possibility of accidental collisions with American badger, and prohibit prolonged presence of food-related trash items onsite which may attract American badger into the work area.

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**Impact 3.2-4: The Project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by CDFW, or USFWS. (Less than Significant with Mitigation)**

The 0.23 acre swale located in the southwestern corner of the Project site is considered an Environmentally Sensitive Area (ESA). The swale appears to collect storm-water runoff as sheet flow from the Project site and may be considered a potential waters of the state, but it is not considered a potential waters of the U.S. Impacts to this feature would be considered a significant impact.

No habitat classified as riparian by CDFW or USFWS is located within the Project site, therefore no impact will occur.

### Mitigation Measures

> **Mitigation Measure 3.2-4**. Avoid Environmentally Sensitive Areas (ESA). Prior to ground disturbing activities, a qualified biologist shall clearly delineate all ESAs. To avoid direct impacts to ESAs, no construction or ground disturbing activities should occur within 15 feet of ESAs.

**Impact Significance After Mitigation:** Implementation of Mitigation Measures 3.2-4 would prevent disturbance of ESAs onsite, and therefore would reduce impacts to less-than-significant levels.

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**Impact 3.2-5: The Project would not interfere substantially with the movement of any native resident or migratory wildlife corridors, or impede the use of native wildlife nursery site. (Less than Significant)**

Project-related artificial outdoor lighting and noise have the potential to disrupt the activities of common and special-status wildlife species that use the Project site and Stony Creek, including

American badger, black-tailed deer, raccoons, and coyotes. Under a worst case scenario, noise can change habitat occupancy patterns, dispersal movements, foraging, mating, and sleep patterns of wildlife species. Anthropogenic noise can impair sensory capabilities by masking biologically relevant sounds used for communication, detection of threats, and prey, and spatial navigation. Additionally, loud, extreme stimuli can startle wildlife that may perceive the noise as threatening and generate self-preservation responses (i.e., fleeing and hiding). These responses can result in negative effects in terms of psychological and physiological stress, reproductive stress, pairing success, number of offspring, or other measures of fitness. Additionally, artificial lighting may cause wildlife to have behavior modifications similar to that of artificial noise.

In this analysis, a substantial interference with the movement of any native, resident, or migratory wildlife within the Stony Creek is defined as the abandonment, permanent evacuation, or discontinuance of use of the Stony Creek by wildlife species.

#### Construction

There will be no nighttime construction and therefore no impact on wildlife corridor movement from nighttime lighting or noise during the construction phase.

#### Operation

The Project would consist of two operational phases. Phase 1 would include a materials recovery facility (MRF) that would first remove bulky materials and then separate materials as organic materials for the anaerobic digestion (AD) facility, recyclable materials or residual materials (for landfill disposal). Phase 2 includes the AD facility that would produce methane fuel gas and soil amendments from the organic materials provided by Phase 1. The operational noise and lighting impacts to wildlife associated with each of these phases are discussed below:

**Phase 1.** Operation of the MRF would generally occur between the daytime hours; the majority of the Project's traffic, and operational activities including preprocessing, vehicle circulation, operation of certain off-road equipment such as front end loader or forklift, and stationary equipment such as conveyor belts, compressors, generators, and other equipment will take place during these times. As discussed above, the site was occupied until approximately 1999 by a cement and gravel mining facility, and subsequently has been used by a gravel hauling company. Project related noise may be detected by wildlife near Stony Creek; however, Project related noise is not expected to substantially interfere with the movement of wildlife species, and therefore is considered a less-than-significant impact.

**Phase 2.** The CleanWorld High Rate Digestion (HRD) system would be used for the anaerobic digestion process. The HRD system would include receiving and preprocessing, a liquid transfer module, a heat module, digesting tanks, a microturbine to generate electricity for on-site uses, and ancillary pumps and flares. Operational activities associated with the HRD system that would generate the highest noise levels would be the microturbine, ancillary pumps and flares. These microturbines, ancillary pumps and flares could operate 24 hours per day. Because Stony Creek is approximately 600 feet away from the proposed location of the HRD system, and the creek is currently buffered by a dense border of shrubs, including giant reed, willow, coyote brush, and tamarisk, it is unlikely nighttime noise from the HRD system would interfere with the movement of wildlife species and therefore is considered a less-than-significant impact.

Both phases of Project operations would require nighttime lighting for safety and security purposes, and Phase 2 may include nighttime indoor MRF operations on peak days. However, fugitive light from the Project would be shielded from penetrating into the creek by a dense border of shrubs, including giant reed, willow, coyote brush, and tamarisk, it is unlikely nighttime safety and security lighting from the Project would carry into Stony Creek and alter dispersal, foraging, or reproduction patterns of wildlife using the creek. Lighting generated by nighttime operations are not expected to substantially interfere with the movement of wildlife species, and therefore is considered a less-than-significant impact.

**Mitigation:** None required.

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**Impact 3.2-6: The Project would have indirect impacts to special-status wildlife resulting from support of nuisance species. (Less than Significant with Mitigation)**

Solid waste facilities that accept food waste provide an anthropogenic food supply for scavenging nuisance species, which can impact other, more sensitive biological resources through predation and/or competition. Nuisance species that regularly use solid waste facilities include various species of gulls, corvids such as common raven and American crow, raccoons, foxes, and feral cats.

Gulls, ravens, and crows are known to favor developed areas and solid waste facilities, and subsequently, their presence can have negative impacts on special-status wildlife species. For example, some crows and ravens threaten other birds with increased rates of nest predation. Additionally, mammalian species, including non-native species such as red fox, Norway rat, roof rat, and feral cats, may also benefit from food subsidies at the solid waste facility, and prey on, or out-compete native species such as California ground squirrel, or field mouse, which are an important component of the diet of hawks and owls.

#### Construction

Presence of food-trash (such as wrappers, cans, bottles, and food scraps) from construction personnel could attract nuisance species to the Project site. An increase in densities of nuisance species at the project site due to construction related trash would be considered a significant impact.

#### Operation

Nuisance species that may benefit from indoor MSW sorting and storage activities are mammalian species, including non-native species such as red fox, Norway rat, roof rat, and feral cats. While these species are currently present in the project area, populations may increase due to potential availability of littered MSW as a food source. The offsite migration of litter or excessive accumulation of litter onsite (e.g., piling up on fences, in fence corners, or on vegetation) could become a concentrated food source at the Project site for nuisance species. Blowing litter is a common occurrence at most waste handling facilities. Adequate litter control is required under 14 CCR 17408.1, which specifies litter control requirements for construction and demolition and inert debris transfer/processing facilities, transfer operations, and transfer/processing facilities. Any accumulation of litter or off-site migration of litter is considered a significant impact. 14 CCR 17404.2 specifies the standards for cleaning operations, facilities, and their equipment, boxes bins, pits, and other types of containers, in order to prevent the propagation or attraction of flies, rodents, birds or other vectors. Violation of proper cleaning schedules and techniques, and the possible subsequent increase of nuisance species would be considered a significant impact.

### Mitigation Measures

> **Mitigation Measure 3.2-6:** Implement a "Litter Control and Site Cleanliness Plan." The Project proponent shall prepare and implement a Litter Control and Site Cleanliness Plan to minimize or avoid accumulation of litter or off-site migration of litter. The Litter Control and Site Cleanliness Plan shall also cover cleaning schedule and procedures for operations, facilities, and their equipment, boxes, bins, pits, and other types of containers. The Litter Control and Site Cleanliness Plan shall be approved by Local Enforcement Agency (LEA).

**Impact Significance After Mitigation:** Implementation of Mitigation Measures 3.2-3c, "Dispose of All Food-Related Trash Items", and 3.2-6 would reduce indirect impacts from nuisance species to special-status species by requiring food-trash generated during construction activities to be removed from the project site daily, and monitoring the implementation of proper cleaning schedules and techniques during facility operation which will limit the availability of MSW as a food source for nuisance species on the Project site, and therefore would reduce impacts to less-than-significant levels.

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## *Cumulative Impacts*

### Geographic Context

The cumulative context for biological resource impacts of the proposed project includes the eastern portion of Glenn County for wildlife resources, and the Stony Creek watershed for wetlands and waters of the U.S. Since the 1900s, development of eastern Glenn County has resulted in modification of natural habitats, including, but not limited to, loss of wildlife habitat and open space areas due to agricultural and urban development, and flood control development along Stony Creek.

**Impact 3.2-7: Construction and operation of the project, in combination with other development, would not result in cumulatively considerable impacts to biological resources. (Less than Significant with Mitigation)**

Habitats present within the project site are primarily non-native communities, nevertheless habitats within the Project area still provide breeding and foraging habitat for both special-status and common wildlife species, and water quality protection for Stony Creek (swale habitat located onsite). While no other projects in eastern Glenn County are planned or reasonably foreseeable, continued development would result in an incremental contribution to the cumulative loss of natural habitats and harm to special-status species in the eastern Glenn County since the 1900s. Following implementation of the proposed mitigation detailed above (**Mitigation Measures 3.2-1 [a-c], 3.2-2 [a-b], 3.2-3 [a-c], 3.2-4, and 3.2-6**, the proposed project would make a less-than-considerable contribution to cumulative impacts on natural habitats and the biological resources they support.

> **Mitigation:** Implementation of Mitigation Measures 3.2-1(a-c), 3.2-2(a-b), 3.2-3(a-c), 3.2-4, and 3.2-6.

**Impact Significance After Mitigation:** Implementation of **Mitigation Measures 3.2-1 (a-c), 3.2-2 (a-b), 3.2-3 (a-c), 3.2-4, and 3.2-6** would lessen cumulative impacts to biological resources by requiring avoidance of ESAs onsite, and providing protection to special-status species during construction and operations activities, and mitigation of foraging habitat for Swainson's hawk.

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# 3.3 Cultural Resources

This section characterizes and discusses the potential effects of the Project on cultural resources. Cultural resources include, but are not limited to, any object, building, structure, site, area, place, record, or manuscript that is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Paleontological resources, while not evidence of human activity, are also included under Cultural Resources for the purposes of CEQA.

The following discussion and analysis is based on the Project specific cultural resources analysis provided by the Golden Hills Consulting in 2013 and updated in 2015 (Golden Hills Consulting, 2013 and 2015; **Appendix C**).

No comments relating to cultural resources were received on the Notice of Preparation (NOP) (**Appendix A**).

## 3.3.1 Environmental Setting

### Natural Setting

The Project site occurs largely within a previous staging area for historic gravel mining. As such, the majority of the study area consists of relatively level, compacted gravels that are sparsely vegetated with weedy, non-native depauperate species. Several large scattered gravel, asphalt, and concrete piles are found in the southeastern portion of the study area. The Project site is generally bound by State Highway 32 (SR 32) to the north, a small levee along Stony Creek to the south, a small stand of mixed ruderal and riparian vegetation to the east, and a small light industrial area to the west.

Remnants of the gravel staging and cement mixing are evident by the presence of longterm scraping of the surface during loading and dumping of gravel piles resulting in a scabby surface appearance especially along the northern portion of the site. Periodic grading and ground clearing occurs within a majority of the site. Several buildings are located within the Project footprint and vicinity. Stony Creek, a perennial waterway, is south of the property’s southern boundary.

The Project site has been leveled in the past, and except for gravel piles, is flat. Elevation is approximately 182 feet above sea level throughout the majority of the site.

### Prehistoric Setting

Habitation of the Central Valley possibly occurred about 12,000 years before present (BP). Evidence of this early habitation is sparse at best, as over the years, alluvial sediment has deeply covered much of this evidence. Few archaeological sites have been identified that predate 5,000 years ago. Groups of Paleo-Indians possibly relied heavily upon the mega-fauna such as mastodon and mammoth, as mobile groups of individuals. As the glaciers receded from the Sierra Nevada and the Central Valley, the climate became warmer and drier, with grasslands and oak forests replacing the pine and riparian forests. Organization was in small, mobile groups of individuals. As the glaciers receded from the Sierra Nevada and the Central Valley, the climate became warmer and drier, with grasslands and oak forests replacing the pine and riparian forests. Population increased to where eventually, the Native American population density of the Central Valley exceeded many other areas of North America.

## Ethnographic Setting

The entire Project area lies within the area once occupied by the Konkow Maidu, who spoke the Maiduan family of languages, classified as California Penutian. The Hill Nomlaki occupied territory nearby to the west of the Project site, with their eastern border in the vicinity of the Black Butte Reservoir area. The Maidu people occupied an area that today would roughly approximate from Eagle Lake north of Susanville, eastward to Honey Lake near the California/Nevada border, southwestward to the Sutter Buttes, and northward to Black Butte Reservoir.

These people were probably not the earliest inhabitants of this area. They are believed to have entered California from the north, sometime around 500 A.D. Prior to that time; the area may have been occupied by Hokan speaking peoples. In prehistoric times, the Konkow Maidu were people who subsisted by hunting and gathering. Roots, stems, leaves, and seeds of plants were used as food, basketry, and medicine. Acorns, and occasionally buckeye, were the primary plant staples. Many small animals were hunted and trapped. Fish were taken with nets, weirs, harpoons, hooks or poisons. Insects such as grasshoppers, crickets, and ants were also used as food. The sole agricultural pursuit of the Maidu involved the cultivation of tobacco, the leaves of which were smoked for both ceremonial and social occasions. Pipes were made of stone or wood.

Groups were organized politically into tribelets, or small “village-communities” containing several small adjacent villages. Villages generally consisted of perhaps five houses, with up to five inhabitants per house. Village-communities could contain a population of perhaps up to 200 individuals. Each tribelet was independent from the others. Usually, there would be a central, or more influential, village where the headman would reside in the largest dwelling which was often used as a dance house. The headman was not an ultimate ruler, but rather, he acted as an advisor and spokesman with no control over the tribelet. The headman position was not hereditary; he was chosen with the aid of the shaman. Warfare was not uncommon and usually involved feuds between villages or village-communities. The Konkow also fought with their neighbors, the Yana, the Achumawi and the Washoe. Battles were generally fought between small groups rather than in a formal military type of organization.

With the arrival of the Euro-Americans, much of the Maidu population succumbed to diseases for which they had little to no immunity. In 1850, Congress authorized the creation of Indian treaties, ultimately aimed at relocating native populations to reservations. By 1855, many of the Konkow Maidu had been moved to the Nom Lackee reservation in Tehama County. Conflicts erupted between the various Indian groups assembled there, and in 1863, soldiers marched 461 Indians to the Round Valley Reservation in Mendocino County. During the two-week long march, 32 of the Indians died along the way. Before arrival of Euro-Americans, the population of all Maidu groups has been estimated at roughly 9,000 individuals. By the latter half of the twentieth century, only

600 persons claimed Maidu ancestry. The population has since regained in numbers, and is actively preserving and promoting their native cultural resources and traditions.

In summary, the examination of ethnographic and archaeological information in the Project area indicates the possibility of encountering one or more of the following types of prehistoric cultural resources:

- Occupation sites, most likely with housepits. Firepits and middens may also be present;
- Surface finds of basalt, chert or obsidian in the form of flakes or artifacts;
- Food processing stations, which would include bedrock mortars and single cups in boulders, or mobile grinding stones.

## Historic Setting

During the historical period exploration, fur trapping and early settlement in the north valley occurred. The immediate impact of these early contacts was the decimation of the native population through the introduction of diseases.

The earliest documented exploration of the foothill areas was by Captain Luis Arguello in 1820. For the next two decades, trappers from the Hudson Bay Company and the American Fur Company occasionally hunted fur-bearing mammals in the Central Valley hills.

During the period of Mexican rule in California, several persons obtained land grants in what is now Butte County. These grants included the Farwell Grant and the Arroyo del Chico Grant, later becoming General Bidwell’s Rancho Chico. Sam Neal obtained the Esquon Grant. For the most part, these large land grants were used to raise cattle. Sam Neal is reported to be the first to raise cattle in the area.

After the discovery of gold in 1848, the influx of people into California significantly changed the subsequent history of the region. The decades following the Gold Rush are marked by Indian removal, gold mining, agriculture, and commerce. Rail lines were established to transport people and goods more efficiently.

### *Glenn County History*

Glenn County was organized in 1891 and named after a local physician, Dr. Hugh James Glenn. Dr. Glenn owned a 45,000 acre ranch which had yielded him a million bushels of wheat, making him the biggest wheat producer in the world at that time. He was known as the “Wheat King.” Granville P. Swift, one of the first non-native settlers in the region, built his adobe home on the banks of Hambright Creek near its confluence with Stony Creek in 1849. Swift established Murdock Ranch in the area, and raised cattle. He is credited with being the first one to grow barley in the Central Valley.

For a few years after 1850, Glenn County was part of Colusi County which included either in part or in whole, Glenn, Colusa, and Tehama Counties. William B. Ide, president of the Bear Republic (Bear Flag Revolt, 1846) lived in Red Bluff and Monroeville, a town on the Sacramento River about 5 miles south of Hamilton City. Colusi County was named after two Mexican Land Grants, the Coluses (1844) and the Colus (1845). The name of the county was often written as Coluse to reflect the name of a local Native Indian tribe. When the county seat was moved from Monroeville in 1854 to Colusa, the name of the county changed to Colusa. In 1856, a portion of Colusa County, along with bits of Butte and Shasta Counties, became Tehama County.

During the gold rush years, the Glenn County area offered little to aspiring miners. As the gold claims withered, prospectors turned to the rich farm land of Glenn County and the expansive grazing lands along the Coast Range. Cattle and sheep ranches gave rise to wheat and barley fields. Supplies were freighted up the Sacramento River. Orland was established in 1870 as a grain shipping railroad station. The town name was drawn at random from a hat, the name referring to a town in England. A post office was established in 1876. The town was incorporated in 1909, and is now the largest town in Glenn County.

In 1875, the railroad was extended north of Woodland. By 1881, it had reached Red Bluff. Along the way, the towns of Willows and Corning sprang up. The railroad brought in Civil War veterans, immigrants, and people from the Mid-West or Eastern United States. Different crops were started such as almonds in Arbuckle, prunes in Colusa, olives in Corning, and oranges in Orland.

The Southern Pacific Railroad was created in 1884. In 1901, the Union Pacific Railroad bought 38% of Southern Pacific stock and assumed control of the company. Seven years later, the Supreme Court ordered Union Pacific to sell their 46% of Southern Pacific stock. Southern Pacific operated as an independent entity until 1996 when it formally merged with Union Pacific, creating the largest railroad company in the United States.

The town of Hamilton City arose in 1905 when a large sugar beet processing facility was proposed. The “Holly Sugar Plant” was built in 1906 by James Hamilton and the Alta California Sugar Beet Company. In 1908, the company name was changed to the Sacramento Valley Sugar Company which was purchased by Spreckels Sugar Company. The Hamilton City post office was opened in 1906. The Holly Sugar Plant shut down operations in 1996.

A Quonset hut metal building with an add-on wood frame office is located in the southeast portion of the Project site, and was once the Stony Creek Ready-Mix facility. A scale house is located near the northeast entrance to the site. A number of gravel loading concrete slabs are located approximately in mid-site. A small wooden building near the western edge of the property houses a power supply switching and maintenance panel.

## 3.3.2 Regulatory Setting

### Federal

#### *National Register of Historic Places*

The National Register of Historic Places (National Register), administered by the National Park Service, includes a list of buildings, structures, sites, objects, and districts that have been determined to possess historic, architectural, engineering, archaeological, or cultural significance at the national, state, or local level.

Structures, sites, buildings, districts, and objects over 50 years of age can be listed in the National Register as significant historical resources. Properties under 50 years of age that are of exceptional importance or are contributors to a district can also be included in the National Register. The criteria for listing in the National Register include resources that:

- Are associated with events that have made a significant contribution to the broad patterns of history;
- Are associated with the lives of persons significant in our past;
- Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded or may likely yield information important in prehistory or history.

## State

### *California Environmental Quality Act*

In general, a significant effect under CEQA would occur if a project results in a substantial adverse change in the significance of a historical resource as defined in in CEQA Guidelines Section 15064.5(a). Substantial adverse change is defined as "physical demolition, destruction, relocation, or alteration of the resource *or its immediate surroundings* [emphasis added] such that the significance of a historical resource would be materially impaired" (CEQA Guidelines Section 15064.5(b)(1)). According to CEQA Guidelines Section 15064.5(b)(2), the significance of a historical resource is materially impaired when a project demolishes or materially alters in an adverse manner those physical characteristics that:

A. Convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or

B. Account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the Public Resources Code or its identification in a historical resources survey meeting the requirements of section 5024.1(g) of the Public Resources Code, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

C. Convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a Lead Agency for purposes of CEQA.

In general, a project that complies with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (Standards) (Weeks and Grimer, 1995) is considered to have mitigated its impacts to historical resources to a less-than-significant level (CEQA Guidelines Section 15064.5(b)(3)).

### California Register of Historical Resources

The California Register is "an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for eligibility for the California Register are based upon National Register criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register.

Similar to the National Register, to be eligible for the California Register, a cultural resource must be significant at the local, State, and/or federal level under one or more of the following four criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the California Register must be of sufficient age, and retain enough of its historic character or appearance (integrity) to convey the reason for its significance.

Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed on the National Register and those formally Determined Eligible for the National Register;
- California Registered Historical Landmarks from No. 770 onward; and
- Those California Points of Historical Interest that have been evaluated by the Office of Historic Preservation and have been recommended to the State Historical Commission for inclusion on the California Register.

### Assembly Bill 52

In September of 2014, the California Legislature passed Assembly Bill (AB) 52, which added provisions to the Public Resources Code regarding the evaluation of impacts on tribal cultural resources under CEQA, and consultation requirements with California Native American tribes. In particular, AB 52 now requires lead agencies to analyze project impacts on "tribal cultural resources," separately from archaeological resources (PRC § 21074; 21083.09). The Bill defines "tribal cultural resources" in a new section of the PRC Section 21074. AB 52 also requires lead agencies to engage in additional consultation procedures with respect to California Native American tribes (PRC § 21080.3.1, 21080.3.2, 21082.3). Finally, AB 52 requires the Office of

Planning and Research to update Appendix G of the CEQA Guidelines by July 1, 2016 to provide sample questions regarding impacts to tribal cultural resources (PRC § 21083.09).

The provisions of AB 52 only apply to projects that have a notice of preparation filed on or after July 1, 2015, and therefore the Bill's requirements are not applicable to this Project (the NOP was published on January 12, 2015).

### *Paleontological Resources*

Paleontological resources are explicitly afforded protection by CEQA Section V(c) of Appendix G, the "Environmental Checklist Form," which addresses the potential for adverse impacts to "unique paleontological resource[s] or site[s] or … unique geological feature[s]". This provision discusses significant fossils – remains of species or genera new to science, for example, or fossils exhibiting features not previously recognized for a given animal group – as well as localities that yield fossils significant in their abundance, diversity, preservation, and so forth. Mitigation of adverse impacts to paleontological resources is therefore required under CEQA. Appendix G (Part V) of the CEQA Guidelines provides guidance relative to significant impacts on paleontological resources, stating that a project will normally result in a significant impact on the environment if it will "…disrupt or adversely affect a paleontological resource or site or unique geologic feature, except as part of a scientific study."

The Society of Vertebrate Paleontology (SVP) has established standard guidelines that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most California State regulatory agencies accept the SVP standard guidelines as a measure of professional practice.

## Local

### *Glenn County General Plan*

The 1993 Glenn County General Plan was previously being updated; however was placed on hold due to budgeting constraints. The Natural Resources Element of the 1993 General Plan includes goals and policies regarding the identification and protection of cultural resources. The relevant goals and policies are listed below.

Goal NRG-6: Identification and preservation of cultural resources within the county.

Policy NRP-82: Protect identified areas of unique historical or cultural value within the county and preserve those sites for educational, scientific and aesthetic purposes.

Policy NRP-85: Require proper evaluation and protection of archaeological resources discovered in the course of construction and development.

## 3.3.3 Impacts and Mitigation Measures

### Significance Criteria

Based on the Appendix G of the CEQA Guidelines, Project implementation would have significant impacts and environmental consequences on cultural resources if it would result in any of the following:

- A substantial adverse change in the significance of a historical resource that is either listed or eligible for listing on the National Register of Historic Places, the CRHR [California Register], or a local register of historic resources;
- A substantial adverse change in the significance of a unique archaeological resource;
- Disturbance or destruction of a unique paleontological resource or site or unique geologic feature; or
- Disturbance of any human remains, including those interred outside or formal cemeteries.

### Methodology

The following methodology and findings discussion is excerpted and summarized from the *Cultural Resources Report for the Municipal Waste Conversion Facility Glenn County, California*, completed by Golden Hill Consulting in 2013, as well as the 2015 update also completed by Golden Hills Consulting.

#### *Archival Review and Results*

Information Center staff conducted a records search at the Northeast Information Center (NEIC) of the California Historical Resources Information System located at California State University, Chico on July 18, 2013 (File No. D13-67). Records for the Project were accessed by reviewing the Hamilton City, California 7.5-minute quadrangle base map.

The study area for the records search was defined as the Project footprint. The archival research results presented below include cultural resources and investigations located within ½ mile of the Project footprint. In addition to NEIC maps and site record forms, other sources that were reviewed included historic maps, the Directory of Properties in the Historic Property Data File for Fresno County, the National Register of Historic Places, the California Register of Historical Resources, the *California Inventory of Historic Resources* (1976), the *California Historical Landmarks* (1996), and the *California Points of Historical Interest* (1992). Golden Hills Consulting staff conducted additional research by reviewing historic topographic and aerial maps of the property.

The NEIC identified three survey reports conducted within a half-mile radius of the Project site. The property has previously been surveyed within the Caltrans right-of-way in 2008, as part of a Caltrans District 3 cultural resources inventory of rural highways in eleven northern California counties. There are no recorded prehistoric or historic cultural resources within a half-mile radius of the property.

### *Field Survey and Results*

Golden Hills Consulting staff meeting the Secretary of the Interior Standards for Archaeologist conducted field survey of the Project footprint on June 21 and July 17, 2013. Staff conducted survey at 10-20 meter intervals. Ground visualization was excellent over most of the site due to routine ground maintenance. No surface prehistoric cultural resources or historic period architectural resources were identified on the property.

The Project site was revisited on May 1, 2015 by Golden Hills Consulting to conduct field survey of the expanded Project footprint. The additional new area was a scraped, scabby and graveled surface, a result of heavy usage by a rock and gravel supply facility and Ready-Mix processing plant. Very little native soil was visible, but was examined. During the re-survey, Golden Hills staff identified an old gas station building, originally constructed elsewhere sometime between Post-World War II and the 1960s. The building was relocated to the Project site in the mid-1970s. Golden Hills Consulting recommended that the structure does not appear eligible for either the California or National Register of Historic Places.

### *Native American Consultation*

Golden Hills Consulting contacted the NAHC to request a database search for sacred lands or other cultural properties of significance within or adjacent to the Project area. A response was received on July 30, 2013. The sacred lands survey did not identify the presence of cultural resources in the Project area. The NAHC provided a list of Native American contacts that might have further knowledge of the proposed plan area with respect to cultural resources. Each person or organization identified by the NAHC was contacted by letter on August 2, 2013. No responses were received, and all correspondence associated with the Project is appended to the Golden Hills Consulting Cultural Resources Report contained in **Appendix C**.

## Impacts Not Evaluated Further

The Project would not result in impacts related to the following criterion:

> **A substantial adverse change in the significance of a historical resource that is either listed or eligible for listing on the National Register of Historic Places, the CRHR [California Register], or a local register of historic.**

No impact discussion is provided for this topic because (as described above), archival and field review by Golden Hills Consulting identified no historic period architectural resources within or adjacent to the Project footprint. Golden Hills evaluated the mid-century gas station located on-site, and recommended it as ineligible for listing in the National and California Registers. No other historic period structures or buildings were identified on the Project site. No impact to historic architectural resources would occur.

## Impacts and Mitigation Measures

**Impact 3.3-1: The Project could result in damage or destruction of known or previously unidentified archeological resources. (Less than Significant with Mitigation)**

Archival records search analysis, Native American contact, and field survey efforts conducted by Golden Hills Consulting identified no archaeological resources within the Project footprint. While unlikely based on the results of the field survey and the environmental context, the unanticipated discovery of archaeological materials during ground disturbing cannot be entirely discounted. Damage or destruction of archaeological resources during construction activities would result in a **potentially significant impact**.

Implementation of **Mitigation Measure 3.3-1** would provide guidance for the identification and treatment of archaeological resources discovered during the course of Project construction.

### Mitigation Measures

**Mitigation Measure 3.3-1:** If prehistoric or historic-era archaeological resources are encountered by construction personnel during Project implementation, all construction activities within 100 feet shall halt and the contractor shall notify the County. Prehistoric archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; and stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include stone, concrete, or adobe footings and walls; filled wells or privies; and deposits of metal, glass, and/or ceramic refuse.

The Applicant shall retain a Secretary of the Interior-qualified archaeologist to inspect the findings within 24 hours of discovery. If it is determined that the Project could damage a historical resource as defined by CEQA, construction shall cease in an area determined by the archaeologist until a mitigation plan has been prepared, approved by the County, and implemented to the satisfaction of the archaeologist (and Native American representative if the resource is prehistoric). In consultation with the County, the archaeologist (and Native American representative) shall determine when construction can commence.

The mitigation plan shall recommend preservation in place as the preferred alternative. If preservation in place is feasible, this may be accomplished through one of the following means: (1) modifying the construction plan to avoid the resource; or (2) capping and covering the resource before building appropriate facilities on the resource site. If preservation in place is not feasible, a qualified archaeologist shall prepare and implement a detailed treatment plan to recover the scientifically consequential information from and about the resource, which shall be reviewed and approved by the County (and Native American representative) prior to any excavation at the resource site. Treatment for most resources would consist of (but would not necessarily be not limited to) sample excavation, artifact collection, site documentation, and historical research, with the aim to target the recovery of important scientific data contained in the portion(s) of the significant resource to be impacted by the Project. The treatment plan shall include provisions for analysis of data in a regional context, reporting of results within a timely manner, curation of artifacts and data at an approved facility, and dissemination of reports to local and state repositories, libraries, and interested professionals.

**Impact Significance After Mitigation:** Implementation of Mitigation Measures 3.3-1 would minimize impacts to archaeological resources by providing guidance for the identification and treatment of archaeological resources discovered during the course of Project specific development, and therefore would reduce these impacts to a less-than-significant levels.

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**Impact 3.3-2: Ground-disturbing activities associated with construction of the Project could result in damage to previously unidentified paleontological resources. (Less than Significant with Mitigation)**

Evidence of paleontological resources is not typically visible at the surface where the ground has not been disturbed and formations exposed. The Project area is underlain by the Holocene period fan deposits (10,000 years Before Present [BP] to Present). Thus, there is low potential for the accidental discovery and disturbance of paleontological resources during earth moving activities associated with the Project. While unlikely, the inadvertent destruction or disturbance of previously unknown paleontological resources could result in a **potentially significant impact**.

### Mitigation Measures

**Mitigation Measure 3.3-2:** If paleontological resources are discovered during earth-moving activities the following requirements will be followed: the construction crew shall immediately cease work and the County shall be notified immediately if any paleontological resources (e.g., fossils) are uncovered during construction. All construction must stop in within 100 feet of the find and a paleontologist shall be retained to evaluate the resource and prepare and implement a proposed mitigation plan, including curation, in accordance with Society of Vertebrate Paleontology guidelines (1995).

**Impact Significance After Mitigation:** Implementation of Mitigation Measures 3.3-2 would lessen impacts to paleontological resources by providing guidance for the analysis and treatment of resources discovered during the course of construction, and therefore would reduce impacts to less-than-significant levels.

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**Impact 3.3-3: Ground-disturbing activities associated with construction of the Project could result in damage to previously unidentified human remains. (Less than Significant with Mitigation)**

Although archival evidence and field survey do not suggest the presence of human burials within the Project area, the possibility of encountering human remains cannot be entirely discounted. The following is a summary of the proper procedures to follow in the event of an unanticipated discovery of human remains.

### Mitigation Measures

> **Mitigation Measure 3.3-3:** If human remains are encountered by construction personnel during Project implementation, all construction activities within 100 feet shall halt and the contractor shall notify the District. The applicant shall contact the Glenn County Coroner and affirmatively indicate to the County that no investigation of the cause of death is required. The Native American Heritage Commission (NAHC) will be contacted within 24 hours if the Coroner determines that the remains are Native American. The NAHC will then identify the person or persons it believes to be the Most Likely Descendant, who in turn would make recommendations to the District for the appropriate means of treating the human remains and any associated funerary objects.

**Impact Significance After Mitigation:** Implementation of Mitigation Measures 3.3-3 would lessen impacts to human remains by providing guidance for the analysis and treatment of human remains discovered during the course of construction, and therefore would reduce impacts to less-than-significant levels.

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## *Cumulative Impact*

### Geographic Context

The cumulative context for cultural resource impacts of the proposed Project include the portions of Sacramento Valley identified as the territory of the local Native American community for prehistoric archaeological resources, the Central Valley for paleontological resources, and northeastern Glenn County for historic architectural resources. People have inhabited the greater Sacramento Valley area for thousands of years, and development of urban areas has resulted in the demolition and loss of numerous significant cultural and historic resources associated with this occupation. Considerable contribution to this loss of non-renewable resources would result in a significant impact.

**Impact 3.3-4: Construction and operation of the proposed Project, in combination with other development, would not result in cumulatively considerable impacts to cultural resources. (Less than Significant)**

Continued development in the region runs the inherent risk of damaging or destroying known or previously unknown significant cultural resources that could yield information important to our history or prehistory. While no significant cultural resources were identified during Project archival review or field survey, the proposed Project could have a considerable contribution to the cumulative impact to cultural resources if archaeological or paleontological resources are located beneath the surface of the Project site and discovered during construction activities. Following implementation of the proposed mitigation detailed above (**Mitigation Measures 3.3-1, 3.3-2, and 3.3-3**), the proposed Project would make a less-than-considerable contribution to cumulative impacts on cultural resources.

> **Mitigation:** Implementation of Mitigation Measures 3.3-1, 3.3-2, and 3.3-3

**Impact Significance After Mitigation:** Implementation of **Mitigation Measures 3.3-1, 3.3-2, and 3.3-3** would lessen cumulative impacts to cultural resources by providing guidance for the analysis and treatment of resources discovered during the course of construction, and therefore would reduce cumulative impacts to less than significant levels.

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## References

Golden Hills Consulting, 2013. Cultural Resources Report for the Municipal Waste Conversion Facility, Glenn County, California. Prepared for KVB, Inc. August 2013.

Golden Hills Consulting, 2015. Addendum to Cultural Resources Report for the Municipal Waste Conversion Facility, Glenn County, California. Prepared for KVB, Inc. May 2015.

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# 3.4 Geology, Soils, and Seismicity

This section discusses the potential effects of the Project related to geology, soils, and seismicity and evaluates the potential for the Project to result in significant impacts related to exposing people or structures to unfavorable geologic hazards, soils, and/or seismic conditions. A description of the geologic setting was determined based on a review of published documents and is followed by a review of the current regulatory framework relevant to geology, soils, and seismicity.

The only comment relating to geology, soils, and seismicity received on the Notice of Preparation (NOP) (**Appendix A**), pertained to a concern regarding the proposed septic system for the site from the Glenn County Environmental Health department.

## 3.4.1 Environmental Setting

### Regional Geology

The Project site is located within the Sacramento Valley which makes up the northern half of the Great Valley geologic province (CGS, 2002). The Great Valley is an elongated lowland about 400 miles long and 50 miles wide, which lies between the Sierra Nevada Range to the east and the Coast Ranges to the west. The only notable topographic break in the valley is the small circular complex of eroded volcanic lava domes which rise above the flat plains known as the Sutter Buttes. The Sacramento River drains the northern half of the Great Valley which is characterized by relatively undisturbed thick sequences of alluvial, flood, and delta plain deposits.

### Site Setting

The Project site is bound by State Highway 32 to the north, a small levee along Stony Creek to the south, a small stand of mixed ruderal and riparian vegetation to the east, and a small light industrial area to the west. According to a geologic map of the area, the site is underlain by what is identified as Quaternary (deposited within the last 1.6 million years) nonmarine terrace deposits (USGS, 2015). Geology in the vicinity of the site is dominated by sedimentary features associated with the ancestral and modern Stony Creek. Much of the surface materials in the site vicinity have been eroded and reworked by in-stream processes of Stony Creek that has formed transient channel deposits also referred to as riverwash. The Stony Creek Fan deposits in the vicinity of the Project site are underlain by the Tehama formation. The Tehama formation consists of semi-consolidated and erosion-resistant fluvial (river) deposits derived from the Coast Range. These deposits were laid down by the ancestral Sacramento River and its tributaries. The Tehama Formation consists of predominately silt and clay deposits, with discontinuous layers of sand and gravel. The Tehama formation is as much as 1,500 feet thick in the Orland area.

The Project site occurs largely within what was the staging area for an inactive gravel mining facility. The majority of the site consists of relatively level, compacted gravels that are sparsely vegetated with weedy, non-native vegetation (Gold Hill, 2013). Several large scattered gravel, asphalt, and concrete piles are found in the southeastern portion of the study area. Elevation is approximately 182 feet above sea level throughout the majority of the site.

## Soils

According to the Soil Survey for Glenn County, the Project site has three major soil types: Riverwash, Orland Loam, and Arbuckle Gravelly Loam (North State Environmental, 2013). The Arbuckle gravelly loam is located along Highway 32; Riverwash is located in the Stony Creek channel; and Orland loam is located between these onsite. A detailed description of each of these soil types follows. However, the ground surface on the site has been highly modified, and native soils are no longer exposed at the ground surface over the majority of the Project site (North State Environmental, 2013).

### *Riverwash*

Riverwash (Rh) consists of stratified deposits of sand and gravel, with 0 to 2 percent slopes reported in the vicinity of the Project site. Riverwash occurs along drainageways, on sand and gravel bars of major active streams, and in the channels of intermittent creeks. These areas are periodically flooded each year and are subject to erosion and deposition. According to the Glenn County Soil Survey (USDA, 1968), Riverwash is a good source of sand, gravel, and road fill. This soil type is classified as hydrologic soil group A, indicating that it has a high infiltration rate, even when wet. Riverwash soils are well drained, have a high rate of water transmission, and are not suitable for farming.

### *Orland Loam*

The Orland Loam is described as a low plasticity silt or clay (ML or CL), and the underlying sand and gravel is classified as a silty sand (SM). The shrink-swell potential for the loam is low to moderate, and is low for underlying sand and gravel. The site has two related soils of this series, Orland loam, shallow over gravel, overflow (Owo), and Orland loam, moderately deep over gravel (Omr). Limited areas of Orland loam, deep over claypan (Odp) were also mapped in close proximity to the Project, but not within the Project area.

The Orland loam, shallow over gravel, overflow (Owo) consists of stratified, medium- and coarse-textured soil that is 10 to 24 inches thick over river sand and gravel. Slopes are 0 to 3 percent. The soil is located on low benches or islands in the streambed of Stony Creek, and is subject to frequent overflow during periods of peak runoff. Vegetation consists mainly of annual grasses and weeds. The erosion hazard can be severe, however, since completion of Black Butte Dam upstream of Stony Creek the local hazard has been reduced. The available water-holding capacity and fertility are low. Permeability is rapid, and runoff is slow.

The Orland loam, moderately deep over gravel (Omr) consists of loam that is 20 to 36 inches thick over river sand and gravel. Slopes are 0 to 2 percent. Areas of this soil downstream of Black Butte Dam are used for irrigated forage, row, and orchard crops. Growth of crops is uneven because of variable depth to the underlying sand and gravel. The shrink-swell potential for the loam is low to moderate, and for the underlying sand and gravel is low. This soil is encountered on low benches near or adjacent to Stony Creek. The formation's available water-holding capacity and fertility are low. Permeability is rapid, runoff is slow, and erosion is a hazard primarily only along stream banks.

#### *Arbuckle Gravelly Loam*

The Arbuckle gravelly loam (AoA) is a thick (60 inches or more), typically layered gravelly loam with 0 to 2 percent slopes. The surface layer is gravelly loam or gravelly fine sandy loam, with as much as 30 percent gravel. The subsoil generally ranges in texture from gravelly loam to gravelly light clay loam. Permeability of this soil is moderate, runoff is slow, and erosion hazard is slight.

### Seismicity

#### *Surface Fault Rupture*

Seismically induced ground rupture is defined as the physical displacement of surface deposits in response to an earthquake's seismic waves. The magnitude, sense, and nature of fault rupture can vary for different faults or even along different strands of the same fault. Ground rupture is considered more likely along active faults. No Alquist-Priolo Fault Rupture Hazard Zone, as designated through the Alquist-Priolo Earthquake Fault Zoning Act, is known to intersect the Project site. The nearest active fault to the site is the Cleveland Hill fault located over 40 miles from the Project site.

#### *Groundshaking*

Richter magnitude (M) is a measure of the size of an earthquake as recorded by a seismograph, a standard instrument that records groundshaking at the location of the instrument. The reported Richter magnitude for an earthquake represents the highest amplitude measured by the seismograph at a distance of 100 kilometers from the epicenter. Richter magnitudes vary logarithmically with each whole number step representing a tenfold increase in the amplitude of the recorded seismic waves. Earthquake magnitudes are also measured by their Moment Magnitude (Mw), which is related to the physical characteristics of a fault including the rigidity of the rock, the size of fault rupture, and movement or displacement across a fault (CGS, 2002).

Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify groundshaking. For this reason, earthquake intensities are also measured in terms of their observed effects at a given locality. The intensities of an earthquake will vary over the region of a fault and generally decrease with distance from the epicenter of the earthquake.

Historically, the Sacramento Valley is a region characterized by relatively low seismic activity. The closest active fault segment to the Project site is the Cleveland Hill fault just south of Lake Oroville which experienced a magnitude 5.7 earthquake in 1975. Other active faults in the region include the Bartlett Springs fault (50 miles west), and the Dunnigan Hills fault (60 miles south). The Corning Fault, which is classified as potentially active, meaning that it has not shown evidence of any displacement over the last 11,000 years, is approximately 6 miles from the site.

During the past 100 years, Glenn County has experienced only minor earthquakes within its boundaries and secondary impacts from earthquakes centered outside the area (North State Environmental, 2013). The design level earthquake is defined as an event that has an exceedance probability of 10 percent in 50 years. According to the California Geological Survey (CGS, 1999), the peak ground motion value for the site vicinity (with a 10 percent probability of exceedance in 50 years) is between 0.1 and 0.2 g. This value is fairly low, and reflects the relatively low level of seismic activity in the Sacramento Valley (North State Environmental, 2013).

### *Landslides and Slope Failure*

Landslides or slope failures are dependent on various factors including the slope characteristics and geology as well as the amount of rainfall, manmade alterations through excavation, or seismic activities. A slope failure is a mass of rock, soil, and debris displaced down slope by sliding, flowing, or falling. Steep slopes and downslope creep of surface materials characterize landslide-susceptible areas. Debris flows consist of a loose mass of rocks and other granular material that, if present on a steep slope and saturated, can move down slope.

The rate of rock and soil movements can vary from a slow creep over many years to sudden mass movements. Landslides occur throughout the state of California but the density of incidents increases in zones of active faulting. Seismic inducement can accelerate otherwise slower processes triggering landslides and slope failure over wide areas. With or without seismic inducement, slope failure is most commonly found in slopes that exceed a 1.5:1 (horizontal:vertical) incline. The Project site and surrounding area is characterized as relatively flat, and potential for landslides at the existing site is anticipated to be limited.

### *Liquefaction*

Liquefaction is a transformation of soil from a solid to a liquefied state during which saturated soil temporarily loses strength resulting from the buildup of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits. The loss of bearing pressure can occur beneath a structure when the underlying soil loses strength and liquefies. When this occurs, the structure can settle, tip, or even become buoyant and "float" upwards. Liquefaction and associated failures can damage foundations, roads, underground cables and pipelines, and disrupt utility service.

In addition, liquefaction can occur in unconsolidated or artificial fill sediments that have not received appropriate compaction. The depth to groundwater influences the potential for liquefaction, in that sediments need to be saturated to have a potential for liquefaction. In general, saturated soils within 50 feet of ground surface are most at risk of liquefaction. There is no on-site data available regarding the depth to groundwater. However, based on the proximity of the site to Stony Creek, shallow groundwater most likely occurs within the sand and gravel alluvium, at approximately the same elevation as Stony Creek. DWR maps of depth to groundwater in domestic wells in Glenn County indicate that depth to groundwater in the site vicinity is approximately 35 feet.

### *Settlement and Subsidence*

Settlement can occur from immediate settlement, consolidation, shrinkage of expansive soil, and liquefaction. Immediate settlement occurs when a load from a structure or placement of new fill material is applied, causing distortion in the underlying materials. This settlement occurs quickly and is typically complete after placement of the final load. Soils tend to settle at different rates and by varying amounts depending on the load weight or changes in properties over an area, which is referred to as differential settlement.

Subsidence is a form of settlement that can be caused by natural (tectonic movement) or through human extraction activities such as the removal of groundwater, oil, or gas. Subsidence can also occur due to placement of new structures or improvements on inadequately prepared surface soils.

### *Expansive Soils*

Expansive soils possess a shrink-swell characteristic that can result in structural damage over a long period of time.[1] Expansive soils are largely comprised of silicate clays, which expand in volume when water is absorbed and shrink when dried. Highly expansive soils can cause damage to foundations and roads over time. The gravelly nature of the sediments found in the Project site would likely have a low to very low potential for shrink-swell characteristics.

### *Soil Erosion*

Erosion is the wearing away of soil and rock by processes such as mechanical or chemical weathering, mass wasting, and the action of stormwater runoff. Excessive soil erosion can eventually lead to damage of building foundations and roadways. In general, areas that are most susceptible to erosion are those that would be exposed during the construction phase when earthwork activities disturb soils and require stockpiling. Typically, the soil erosion potential is reduced once the soil is graded and covered with concrete, structures, asphalt, or slope protection, however changes in drainage patterns can also cause areas to be susceptible to the effects of erosion.

# 3.4.2 Regulatory Framework

## Federal Regulations

### *Earthquake Hazards Reduction Act*

The Earthquake Hazards Reduction Act was enacted in 1977 to "*reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards and reduction program*." To accomplish this, the Act established the National Earthquake Hazards Reduction Program (NEHRP). This program was

1 "Shrink-swell" is the cyclical expansion and contraction that occurs in fine-grained clay sediments from wetting and drying. Structures located on soils with this characteristic may be damaged over a long period of time, usually as the result of inadequate foundation engineering.

significantly amended as by the Earthquake Hazards Reduction Program Reauthorization Act of 2004 (Public Law 108-360).

NEHRP's mission includes improved understanding, characterization, and prediction of hazards and vulnerabilities; improvement of building codes and land use practices; risk reduction through post-earthquake investigations and education; development and improvement of design and construction techniques; improvement of mitigation capacity; and accelerated application of research results. The NEHRP designates the Federal Emergency Management Agency (FEMA) as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Programs under NEHRP help inform and guide planning and building code requirements such as emergency evacuation responsibilities and seismic code standards such as those to which the proposed project would be required to adhere.

## State

### *California Building Code*

The California Building Code (CBC) has been codified in the California Code of Regulations (CCR) as Title 24, Part 2. Title 24 is administered by the California Building Standards Commission, which, by law, is responsible for coordinating all building standards. Under state law, all building standards must be centralized in Title 24 or they are not enforceable. The purpose of the CBC is to establish minimum standards to safeguard the public health, safety, and general welfare through structural strength, means of egress facilities, and general stability by regulating and controlling the design, construction, quality of materials, use and occupancy, location, and maintenance of all building and structures within its jurisdiction. The 2013 CBC is based on the 2012 International Building Code (IBC) published by the International Code Conference. In addition, the CBC contains necessary California amendments, which are based on reference standards obtained from various technical committees and organizations such as the American Society of Civil Engineers (ASCE), the American Institute of Steel Construction (AISC), and the American Concrete Institute (ACI). ASCE Minimum Design Standards 7-05 provides requirements for general structural design and includes means for determining earthquake loads as well as other loads (flood, snow, wind, etc.) for inclusion into building codes. The provisions of the CBC apply to the construction, alteration, movement, replacement, and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout California.

Applicable earthquake design requirements take into account the occupancy category of the structure, site class, soil classifications, and various seismic coefficients which are used to determine a Seismic Design Category (SDC) for a project as described in Chapter 16 of the CBC. The SDC is a classification system that combines the occupancy categories with the level of expected ground motions at the site and ranges from SDC A (very small seismic vulnerability) to SDC E (very high seismic vulnerability and near a major fault). Design specifications are then determined according to the SDC in accordance with Chapter 16 of the CBC.

## Local

### *Glenn County General Plan*

The 1993 Glenn County General Plan contains the following goals and policies that pertain to geology, soils, and seismicity:

> Goal PSG-3: Protection and enhancement of the quality of life by reducing the loss of life and personal property due to geologic hazards.
>
> Policies: It shall be the policy of Glenn County to:
>
> > PSP-28: Promote sound agricultural: soil and development practices which conserve soil resources and avoid or mitigate impacts associated with erosion.
> >
> > PSP-29: Protect valley stream courses from the effects of erosion.
> >
> > PSP-30: Require erosion control plans for development proposed on sloping land.
> >
> > PSP-31: Require a site specific geological investigation prior to development within areas of high landslide risk.
> >
> > PSP-33: Enforce the requirements of the Uniform Building Code for all development in order to protect people, property and improvements from seismic and other geologic hazards.
>
> Implementation Strategies, Programs and Priorities:
>
> > PSI-28: Incorporate into the building permit/grading permit process a procedure for requiring an erosion control plan in areas subject to water runoff-related erosion.
> >
> > PSI-29: Incorporate into the building permit process a procedure for requiring geologic reports in areas subject to landslide hazards as identified in the General Plan.
> >
> > PSI-32: Continue to require building permits and subsequent inspections for all construction activities within the county.

### *Glenn County Environmental Health*

The goal of the Glenn County Environmental Health Department is to preserve the environment and protect the health and safety of the citizens of Glenn County. As part of this goal, the department regulates the construction of new septic systems through its permitting process. The Glenn County Board of Supervisors has adopted revised sewage disposal regulations so that such systems can be designed to function properly without polluting groundwater. Applicants must apply for and obtain an Individual Sewage Disposal System Permit prior to construction of a new septic system. Every individual sewage disposal system site evaluation and design must be performed by a registered environmental health specialist (REHS), registered civil engineer, registered geologist or other qualified professional who is knowledgeable to the satisfaction of the health officer in the procedures required by County Code requirements (Ord. 960 § 1 (part), 1990).

## 3.4.3 Impacts and Mitigation Measures

### Significance Criteria

Based on Appendix G of the CEQA Guidelines, geology, soils, and seismicity impacts would be considered potentially significant if the proposed project would:

- Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
  - 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;
  - Strong seismic ground shaking;
  - Seismic-related ground failure, including liquefaction; or
  - Landslides.
- Result in substantial soil erosion or the loss of topsoil;
- 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;
- Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property; or
- 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.

### Methodology

The following impact analysis focuses on potential impacts of the proposed Project related to soils, seismicity and other geologic hazards. The evaluation considered project plans, current conditions at the site, and applicable regulations and guidelines. Some of the above criteria are not considered relevant to the Project, based upon project plans and data research, and therefore, they will not be evaluated further in this EIR.

### Impacts Not Evaluated Further

The Project would not result in impacts related to the following CEQA criteria:

> **The Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault.**

The Project site is located more than 40 miles from the nearest active fault and is not located within or near an Alquist-Priolo Earthquake Hazard Zone. The likelihood of fault rupture occurring at the site is very remote and considered unlikely. There would be no impact related to this criterion.

**The Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides (No Impact)**

The Project site is located in relatively flat region with little to no susceptibility to landslides. There would be no impact related to this criterion.

## Impacts and Mitigation Measures

**Impact 3.4-1: The Project could expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving groundshaking. (Less than Significant)**

### Phase 1 and Phase 2

The Project site is not located in a very seismically active region, but a significant earthquake on a distant active fault could still potentially produce groundshaking that is felt at the Project site. If not designed appropriately, improvements could become damaged by the resulting groundshaking from a substantive earthquake.

Earthquakes are unavoidable hazards although the resultant damage can be minimized through appropriate seismic design and engineering. The County requires that all construction meet the latest standards of the California Building Code (CBC) for construction, which considers proximity to potential seismic sources and the maximum anticipated groundshaking possible. The proposed construction associated with the Project would be in accordance with applicable County ordinances and policies, and would be consistent with the most recent version of the CBC, which requires structural design that can accommodate ground accelerations expected from known active faults. In addition, the required design-level geotechnical investigations would be prepared by a California registered Geotechnical Engineer or Engineering Geologist and recommendations would include final design parameters for any retaining walls, foundations, foundation slabs, and surrounding related improvements. Compliance with these building safety design standards would reduce potential impacts associated with groundshaking to less than significant levels. Therefore, with implementation of the seismic design requirements into construction specification, the impacts associated with the effects associated with groundshaking would be reduced to less-than-significant levels.

**Significance Determination:** Less than Significant

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**Impact 3.4-2: The Project could expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction. (Less than Significant)**

### Phase 1 and Phase 2

Liquefaction can result in loss of bearing pressure, lateral spreading, sand boils (liquefied soil exiting at the ground surface), and earthquake-induced settlement causing substantial damage to structures. According to the soil survey for Glenn County as described above in the Setting section, onsite soils include cohesionless sands and gravels, which if saturated, could potentially be susceptible to liquefaction. However, the presence of liquefiable soils can only really be determined through site specific analysis of onsite soils during a geotechnical investigation, as required by the California Building Code. All proposed improvements during both phases of the Project would be required to adhere to current building code requirements, which would include a design-level geotechnical investigation that would further confirm whether potentially liquefiable soils are present or not. In the event that potentially liquefiable soils are identified on site, adherence to these building code requirements, which would include incorporation of industry standard measures of minimizing the potential for liquefaction through foundation design, treatment of site soils and/or replacement of liquefiable soils with engineered fills, would ensure that seismically induced ground failure is a less than significant impact to all proposed improvements.

**Significance Determination:** Less than Significant

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**Impact 3.4-3: Construction of the Project could result in substantial soil erosion or the loss of topsoil. (Less than Significant)**

### Phase 1 and Phase 2

Construction activities associated with implementation of the Project would involve substantive earthwork activities, including grading and stockpiling of soils. Soils formerly protected with vegetation or covered by asphalt or structures can become exposed to winds and water flows that could result in soil erosion or the loss of topsoil. As detailed in Section 3.6, *Hydrology and Water Quality,* Project implementation would be required to adhere to the conditions of the NPDES General Construction Permit. As part of the permit requirements, the contractor would be required to include construction best management practices (BMPs), as detailed in a Storm Water Pollution Prevention Plan (SWPPP), for all construction activities. The SWPPP and BMPs would be developed on a project-specific basis, and would contain the specific criteria for construction activities that would be required in order to minimize the potential for offsite transport of potential pollutants including sediment. At minimum, typical examples of construction BMPs could include installation of silt fences, hay bales or application of soil stabilization measures on exposed areas in order to minimize erosion potential.

Although the SWPPP and the General Construction permit are intended to primarily prevent sedimentation from entering runoff from the site, they have proven effective in preventing soil erosion and loss of topsoil occurring at a construction site. Thus, with adherence to the required BMPs, potential construction-related erosion would be minimized.

Following completion of construction activities, disturbed areas would be either revegetated or covered by impervious surfaces such as asphalt or buildings, which limit the potential for erosion. Thus, operation of the Project would not result in significant soil erosion impacts. For further discussion of soil erosion and sedimentation, see Section 3.6, *Hydrology and Water Quality*.

**Significance Determination:** Less than Significant

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**Impact 3.4-4: Proposed improvements could be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, potentially resulting in on or off-site landslide, lateral spreading, subsidence, liquefaction, expansive soils, or collapse. (Less than Significant)**

### Phase 1 and Phase 2

Loose, uncompacted soils or soils susceptible to slope failure, lateral spreading, subsidence, liquefaction, expansion, or collapse can cause considerable damage in new structures and associated appurtenances if not engineered appropriately.

As discussed above, the Project site is relatively level. The Project would not include any constructed slopes; therefore landslides are not anticipated to occur as a result of Project implementation.

Prior to issuance of a building permit, the Project applicant would be required to complete a geotechnical investigation for the site, in accordance with the California Building Code and County building code requirements. The geotechnical investigation would include collection of subsurface soils to define their geotechnical engineering characteristics. The findings of the investigation would determine the soil types beneath the site and their ability to withstand the new loadings that would be associated with the proposed improvements. Soil samples would also be collected for laboratory analysis to determine various engineering properties, including the potential for liquefaction or liquefaction, as discussed above, and expansive soils or collapse. Expansive soils increase in volume when their moisture content becomes elevated. Structures built on expansive soils could experience foundation cracking as a result of the expanding and contracting soils.

The required geotechnical investigation, in accordance with county and state requirements, would also determine the susceptibility of the Project site to settlement, and prescribe appropriate engineering techniques for reducing any potential settlement related effects. Where settlement and/or differential settlement is predicted, site preparation measures—such as use of engineered fill, surcharging, wick drains, deep foundations, structural slabs, hinged slabs, flexible utility connections, and utility hangers—would be deployed as warranted. These measures would be evaluated and the most effective, feasible, and economical measures recommended in a geotechnical report and incorporated into site design in accordance with building code requirements. Engineering recommendations included in the project engineering and design plans would be reviewed and approved by the County.

Final geotechnical specifications would also include measures to prevent other geologic hazards, such as corrosivity from causing significant damage. Geotechnical recommendations include preventing corrosive soils from coming in contact with vulnerable materials. Generally, industry standard practices minimize corrosivity through both the type of materials used for underground improvements and selective use of the engineering characteristics of backfill materials.

The site-specific analysis of site foundation soils guides the recommended building foundation design, such that adverse effects from unstable soils are minimized and reduced to levels that can be accommodated by the final design. Therefore, implementation of standard geotechnical engineering practices, including completion and adherence to a geotechnical investigation containing recommendations that would be specific to the Project site, as well as adherence to building code requirements, would reduce potential impacts from unstable soils and other adverse soil properties to less-than-significant levels.

**Significance Determination:** Less than Significant

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**Impact 3.4-5: The Project site could have soils incapable of adequately supporting the use of the proposed septic system. (Less than Significant)**

The proposed Project would require installation of a new septic system for the waste separation building. The estimated daily waste water requirement for workers' needs is approximately 400 gallons per day, which is beyond the capacity of the current system.

As described above, shallow soils beneath the site are variable and include compacted clay- and silt-rich soils as well as loose sands and gravels. The required site evaluation would include percolation tests by a registered environmental health specialist (REHS), registered civil engineer, registered geologist or other qualified professional prior to approval of a new septic system. If the site does not pass the percolation tests, then there are engineered alternatives to the traditional leach field that can be implemented. The system must also meet set back requirements from all wells to protect groundwater quality in accordance with the County's design standards. The leach field size for the new system cannot be determined until the applicant obtains a permit from the County Environmental Health department that includes an accurate indication of the number of employees and visitors to the site, and results of a test hole, performed to determine soil and groundwater conditions at the site. Adherence to the County septic system permit requirements as specified in Title 07 Chapter 100 of the County Code would ensure that onsite soils are capable of adequately supporting the proposed use of the site and the impact would be less than significant.

**Significance Determination:** Less than Significant

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## *Cumulative Impact*

### Geographic Context

The cumulative context for geology, soils, and seismicity cumulative impacts of the proposed project include the Sacramento Valley identified as a geographic region of relatively similar broad geologic characteristics. The majority of the Sacramento Valley is generally considered to have relatively low seismic risk hazards, and is relatively level.

**Impact 3.4-6: The Project, combined with other past, present, existing, approved, pending, and reasonably foreseeable future projects, would not result in significant cumulative impacts with respect to geology, soils or seismicity. (Less than Significant)**

The geographic context of this cumulative analysis is the Sacramento Valley, which represents the geologic regime in which the Project site is located. The Project, combined with past, present and other reasonably foreseeable development in the area, would result in increased population and activity in this area subjected to geologic hazards. Sacramento Valley is not considered a region of high seismic activity, but nonetheless could potentially experience some effects. In general, geologic hazards are site specific because conditions can vary widely from site to site. As a result, potential impacts tend not to be cumulatively considerable. All present and reasonably foreseeable cumulative scenario projects would be required to adhere to current seismic design standards in accordance with the County’s Building Code requirements. Therefore, the proposed Project combined with past, present and other foreseeable development in the area, would not result in a cumulatively significant impact by exposing people or structures to risk related to geologic hazards, soils and/or seismic conditions and no mitigation would be required.

**Significance Determination:** Less than Significant

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## References

Department of Water Resources (DWR), *Groundwater Well Database*, http://www.water.ca.gov/waterdatalibrary/groundwater/index_new.cfm, accessed August 14, 2015.

Gold Hill Consultants (Gold Hill), *Cultural Resources Report for the Municipal Waste Conversion Facility, Glenn County,* August 2013.

North State Environmental, *Hydrogeology and Water Quality Proposed KVB Solid Waste Materials Recovery Facility,* January 2013.

USGS, *Geology of California, Ukiah Sheet,* available at http://ngmdb.usgs.gov/Prodesc/proddesc_336.htm, accessed on August 14, 2015.

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# 3.5 Hazardous Materials

This section describes the setting for hazards and hazardous materials at the Project site, relative to the Project. This section includes a discussion of existing site conditions and findings from a review of available data. Potential hazards that may affect the proposed Project are identified, as well as pertinent regulatory information. Project impacts and mitigation measures, as necessary, are also identified and discussed. The assessment focuses on the following issues:

- The potential for encountering unsafe structures, debris, or underground hazards during construction.
- The potential for encountering hazardous substances in soil and groundwater during construction activities based on a regulatory database search to identify permitted hazardous materials uses and environmental cases in the vicinity of ground-disturbing activities.
- The potential for a release of fuels or other construction-related chemicals during construction.
- The potential for wildland fires caused by construction activities.
- The potential for operational releases of hazardous materials to adversely affect the public or the environment.
- The potential for adverse effects from releases of hazardous materials associated with household waste that transported to and processed in the onsite facilities.

Some comments relating to hazardous materials were received on the Notice of Preparation (NOP) (**Appendix A**), including comments from the City of Orland which regarding the handling of household hazardous waste in the processing facility, as well transportation of hazardous wastes. Glenn County Environmental Health also expressed an interest in having the EIR discuss the incidental occurrence of household hazardous waste that could be included in the receiving waste stream.

## 3.5.1 Environmental Setting

### Hazardous Materials

#### *Definitions*

Materials and waste are generally considered hazardous if they are poisonous (toxicity), can be ignited by open flame (ignitability), corrode other materials (corrosivity), react violently, explode, or generate vapors when mixed with water (reactivity). The term “hazardous material” is defined in the State Health and Safety Code (Chapter 6.95, Section 25501[o]) as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment.

A hazardous waste, for the purpose of this EIR, is any hazardous material that is abandoned, discarded, or recycled, as defined in the State Health and Safety Code (Chapter 6.95, Section 25125). A household hazardous waste is characterized as leftover household products that contain corrosive, toxic, ignitable, or reactive ingredients such as paints, cleaners, oils, batteries, and pesticides.The transportation, use, and disposal of hazardous materials, as well as the potential releases of hazardous materials to the environment are closely regulated through many state and federal laws.

### *Potential Receptors/Exposure*

The sensitivity of potential receptors in the areas of known or potential hazardous materials contamination is dependent on several factors, the primary factor being the potential pathway for human exposure. Exposure pathways include external exposure, inhalation, and ingestion of contaminated soil, air, water, or food. The magnitude, frequency, and duration of human exposure can cause a variety of health effects, from short term acute symptoms to long-term chronic effects. Potential health effects from exposure can be evaluated in a health risk assessment. The principle elements of exposure assessments typically include:

- Evaluation of the fate and transport processes for hazardous materials at a given site;
- Identification of potential exposure pathways;
- Identification of potential exposure scenarios;
- Calculation of representative chemical concentrations; and
- Estimation of potential chemical uptake.

### *Hazardous Building Materials*

There are several existing structures at the Project site associated with the past uses of the site; none are proposed for demolition as part of the Project (Richgels, 2015). Many older buildings can contain building materials that consist of hazardous building materials, which can be hazardous to people and the environment once disturbed. These materials include lead-based paint, asbestos-containing materials (ACM), polychlorinated biphenyls (PCBs), and mercury.

#### Lead and Lead-Based Paint

Prior to the U.S. Environmental Protection Agency (EPA) ban in 1978, lead-based paint was commonly used on interior and exterior surfaces of buildings. Where lead paint is present, disturbances such as sanding and scraping activities, renovation work, gradual wear and tear, old peeling paint, or paint dust particulates have been found to contaminate surface soils or cause lead dust to migrate and affect indoor air quality. Exposure to residual lead can cause severe adverse health effects, especially in children.

#### Asbestos

Asbestos is a naturally-occurring fibrous material that was extensively used as a fireproofing and insulating agent in building construction materials before such uses were banned by the EPA in the 1970s. ACM were commonly used for insulation of heating ducts as well as ceiling and floor tiles to name a few typical types of materials. Similar to lead-based paint, ACM contained within the building materials present no significant health risk because there is no exposure pathway. However, once these tiny fibers are disturbed, they can become airborne and become a respiratory hazard. The fibers are very small and cannot be seen with the naked eye. Once they are inhaled, they can become lodged into the lung potentially causing lung disease or other pulmonary complications.

State laws and regulations prohibit emissions of asbestos from asbestos-related manufacturing, demolition, or construction activities; require medical examinations and monitoring of employees engaged in activities that could disturb asbestos; specify precautions and safe work practices that must be followed to minimize the potential for release of asbestos fibers; and require notice to federal and local governmental agencies prior to beginning renovation or demolition that could disturb asbestos.

#### Polychlorinated Biphenyls (PCBs)

PCBs are organic oils that were formerly used primarily as insulators in many types of electrical equipment including transformers and capacitors. After PCBs were determined to be a carcinogen in the mid to late1970s, the U.S. EPA banned PCB use in most new equipment and began a program to phase out certain existing PCB-containing equipment. Fluorescent lighting ballasts manufactured after January 1, 1978, do not contain PCBs and are required to have a label clearly stating that PCBs are not present in the unit.

#### Mercury

Spent fluorescent light tubes, thermostats, and other electrical equipment contain heavy metals such as mercury that, if disposed of in landfills, can leach into soil or groundwater. Lighting tubes typically contain concentrations of mercury that may exceed regulatory thresholds for hazardous waste and, as such, must be managed in accordance with hazardous waste regulations. Elemental mercury waste is considered hazardous. Mercury can also be present in traps in the plumbing of older buildings in which mercury-containing equipment has been used.

### Soil and Groundwater Contamination

Many commercial and light industrial businesses, as well as some agricultural practices, use hazardous materials and generate wastes that are considered hazardous by federal and state standards. Businesses are required to contain, manage, and transport their hazardous materials in conformance with established state regulations to ensure hazardous materials are not released to the environment to become a health hazard.

However, some land uses that date back to times of less stringent requirements are more likely to have associated contamination of the surface soil and groundwater which can occur through leaking underground tanks or surface spills of hazardous materials and petroleum.

Underground storage tanks (USTs), in particular, are a common contamination source in urban areas, but are also found on sites historically used for agriculture. Until the mid-1980s, most USTs were made of single-walled bare steel, which can corrode over time and result in leakage. Faulty installation or maintenance procedures can also lead to UST leakage, as well as to potential releases associated with spills. Recently revised UST regulations have significantly reduced the incidents of leakage and consequential soil and groundwater contamination from new UST systems. However, there are still some older UST systems that remain in service, and many sites contaminated by leaking USTs in the past are still under investigation and undergoing clean-up. Similarly, spills resulting from poor maintenance or improper installation associated with aboveground storage tanks (ASTs) can result in localized, shallow soil contamination. USTs installed prior to the mid-1980's that have leaked, as well as improperly installed USTs and ASTs that have resulted in fuel spills, can present contamination issues.

## Project Site

The Project site is located within unincorporated Glenn County, approximately three miles west of Hamilton City and five miles east of Orland. The Project site is currently partially occupied by an inactive gravel processing facility situated between State Route 32 (SR 32) to the north and Stony Creek to the south. The surrounding properties consist mostly of agricultural land uses and are zoned either agricultural or industrial.

Known past uses of the site include the former gravel quarry and processing facility. A Quonset hut metal building with an add-on wood frame office is located in the southeast portion of the site; it was once the Stony Creek Ready-Mix facility. A scale house is located near the northeast entrance to the site. A number of gravel loading concrete slabs are located approximately in mid-site. A small wooden building near the western edge of the property houses a power supply switching and maintenance panel.

A Phase I and limited Phase II environmental site assessment was conducted at the site in 1996 (Century West, 1996). The Phase I noted the presence of both above ground fuel storage tanks (ASTs) and an underground storage tank (UST). Some surface staining associated with the ASTs were observed and targeted for limited excavation and removal of subsurface soils. Collection of subsurface sampling following excavation determined that diesel contamination still remained at the site but was estimated to be relatively limited in extent (Century West, 1996). The UST was only 500 gallons and reportedly only in the ground for approximately one year. As a result it was thought to have been an unlikely source of any substantive contamination.

According to a review of databases conducted for this analysis, the Project site is not included on the Department of Toxic Substances Control Envirostor database or the State Water Resources Control Board Geotracker database (DTSC, 20015 and SWRCB, 2015).

## Airports

The nearest airport to the Project site is the Orland Haigh Field Airport which is approximately 3 miles to the southwest. The Haigh Field Airport is a County-operated general aviation facility that is operated in accordance with the County Airport Master Plan. The Chico Municipal Airport is approximately 12 miles east of the Project site.

## Wildland Fire

Fire potential for wildlands is based on three major factors: fuels, terrain, and weather. Public Resources Code sections 4201-4204 direct the California Department of Forestry and Fire Protection (CAL FIRE) to map fire hazards within State Responsibility Areas (SRA) and Local

Responsibility Areas (LRA). These statutes were passed after significant wildland-urban interface fires occurred. Areas of fire hazard in SRAs are described according to their potential for causing ignitions to buildings. The hazard zones referred to as Fire Hazard Severity Zones (FHSZ), provide the basis for application of various mitigation strategies to reduce risks to buildings associated with wildland fires. The threat classes are divided into three categories: Moderate, High, and Very High (CAL FIRE, 2007). CAL FIRE has determined that Glenn County has no Very High Fire Hazard Severity Zones in LRA and the Project site is not located within an SRA hazard zone (CAL FIRE, 2015).

## 3.5.2 Regulatory Setting

### Federal

The United States Environmental Protection Agency (U.S. EPA) is the lead agency responsible for enforcing federal regulations that affect public health or the environment. The primary federal laws and regulations include the Resource Conservation and Recovery Act of 1976 (RCRA) and the Hazardous and Solid Waste Amendments enacted in 1984; the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA); and the Superfund Act and Reauthorization Act of 1986 (SARA). Federal statutes pertaining to hazardous materials and wastes are contained in the Code of Federal Regulations (CFR), Title 40 - Protection of the Environment.

#### *Resource Conservation and Recovery Act*

The Resource Conservation and Recovery Act was adopted in 1976. RCRA Subtitle C regulates the generation, transportation, treatment, storage and disposal of hazardous waste by “large-quantity generators” (1,000 kilograms per month or more) and “small-quantity generators” (between 100 and 1,000 kilograms per month) through comprehensive life cycle or “cradle to grave” tracking requirements. The requirements include maintaining inspection logs of hazardous waste storage locations, records of quantities being generated and stored, and manifests of pick-ups and deliveries to licensed treatment/storage/disposal facilities. RCRA also identifies standards for treatment, storage, and disposal, which is codified in CFR Title 40 Part 260.

According to RCRA Subpart C and the U.S. EPA, materials and waste are considered hazardous based on four characteristics:

> ***Ignitability.*** Ignitable wastes can create fires under certain conditions, are spontaneously combustible, or have a flash point less than 60 °C (140 °F). Examples include waste oils and used solvents.
>
> ***Corrosivity.*** Corrosive wastes are acids or bases (pH less than or equal to 2, or greater than or equal to 12.5) that are capable of corroding metal containers, such as storage tanks, drums, and barrels. Battery acid is an example.
>
> ***Reactivity.*** Reactive wastes are unstable under “normal” conditions. They can cause explosions, toxic fumes, gases, or vapors when heated, compressed, or mixed with water. Examples include lithium-sulfur batteries and explosives.
>
> ***Toxicity.*** Toxic wastes are harmful or fatal when ingested or absorbed (e.g., containing mercury, lead, etc.)

### Comprehensive Environmental Response Compensation and Liability Act

CERCLA, commonly known as Superfund, is the legal framework for the identification and restoration of contaminated property. In addition, CERCLA:

- Established prohibitions and requirements concerning closed and abandoned hazardous waste sites; and
- Provided for liability of persons or entities responsible for releases of hazardous waste at these
- Generally, CERCLA authorizes two kinds of response actions:
- Short-term removals, where actions may be taken to address releases or threatened releases requiring prompt response.
- Long-term remedial response actions, that permanently and significantly reduce the dangers associated with releases or threats of releases of hazardous substances that are serious, but not immediately life threatening.

### Federal Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 provided a new set of mitigation plan requirements that encourage state and local jurisdictions to coordinate disaster mitigation planning and implementation. States are encouraged to complete a "Standard" or an "Enhanced" Natural Mitigation Plan. "Enhanced" plans demonstrate increased coordination of mitigation activities at the state level and, if completed and approved, would increase the amount of funding through the Hazard Mitigation Grant Program. California's updated State Hazard Mitigation Plan was adopted on October 8, 2007, and approved by FEMA Region IX on December 17, 2007.

### Hazardous Materials Transportation Act

The transportation of hazardous materials is regulated by the Hazardous Materials Transportation Act (HMTA), which is administered by the Research and Special Programs Administration (RSPA) of USDOT. HMTA provides USDOT with a broad mandate to regulate the transport of hazardous materials, with the purpose of adequately protecting the nation against risk to life and property, which is inherent in the commercial transportation of hazardous materials. The HMTA governs the safe transportation of hazardous materials by all modes, excluding bulk transportation by water. RSPA carries out these responsibilities by prescribing regulations and managing a user-funded grant program for planning and training grants for states and Indian tribes. USDOT regulations that govern the transportation of hazardous materials are applicable to any person who transports, ships, causes to be transported or shipped, or who is involved in any way with the manufacture or testing of hazardous materials packaging or containers. USDOT regulations pertaining to the actual movement govern every aspect of the movement, including packaging, handling, labeling, marking, placarding, operational standards, and highway routing. Additionally, USDOT is responsible for developing curriculum to train for emergency response, and administers grants to states and Indian tribes for ensuring the proper training of emergency responders. HMTA was enacted in 1975 and was amended and reauthorized in 1990, 1994, and 2005.

### International Fire Code

The International Fire Code (IFC), created by the International Code Council, is the primary means for authorizing and enforcing procedures and mechanisms to ensure the safe handling and storage of any substance that may pose a threat to public health and safety. The IFC regulates the use, handling, and storage requirements for hazardous materials at fixed facilities. The IFC and the International Building Code (IBC) use a hazard classification system to determine what protective measures are required for fire and life safety. These measures may include construction standards, separations from property lines, and specialized equipment. To ensure that these safety measures are met, the IFC employs a permit system based on hazard classification. The IFC is updated every three years, and is the basis for the California Fire Code (also updated triennially). Local jurisdictions then adopt the California Fire Code, in some cases with local amendments.

### National Fire Plan

The Department of the Interior's National Fire Plan is intended to ensure an appropriate federal response to severe wildland fires, reduce fire impacts to rural communities, and ensure sufficient firefighting capacity in the future. The Rural Fire Assistance program is funded to enhance the fire protection capabilities of rural fire districts and safe and effective fire suppression in the wildland/urban interface. The program promotes close coordination among local, state, tribal, and federal firefighting resources by conducting training, equipment purchase, and prevention activities on a cost-shared basis.

## State

### Compostable Materials Handling Operations and Facilities

Compostable materials handling, operations and facilities regulatory requirements are established in CA Title 14, Division 7, Chapter 3.1 and can be obtained at: http://www.calrecycle.ca.gov/Laws/Regulations/title14/ch31.htm.

These regulations are overseen by CalRecycle and its designated local enforcement agencies. These regulations include, but are not limited to, the following for compost facility operations: establishes permitting and inspection requirements; prohibits acceptance of hazardous wastes, liquids and sludges; outlines general operating standards; provides for removal of contaminants from compost and feedstock; requires materials handling in a manner that minimizes vectors and prevents unauthorized access by individuals and animals; outlines pathogen reduction and sampling requirements; establishes recordkeeping and facility closure requirements.

Composting Operating Standards in CA Title 14, Division 7, Chapter 3.1, Article 6, Section 17867 include the following general operating standards.

a. All compostable materials handling operations and facilities shall meet the following requirements:

    1. All handling activities are prohibited from composting any material specified in section 17855.2 of this Chapter (i.e., mammalian tissue, medical waste, and hazardous waste).

2. All handling activities shall be conducted in a manner that minimizes vectors, odor impacts, litter, hazards, nuisances, and noise impacts; and minimizes human contact with, inhalation, ingestion, and transportation of dust, particulates, and pathogenic organisms.

### *Title 14 Transfer/Processing Operations and Facilities Regulatory Requirements*

Minimum Standards for Solid Waste Handling and Disposal are in CA Title 14, Division 7, Chapter 3. Article 6.1, Section 17410.4 of Chapter 3 includes the following requirement for vector, bird and animal control.

The operator shall take adequate steps to control or prevent the propagation, harborage and attraction of flies, rodents, or other vectors, and animals, and to minimize bird attraction.

### *Worker Safety Requirements*

The California Occupational Safety and Health Administration (Cal-OSHA) is responsible for assuring worker safety in the handling and use of chemicals in the workplace. The federal regulations pertaining to worker safety are contained in Title 29 of the Code of Federal Regulations (CFR), as authorized in the Occupational Safety and Health Act of 1970. They provide standards for safe workplaces and work practices, including standards relating to hazardous materials handling. In California, Cal-OSHA assumes primary responsibility for developing and enforcing workplace safety regulations; Cal-OSHA standards are generally more stringent than federal regulations.

The state regulations concerning the use of hazardous materials in the workplace are included in Title 8 of the California Code of Regulations, which contain requirements for safety training, availability of safety equipment, accident and illness prevention programs, hazardous substance exposure warnings, and emergency action and fire prevention plan preparation. Cal-OSHA also enforces hazard communication program regulations, which contain worker safety training and hazard information requirements, such as procedures for identifying and labeling hazardous substances, communicating hazard information related to hazardous substances and their handling, and preparation of health and safety plans to protect workers and employees.

### *Hazardous Materials Business Plans*

State laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. California’s Hazardous Materials Release Response Plans and Inventory Law, sometimes called the “Business Plan Act,” aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to possible hazardous materials emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated emergency response agencies, to illustrate on a diagram where the materials are stored on-site, to prepare an emergency response plan, and to train employees to use the materials safely.

### *Hazardous Materials Emergency Response*

Pursuant to the Emergency Services Act, California has developed an Emergency Response Plan to coordinate emergency services provided by federal, state, and local governmental agencies and private persons. Response to hazardous materials incidents is one part of this plan. The plan is administered by the state Office of Emergency Services (OES). The OES coordinates the responses of other agencies, including the USEPA, CHP, the California Department of Fish and Game (CDFG), the RWQCBs, the local air pollution control districts, and local agencies.

Pursuant to the Business Plan Law, local agencies are required to develop "area plans" for response to releases of hazardous materials and wastes. These emergency response plans depend to a large extent on the Business Plans submitted by persons who handle hazardous materials. An area plan must include pre-emergency planning and procedures for emergency response, notification, and coordination of affected governmental agencies and responsible parties, training, and follow up.

In addition, California Accidental Release Prevention Program (CalARP) regulations became effective January 1, 1997, replacing the California Risk Management and Prevention Program. CalARP was created to prevent the accidental release of regulated substances. It covers businesses that store or handle certain volumes of regulated substances at their facilities. A list of regulated substances is found in Section 2770.5 of the CalARP regulations. If a business has more than the listed threshold quantity of a substance, an accidental release prevention program must be implemented and a risk management plan may be required. The California Office of Emergency Services is responsible for implementing the provisions of CalARP.

### *Asbestos*

State laws and regulations prohibit emissions of asbestos from asbestos-related manufacturing, demolition, or construction activities; require medical examinations and monitoring of employees engaged in activities that could disturb asbestos; specify precautions and safe work practices that must be followed to minimize the potential for release of asbestos fibers; and require notice to federal and local governmental agencies prior to beginning renovation or demolition that could disturb asbestos. Asbestos represents a human health risk when asbestos fibers become friable (easily crumbled or powdery) and potentially airborne, and can be inhaled into the lungs.

### *Polychlorinated Biphenyls (PCBs)*

In 1979, USEPA banned the use of PCBs in most new electrical equipment and began a program to phase out certain existing PCB-containing equipment. The use and management of PCBs in electrical equipment is regulated pursuant to the Toxic Substances Control Act (40 CFR). The Toxic Substances Control Act of 1976 (15 USC 2605) banned the manufacturing, processing, distribution, and use of Polychlorinated Biphenyl (PCBs) in totally enclosed systems. The EPA Region 9 PCB Program regulates remediation of PCBs in several states, including California. 40 CFR Section 761.30(a)(1)(vi)(A) states that all owners of electrical transformers containing PCBs must register their transformers with EPA. Specified electrical equipment manufactured between July 1, 1978, and July 1, 1998, that does not contain PCBs must be marked by the manufacturer with the statement "No PCBs" (Section 761.40[g]). Transformers and other items manufactured before July 1, 1978, containing PCBs must be marked as such.

### *Lead and Lead-Based Paint*

The California Code of Regulations, Title 22, considers waste soil with concentrations of lead to be hazardous if it exceeds a total concentration of 1,000 parts per million (ppm) or a soluble[1] concentration of 5 ppm. Both the federal and California OSHAs regulate all worker exposure during construction activities that involve LBP. The Interim Final Rule found in 29 CFR Part 1926.62 covers construction work in which employees may be exposed to lead during such activities as demolition, removal, surface preparation for re-painting, renovation, clean up and routine maintenance. The OSHA-specified method of compliance includes respiratory protection, protective clothing, housekeeping, hygiene facilities, medical surveillance, and training.

### *Natural Gas Pipelines*

The DOT also provides oversight for the nation's natural gas pipeline transportation system. Its responsibilities are promulgated under Title 49, United States Code (USC) Chapter 601. The Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS), administers the national regulatory program to ensure the safe transportation of gas and other hazardous materials by pipeline.

The OPS shares portions of this responsibility with State agency partners and others at the federal, State, and local levels. The State of California is certified under 49 USC Subtitle VIII, Chapter 601, §60105. The State has the authority to regulate intrastate natural and other gas pipeline facilities. The California Public Utilities Commission has rules governing design construction, testing, operation, and maintenance of gas gathering, transmission, and distribution piping systems (General Order No. 112-E). The State requirements for designing, constructing, testing, operating, and maintaining gas piping systems are stated in CPUC General Order Number 112. These rules incorporate the federal regulations by reference, but for natural gas pipelines, they do not impose any additional requirements affecting public safety. The federal pipeline regulations are published in Title 49 CFR, Parts 190 through 199. 49 CFR 192 specifically addresses natural and other gas pipelines. These regulations include specific standards for material selection and qualification, design requirements, protection from corrosion, worker training, safety and provisions for safety standards specific to the location of the pipeline relative to population densities and sensitive land uses.

### *California Multi-Hazard Mitigation Plan*

CalEMA issued the State of California Multi-Hazard Mitigation Plan (Multi-Hazard Mitigation Plan), which was approved by the Federal Emergency Management Agency (FEMA) in October 2010 and then updated on September 30, 2013. The overall intent of the Multi-Hazard Mitigation Plan is to reduce or prevent injury and damage from natural hazards in California, such as earthquakes, wildfires, and flooding. The plan identifies past and present hazard mitigation activities; current policies and programs; and mitigation goals, objectives, and

1 Capable of being dissolved-especially in water.

strategies for the future. The Federal Disaster Mitigation Act required all state emergency services agencies to issue such plans by November 1, 2004, for the states to receive Federal grant funds for disaster assistance and mitigation under the Stafford Act (44 CFR 201.4). These plans must be updated every 3 years.

#### *California Department of Forestry and Fire Protection (CALFIRE)*

Fire Hazard Severity Zone Maps California law requires the California Department of Forestry and Fire Protection (CALFIRE) to identify areas based on the severity of fire hazard that is expected to prevail there. These areas, or "zones," are based on factors such as fuel (material that can burn), slope and fire weather. There are three zones, based on increasing fire hazard, classified as medium, high and very high. In November 2007, the CALFIRE adopted Fire Hazard Severity Zone maps for State Responsibility Areas where the State has financial responsibility for wildland fire protection.

In the mid-1990s, Government Code Section 51175 called for the CALFIRE Director to evaluate fire hazard severity in Local Responsibility Area and to make a recommendation to the local jurisdiction where very high Fire Hazard Severity Zones exist. In 2008, CALFIRE provided recommended maps for Very High Fire Hazard Severity Zones in Local Responsibility Areas. Local responsibility areas include incorporated cities, cultivated agriculture lands, and portions of the desert. Local responsibility area fire protection is typically provided by city fire departments, fire protection districts, counties, and by CALFIRE under contract to local government.

### Local

#### *Certified Uniform Program Agency (CUPA)*

Each business in Glenn County that handles, uses, generates or stores hazardous materials is required to comply with State and Federal community right-to-know laws. The primary purpose of these laws is to provide readily available information regarding the location, type and health risks of hazardous materials to emergency response personnel, authorized government officials, and the public. These requirements are found in California Health & Safety Code (CHSC), Division 20, Chapter 6.95, Sections 25500-25520; California Code of Regulations (CCR), Title 19, Chapter 2, Sub-chapter 3, Article 4, Sections 2729-2734, Title 40, Code of Federal Regulations (CFR), EPA (SARA, Title III).

The Glenn County Air Pollution Control District is the Administering Agency and the Certified Unified Program Agency (CUPA) for Glenn County with responsibility for regulating hazardous materials handlers, hazardous waste generators, underground storage tank facilities, above ground storage tanks, and stationary sources handling regulated substances.

#### *Glenn County General Plan*

Goal: PSG-8 Reduce the County's reliance on landfilling, reduce the volume of the solid waste stream, increase recovery of materials, and dispose of remaining waste in the most environmentally and fiscally responsible manner available.

Policies: It shall be the policy of Glenn County to:

PSP-57 Achieve maximum waste diversion through the expansion and/or development of cost effective recycling and source reduction programs tailored for both rural and urbanized jurisdictions in the county.

## 3.5.3 Impacts and Mitigation Measures

### Significance Criteria

#### Thresholds of Significance

CEQA defines a significant effect on the environment as a substantial, or potentially substantial, adverse change in the physical conditions of the area affected by the Project. An impact related to hazards and hazardous materials, including fire hazards, would be considered significant if it would result in any of the following, which are adapted from Appendix G of the CEQA *Guidelines*:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment;
- Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one quarter mile of an existing or proposed school;
- Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment;
- Be located within an area covered by 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, and would result in a safety hazard for people residing or working in the project area;
- Be located within the vicinity of a private airstrip and would result in a safety hazard for people residing or working in the project area;
- Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan; or
- 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.

### Methodology

The following analysis considers proposed plans, existing conditions as provided in the setting section and compares them with regulatory requirements. Potential effects on the environment related to hazards and hazardous materials were also evaluated based on the type and location of anticipated construction and operational activities, and on publicly available information related to existing land uses, wildfire hazard zones, and known soil and/or groundwater contamination sites within and in the vicinity of the Project.

## Impacts Not Evaluated Further

The following criteria were determined to have no impact for the underlying reasons.

> **The Project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one quarter mile of an existing or proposed school.**

There are no schools located within a quarter mile of the Project site. The nearest school to the Project site is the Plaza Elementary School located approximately 2.3 miles southwest of the site. No further impact would occur.

> **The Project would not be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5.**

As noted above in the setting section, the Project site was not found on any of the databases of hazardous release sites that were reviewed (SWRCB, 2015 and DTSC, 2015). No further impact would occur.

> **The Project would not be located within an area covered by 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.**

The nearest public use airport that is covered by an airport land use plan is the Orland Haigh Field Airport which is approximately 3 miles to the southwest which is outside of the influence area. No further impact would occur.

> **The Project would not be located within the vicinity of a private airstrip and would result in a safety hazard for people residing or working in the Project area.**

There are no private airstrips located within 2 miles of the Project site. No further impact would occur.

> **The Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.**

The Project site is located in a rural location that is sparsely populated. The Project would not require any road closures or other long term changes to the existing transportation network except for the modifications to the entrance from SR 32. As a result, there would no impact related to interference with emergency response or evacuation plans. No further impact would occur.

> **The Project would not 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.**

As noted above in the Setting section, the Project site is not located within a wildland fire hazard area. All improvements would be required to adhere to all fire codes contained in the California Building Code as well as any local Glenn County amendments. No further impact would occur.

## Impacts and Mitigation Measures

**Impact 3.5-1: Implementation of the Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. (Less than Significant with Mitigation)**

### Construction

Construction activities associated with development of the Project would not involve demolition of existing structures but would include earth work activities.

Earthwork activities for preparation of the construction of the proposed improvements could disturb soils that were previously contaminated by past land uses. Petroleum products, pesticides or herbicides, VOC or other hazardous materials that have been associated with past land uses of the site could be present in excavated soil or groundwater and subsequently released to the environment resulting in exposures to construction workers or the public. Contaminated soil or groundwater could also require disposal as a hazardous waste.

Hazardous materials in soil and groundwater, if identified, could be managed appropriately according to applicable laws and regulations to reduce the risks associated with exposures to individuals or releases to the environment. Cal/OSHA regulations require the preparation and implementation of a site health and safety plan to protect workers who could encounter hazardous materials, ensure that construction workers have specialized training and appropriate personal protective equipment. Regulations also require that excavated materials suspected of contamination be segregated, sampled and hauled to a landfill licensed for this type of waste. If groundwater dewatering is required for excavation of subsurface facilities, the groundwater may require treatment prior to discharge, in accordance with regulations.

### Operation

Operation and maintenance of the proposed facilities would involve the transport, use, storage and disposal of hazardous materials such as fuels, lubricants and hydraulic fluids for vehicles and onsite equipment. These products would be used for building maintenance and daily operations. Operations would use products such as the use of cleaners, oils, and lubricants. In addition, the facility could receive household hazardous waste as part of the MSW that is brought to the site. Both are discussed below.

### Operational Hazardous Materials

The phases of operations are discussed below.

#### *Pre-Processing – Phase I Separation Building*

Pre-processing would occur in the Phase I Separation Building that accepts mixed MSW and separates out organic materials, household hazardous wastes (those not dropped off at the

PHHWCF) and recyclable materials through a combination of manual and mechanical sorting. Incoming materials would be received from waste hauling trucks and private vehicles. Any household hazardous waste collected in this building would be segregated separately and disposed of in accordance with regulatory and disposal facility requirements, depending upon the items collected. In most cases it would be taken to the PHHWCF for processing.

#### *Phase II – Anaerobic Digestion*

As described in the Project description, the anaerobic process of Phase II would include further screening and removal of items such as plastics, metals, rocks, and other debris that would hinder the organic waste digestion process. As part of the preprocessing, these materials would be separated and retained in containers suitable for handling as solid waste or, where possible, material recovery. The non-organic separated residuals are not anticipated to be hazardous; as the hazardous materials would have been previously removed.

#### *Post-Processing*

The AD process would result in biogas production, solid/liquid separation and then processing for the separated solids and liquids.

**Digestion Process:** Upon completion of the digestion process, the digestate would undergo a solids separation process. The water would be further processed via the aerobic stabilization ponds/lagoons for subsequent beneficial uses that would include recirculation for subsequent use as process water for the digesters.

**Biogas and Biogas Process:** The biogas resulting from the AD process would be used to generate electricity via internal combustion engines, flared, or used for transportation fuel. Scrubber facilities would be needed to clean the biogas to remove sulfides and potentially other contaminants. Flushing of the scrubbers would produce sulfide effluent that would require appropriate disposal. The hazard from biogas is that it is a danger in confined spaces, an explosion hazard and a breathing hazard.

Handling of hazardous materials and hazardous wastes is covered by federal and State laws that minimize worker safety risks from both physical and chemical hazards in the workplace. Cal/OSHA is responsible for developing and enforcing workplace safety standards, including the handling and use of hazardous materials. Businesses that use hazardous materials are required to submit a Hazardous Materials Business Plan to the local CUPA, which performs inspections to ensure compliance with hazardous materials labeling, training, and storage regulations. For example, hazardous materials must be stored in containers according to the manufacturer’s guidelines and appropriately labeled. The Material Safety Data Sheet for each chemical must be available for review. Employers must inform workers of the hazards associated with the materials they handle and maintain records documenting training. Hazardous wastes must be segregated, sampled and disposed of at appropriately licensed landfill facilities. Transportation of hazardous materials is regulated by the DOT and Caltrans. Together, federal and State agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of accidental release.

The volume of hazardous materials stored onsite as part of facility maintenance and operations (fuels, lubricants, and hydraulic fluids) would be minor – sufficient to operate the facility - and handled in accordance with existing regulatory requirements including the Hazardous Materials Business Plan for the entire facility.

#### Construction and Demolition Wastes

The Project would include a separate Construction and Demolition processing area where construction materials can be processed and recycled similar to how it is handled at the existing Glenn County Landfill. The Project would operate under a Construction and Demolition Waste Management Plan which includes measures to handle potentially hazardous building materials. The Project would include measures to ensure the containment of lead-based paint and dust, nails, asbestos-based products and any biological contaminants that may otherwise pose a potential health hazard to workers or the public. Incorporation of appropriate screening and handling procedures to prevent exposure would be included in Project operations.

#### Household Hazardous Wastes

Currently, household hazardous waste is required to be directed to the Permanent Household Hazardous Waste Collection Facility (PHHWCF) at the Glenn County Landfill. Household hazardous waste is currently banned from being included with the municipal waste that is sent to the Glenn County Landfill. Under the Project, household hazardous waste would continue to be required to be directed to PHHWCF and would not be permitted at the Phase I Separation Building. Current records from Glenn County for fiscal 2013 indicate the following typical household hazardous wastes were received:

- Paint (latex and oil based)
- Used motor oil
- Antifreeze
- Fluorescent light ballasts
- Flammable liquids
- Pesticides, herbicides, other poisons
- Medical waste (sharps)

In total 147,374 pounds (lbs.) of household hazardous wastes were received at the PHHWCF and another 890 lbs. were recovered through load check for the 2012/2013 reporting period (CalRecycle, 2015). The largest components of the collections were: Electronic Wastes (110,418 lbs.); latex paint (22,200 lbs.); and oil–based paints (10,000 lbs.) (CalRecycle, 2015).

Since the requirements for the appropriate disposal of household hazardous wastes would not change under the Project, the volume of household hazardous wastes would likely be relatively similar to existing conditions, in proportion to the total permitted capacity of 500 tpd versus the 200 tpd limit currently at the landfill. Most household hazardous would be separated and delivered to the PHHWCF at the Project site prior to MSW being delivered to the Phase I Separation Building. Visual screening and load checks at the Phase I Separation Building would identify additional household hazardous wastes not dropped off at the PHHWCF (similar to the current Glenn County Landfill process).

In summary, due to the historical land uses at the site, there is a potential for construction activities to encounter hazardous building materials and/or hazardous materials released to the subsurface. If not managed appropriately, these could cause adverse effects in workers. With implementation of Mitigation Measure 3.5-1, the potential for encountering hazardous materials during construction would be reduced to less than significant levels by identifying the potential risk of encountering any contamination and providing sampling confirmation prior to commencement of earthwork activities. Once constructed the proposed facility would require the use, storage and disposal of hazardous materials for ongoing operational and maintenance activities. Because numerous laws and regulations govern the transport, use, storage, handling and disposal of hazardous materials to reduce the potential hazards associated with these activities, operation of the Project would not create a substantial hazard to the public or environment associated with hazardous materials.

### Mitigation Measure

> **Mitigation Measure 3.5-1:** Prior to final Project design and any earth disturbing activities, the applicant or agency(s) responsible shall conduct an updated Phase I Environmental Site Assessment (ESA) for Project site construction areas. The Phase I ESA shall be prepared by a qualified professional to assess the potential for contaminated soil or groundwater conditions at the project site. The Phase I ESA shall include a review of the 1996 Phase I and II investigations, existing and past land uses through aerial photographs, historical records, interviews of owners and/or operators of the property, observations during a reconnaissance site visit, and review of other relevant existing information that could identify the potential existence of contaminated soil or groundwater in accordance with ASTM Standard e1527-13. The Phase I shall also include a review of the potential presence of hazardous building materials for any onsite structures that may be demolished as part of the Project.
>
> If the findings of the Phase I ESA recommend further review or sampling, the applicant responsible shall retain a qualified firm to conduct follow-up sampling to characterize the contamination and to identify any required remediation that shall be conducted consistent with applicable regulations prior to any earth disturbing activities.

**Impact Significance After Mitigation:** Implementation of Mitigation Measures 3.5-1 would ensure that construction activities do not expose workers or the public to any adverse effects by ensuring that any existing contamination or existing hazardous building materials onsite would be removed from the site in accordance with regulatory requirements, and therefore would reduce impacts to less-than-significant levels.

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**Impact 3.5-2: The Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. (Less than Significant with Mitigation)**

### Construction

Construction activities for proposed development would require the use of certain hazardous materials such as fuels, oils, solvents, paints, and glues. Inadvertent release of large quantities of these materials into the environment could adversely impact workers, the public, soil, surface waters, or groundwater quality. The use of construction best management practices implemented as part of a Storm Water Pollution Prevention Plan (discussed further in Section 3.6, *Hydrology and Water Quality*) as required by the National Pollution Discharge Elimination System General Construction Permit would minimize the potential adverse effects to workers, the public, groundwater and soils. These could include the following:

- Establish a dedicated area for fuel storage and refueling activities that includes secondary containment protection measures and spill control supplies;
- Follow manufacturer's recommendations on use, storage and disposal of chemical products used in construction;
- Avoid overtopping construction equipment fuel gas tanks;
- During routine maintenance of construction equipment, properly contain and remove grease and oils.
- Properly dispose of discarded containers of fuels and other chemicals.

In general, aside from refueling needs for heavy equipment, the hazardous materials typically used on a construction site are brought onto the site packaged in consumer quantities and used in accordance with manufacturer recommendations. The overall quantities of these materials on the site at any one time would not result in large bulk amounts that, if spilled, could cause a significant soil or groundwater contamination issue. Spills of hazardous materials on construction sites are typically localized and would be cleaned up in a timely manner in accordance with spill response BMPs which require spill response materials be kept onsite during construction. As described above, refueling activities of heavy equipment would be conducted in a controlled dedicated area complete with secondary containment and protective barriers to minimize any potential hazards that might occur with an inadvertent release.

#### Operation

The Project involves the production of biogas generated through the AD processes. The biogas would be captured and could be combusted in a flare, used directly in internal combustion engines to produce electricity and heat, or used as transportation fuel. Biogas is comprised primarily of methane which is not toxic. However, methane has an ignition temperature of 1,000 degrees Fahrenheit (°F) and is flammable at concentrations between 5 percent and 15 percent in air. Unconfined mixtures of methane in air are not explosive; however, a flammable concentration within an enclosed space in the presence of an ignition source can explode. Methane is buoyant at atmospheric temperatures and disperses rapidly in air.

Unintentional releases of biogas from the AD facilities or pipelines could pose risks to human health and safety. For example, biogas could be released from a leak or rupture of the digester facility or one of the pipe segments. If the gas reaches a combustible mixture and an ignition source is present, a fire and/or explosion could occur, resulting in possible injuries and/or deaths.

Compliance with existing safety regulations and widely-accepted industry standards would minimize the hazard to the public and the environment. With respect to the flaring of biogas and potential fire hazards associated with the storage and transport of methane and any small quantities of fuels or oils used in operations, the NFPA has established standards for fire protection which would be applicable to the construction of AD facilities. These standards have been successfully implemented by numerous wastewater treatment facilities across the country. Construction and operation of facilities would comply with the California fire code, local building codes (including requirements for the installation of fire suppression systems), and gas pipeline regulations. The Glenn County Fire Department would be responsible for enforcing the provisions of the fire code. The OPS and CPUC regulate the safety of gas transmission pipelines. Standard safety measures for anaerobic treatment facilities that would minimize the potential for exposure to biogas include leak detection systems, warning signals, and safety flares to reduce excess gas capacity. If released to the environment, methane would be dispersed rapidly in air, minimizing the hazards of exposure.

Any biogas transmission pipelines or other biogas storage and transportation infrastructure would be designed, constructed and operated consistent with State and federal regulations to minimize the risk of rupture and accidental release. As described in the Regulatory Setting, the CPUC has rules governing design construction, testing, operation, and maintenance of gas gathering, transmission, and distribution piping systems. These rules incorporate the federal regulations by reference, but for natural gas pipelines, they do not impose any additional requirements affecting public safety. The federal pipeline regulations include specific standards for material selection and qualification, design requirements, protection from corrosion, worker training, safety and provisions for safety standards specific to the location of the pipeline relative to population densities and sensitive land uses.

Upset and accident conditions could also be a potential hazard associated with the offsite transport of household hazardous waste that is separated from the waste received at the PHHWCF. However, as stated above, existing local, state and federal requirements govern the containerization of hazardous waste and transportation requirements which include placard and safety documentation throughout all stages of transport.

In summary, given the required protective measures (i.e., best management practices under the General Construction Permit) and the quantities of hazardous materials typically needed for construction projects such as the proposed Project, the threat of exposure to the public or contamination to soil and/or groundwater from construction-related hazardous materials is considered a less than significant impact. Once constructed, compliance with existing laws and regulations would reduce the potential for upset and accident conditions to occur. In the unlikely event of a fire or explosion associated with biogas management, the Project could have the potential to expose nearby people or structures to a significant risk injury or death.

#### Mitigation Measure

> **Mitigation Measure 3.5-2:** Prior to project approval, the applicant shall prepare and implement a Fire Safety Plan that outlines fire hazards, describes facility operations procedures to prevent ignition of fires, requires regular inspection of fire suppression systems, and provides for worker training in safety procedures as well as protocols for responding to fire incidents. The Fire Safety Plan shall be reviewed by the Hamilton City Fire Protection District and the Glenn County air Pollution Control District (as the CUPA for Glenn County) for compliance with fire codes, handling and storage of hazardous materials, and other applicable County regulations, policies and goals related to fire safety.

**Impact Significance after Mitigation:** Less than Significant

Implementation of Mitigation Measure 3.5-2 would require worker training in fire safety procedures, reducing the potential for fire incidents and providing for prompt response in the event of a fire, and therefore would reduce impacts to less-than-significant levels.

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## *Cumulative Impact*

### Geographic Context

The geographical context for potential cumulative hazards and hazardous materials impacts to result in an increased risk of exposure due to a release of hazardous materials is the whole of Glenn County. The potential for cumulative scenario projects to cause a hazardous materials release resulting in an increased risk of exposure, and the project's contribution to such a risk, would be limited. Exposure to existing soil and groundwater contamination is generally site-specific and depends on past, present, and future uses and existing soil, sediment, and groundwater conditions. Any hazardous materials uncovered during construction activities would be managed consistent with applicable federal, State and local laws as provided above in the Regulatory Setting, to limit exposure and clean up the contamination. In addition, the storage, handling and transport of hazardous materials are also regulated by federal, State and local regulatory agencies to limit risk of exposure and would apply to the Project as well as any of the other current or reasonably foreseeable future projects.

**Impact 3.5-3: Development of Project could contribute to cumulative impacts related to hazardous materials. (Less than Significant)**

The contribution of the Project to cumulative risk of exposure would not be considerable. While construction and operational activities could result in accidental spills or leaks in the vicinity, the extent of the contamination is not likely to extend beyond the Project site boundaries due to the type and limited quantities of hazardous materials likely to be used (for example, motor fuels, hydraulic oils, paint, and lubricants). Furthermore, as identified above, all AD facility activities associated with the use, storage and transportation of hazardous materials would be required to adhere to all applicable laws and regulations just as other current or future projects would. Compliance with existing laws and regulations and mitigation measures for other land uses that involve hazardous materials would minimize the potential for harmful exposures to hazardous materials, fires, and upset and accident conditions.

**Mitigation:** Implement Mitigation Measures 3.5-1 and 3.5-2.

**Impact Significance After Mitigation:** In sum, the construction and operation of the Project in combination with other projects in the County would not create a significant hazard to the public or the environment through the routine transport, use, disposal or accidental release of hazardous materials, and fire hazards due to the site-specific nature of the potential impacts and existing laws, and regulations that minimize the risk of exposure, and implementation of mitigation measures for the Project in this Chapter of the EIR. Therefore, this is considered a less-than-significant cumulative impact with implementation of Mitigation Measures 3.5-1 and 3.5-2.

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## References

California Department of Forestry and Fire (CAL FIRE), *Fire Hazard Severity Zone Map*, http://www.fire.ca.gov/fire_prevention/fhsz_maps_glenn.php, accessed August 21, 2015.

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Department of Toxic Substances Control (DTSC), *Envirostor Database*, http://www.envirostor.dtsc.ca.gov/public/mapfull.asp?global_id=&x=-119&y=37&zl=18&ms=640,480&mt=m&findaddress=True&city=Glenn%20County,%20CA&zip=&county=&federal_superfund=true&state_response=true&voluntary_cleanup=true&school_cleanup=true&ca_site=true&tiered_permit=true&evaluation=true&military_evaluation=true&school_investigation=true&operating=true&post_closure=true&non_operating=true, accessed August 20, 2015.

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# 3.6 Hydrology and Water Quality

This section of the EIR evaluates potential environmental effects related to hydrology, drainage, and water quality that would result with implementation of the Glenn County Solid Waste Conversion Facility (Proposed project). The analysis addresses surface water, groundwater, flooding, stormwater, and water quality.

Four comments relating to hydrology or water quality were received in response to the Notice of Preparation (NOP) (**Appendix A**). A letter from the Hamilton City Community Services District reiterated concerns expressed in prior correspondence related to surface and ground water quality. The County of Glenn Health and Human Services Agency requested that impacts related to stormwater runoff and leachate be analyzed, particularly because of the proximity of the Project site to Stony Creek. The Central Valley Regional Water Quality Control Board described requirements under the Construction General Permit. The California Department of Transportation (Caltrans) stated that the Project site is located within the Federal Emergency Management Agency 100-year[1] floodplain and that a hydraulic study would be required as part of the permitting process to demonstrate that the Project would not cause an adverse effect related to flooding.

## 3.6.1 Environmental Setting

### Surface Water Resources

The major surface water feature in Glenn County is the Sacramento River, which is the primary source of surface irrigation water in the County. The total length of the Sacramento River is approximately 327 miles. Its drainage area encompasses 27,200 square miles, extending from the Coast Ranges in the west, the Cascade and Klamath Ranges in the north, and the Sierra Nevada in the east to the Sacramento–San Joaquin Delta to the south. For irrigation purposes, water from the river is diverted into two major canals, the Glenn-Colusa Canal and the Tehama-Colusa Canal. Stony Creek is also a predominant source of surface water, supporting two reservoirs within the County - Stony Gorge and Black Butte. Hydroelectric power generating facilities are located at both of these reservoirs. Stony Creek is the second largest tributary on the west side of the Sacramento Valley; it merges with the Sacramento River south of Hamilton City. The Stony Creek watershed is 741 square miles and includes portions of Glenn, Colusa, and Tehama counties. The watershed is roughly divided into Upper Stony Creek and Lower Stony Creek, with Black Butte Reservoir forming the boundary. The majority of the upper watershed is publicly owned (Mendocino National Forest), while most (96%) of the lower watershed is privately owned agricultural land.

[1] The term “100-year flood” refers to a flood that statistically has a one percent chance of occurring in any given year. The 100-year floodplain is the area that would be inundated during the 100-year flood.

The Project site is located approximately 600 feet north of Stony Creek streambed, and approximately 5 miles upstream of the confluence of Stony Creek and the Sacramento River. Black Butte Dam regulates Stony Creek upstream of the Project site, approximately 9 miles west of Orland. The dam was completed in 1963 to protect downstream areas from flooding and to provide water for local agriculture. **Figure 3.6-1**, **Regional Hydrogeography**, shows the boundary of the Stony Creek watershed, Stony Gorge and Black Butte reservoirs, and the Stony Creek/Sacramento River confluence.

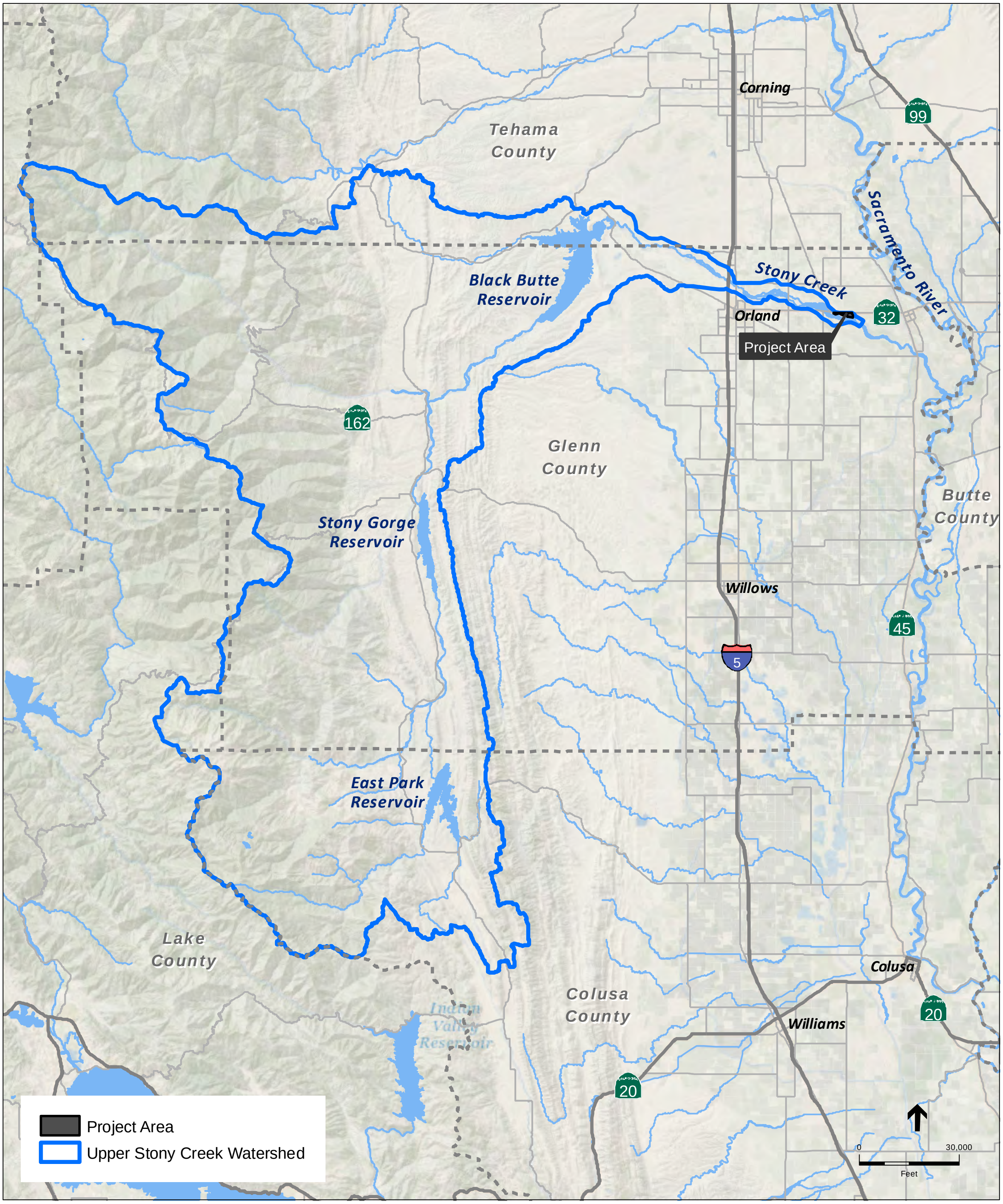
## Surface Water Quality

Data on Upper Stony Creek were collected from 1998 to 2002 by the California Department of Water Resources (DWR) from studies on East Park, Stony Gorge, and Black Butte Reservoirs. The principal water quality issue is mercury, which is known to be present in naturally occurring deposits in the upper watershed. Stony Gorge Reservoir is included on the State Water Resources Control Board's (SWRCB's) 303(d) list as an impaired water body for mercury (SWRCB, 2015). There is also concern about metals from abandoned mines, elevated temperatures attributable to lack of riparian shade canopy, and high erosion/sediment discharge rates; however, mercury is the only documented impairment. Lower Stony Creek data come from DWR monitoring (1999–2005) and from site monitoring as part of the Irrigated Lands Regulatory Program. Elevated levels of the pesticides diazinon and simazine have been detected. Temperature is also a concern. Temperatures are coldest at the outlet from Black Butte Dam and increase downstream as affected by air temperature, solar radiation, shading, and channel geometry. These issues aside, the principal management concern in Lower Stony Creek is accelerated channel erosion resulting from the modified hydrologic regime and from the persistent growths of invasive giant reed and saltcedar (SRWP, 2015).

## Flooding

The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) and delineates areas subject to flood hazards on Flood Insurance Rate Maps (FIRMs) for each community participating in the NFIP. The FIRMs show the areas subject to inundation by a flood that has a one percent chance or greater of being equaled or exceeded in any given year. This type of flood is referred to as the 100-year or base flood. Areas on FIRMs are divided into geographic areas, or zones, that FEMA has defined according to varying levels of flood risk. **Table 3.6-1**, **FEMA Flood Zone Designations**, includes a description of the risk associated with each zone. As shown on Figure 2-3 a portion of the southwestern corner of the Project Study Area (but not the Project facilities) is within the 100-year flood zone (Zone A; see Table 3.6-1) along Stony Creek. Most of the Project site had been previously mapped within the Federal Emergency Management Agency (FEMA) 100-year floodplain, but was removed through a FEMA-approved Letter of Map Amendment process.

The southernmost portion of the Project site is located within the Central Valley Flood Protection Board (CVFPB) Designated Floodway. More information on the CVFPB and designated floodways is provided under Regulatory Setting, below.




SOURCE: ESRI, 2012; CIWMC, 2004; ESA, 2015

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**Figure 3.6-1**
Regional Hydrogeology

**TABLE 3.6-1**
**FEMA FLOOD ZONE DESIGNATIONS**

| Zone | Description |
|---|---|
| **Moderate to Low Risk Areas** | |
| B and X (shaded) | Area of moderate flood hazard, usually the area between the limits of the 100-year and 500-year events. Are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year event, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile. |
| C and X (unshaded) | Area of minimal flood hazard, usually depicted on FIRMs as above the 500-year flood level. |
| **High Risk Areas** | |
| A | Areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. Because detailed analyses are not performed for such areas; no depths or base flood elevations are shown within these zones. |
| AE | The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones. |
| A1-30 | These are known as numbered A Zones (e.g., A7 or A14). This is the base floodplain where the FIRM shows a BFE (old format). |
| AH | Areas with a 1% annual chance of shallow flooding, usually in the form of a pond, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones. |
| AO | River or stream flood hazard areas, and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Average flood depths derived from detailed analyses are shown within these zones. |
| AR | Areas with a temporarily increased flood risk due to the building or restoration of a flood control system (such as a levee or a dam). Mandatory flood insurance purchase requirements will apply, but rates will not exceed the rates for unnumbered A zones if the structure is built or restored in compliance with Zone AR floodplain management regulations. |
| A99 | Areas with a 1% annual chance of flooding that will be protected by a Federal flood control system where construction has reached specified legal requirements. No depths or base flood elevations are shown within these zones. |
| **Undetermined Risk Areas** | |
| D | Areas with possible but undetermined flood hazards. No flood hazard analysis has been conducted. Flood insurance rates are commensurate with the uncertainty of the flood risk. |

SOURCE: FEMA, 2015

## Groundwater

### *Groundwater Basin*

The eastern portion of Glenn County overlies the Sacramento Valley groundwater basin, which contains supplies of high quality groundwater to depths of 800 feet (Glenn County, 1993). Groundwater is the primary source of domestic water supply in the County and also is used for irrigation in areas where surface water is not available. The Stony Creek area, including the gravel ridge from Stony Creek south and parallel to County Road P, is a major recharge area. The Project is located in the Sacramento Valley groundwater basin, Colusa subbasin (DWR, 2006).

The Project is located in the Stony Creek Fan, an alluvial deposit that forms much of the shallow aquifer in eastern Glenn County and one of the major sources of groundwater recharge in the Sacramento Valley.

The California Statewide Groundwater Elevation Monitoring Program (CASGEM) identifies the Colusa subbasin as a medium priority basin due to severely declining groundwater levels along the west side of Glenn County, moderately declining groundwater levels in the Capay area, and high total dissolved solids (TDS) in the shallow aquifer in the Maxwell- Williams area (DWR, 2014).

#### *Groundwater Quality*

The groundwater quality in the regional groundwater basin is considered excellent (Glenn County, 1993; DWR, 2006). The Sacramento Valley basin is a calcium-magnesium bicarbonate type (DWR, 2006).

## 3.6.2 Regulatory Setting

### Federal

#### *Clean Water Act*

The Clean Water Act (CWA) was enacted with the primary purpose of restoring and maintaining the chemical, physical, and biological integrity of the Nation's waters. The CWA directs states to establish water quality standards for all "waters of the United States" and to review and update such standards on a triennial basis. The EPA has delegated responsibility for implementation of portions of the CWA, including water quality control planning and control programs, such as the National Pollutant Discharge Elimination System (NPDES) Program, to the SWRCB and the RWQCB for water quality control planning and control programs, such as the NPDES Program.

Responsibility for the protection of water quality in California rests with the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards (RWQCBs). The SWRCB establishes statewide policies and regulations for the implementation of water quality control programs mandated by federal and state water quality statutes and regulations. The RWQCBs develop and implement Water Quality Control Plans (Basin Plans) that consider regional beneficial uses, water quality characteristics, and water quality problems. The Central Valley Regional Water Quality Control Board (CVRWQCB) (Region 5) implements a number of federal and state laws, the most important of which are the state Porter-Cologne Water Quality Control Act and the federal CWA. The Project site is located within Region 5 and is subject to CWA requirements.

Section 301 of the CWA prohibits the discharge of any pollutant into the Nation's waters without a permit; while Section 402 of the CWA contains general requirements regarding NPDES permits.

Under Section 404 of the CWA, the U.S. Army Corps of Engineers (USACE) has the authority to regulate activity that could discharge fill or dredge material or otherwise adversely modify wetlands or other waters of the U.S. Under Section 401, the CWA requires that an applicant for a

Section 404 permit (to discharge dredged or fill material into waters of the United States) first obtain a certificate from the appropriate state agency stating that the fill is consistent with the State's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the SWRCB to the nine regional boards. The CVRWQCB is the appointed authority for Section 401 compliance in the Project site.

#### Water Quality Standards

Section 303 of the federal CWA requires states to adopt water quality standards for all surface water of the United States. Where multiple uses exist, water quality standards must protect the most sensitive use. Water quality standards are typically numeric, although narrative criteria based upon biomonitoring methods may be employed where numerical standards cannot be established or where they are needed to supplement numerical standards. Section 303(d) requires that the states make a list of waters that are not attaining standards after the technology-based limits are put into place. For waters on this list (and where the EPA administrator deems they are appropriate), the states are to develop total maximum daily loads or TMDLs established at the level necessary to implement the applicable water quality standards. Federal regulations require that an implementation plan be developed along with the TMDL and Section 303(d), 303(e), and their implementing regulations require that approved TMDLs be incorporated into water quality control plans. The EPA has established regulations (40 CFR 122) requiring that NPDES permits be revised to be consistent with any approved TMDL. The Project would be subject to the water quality standards set forth in the Water Quality Control Plan for the Sacramento and San Joaquin River Basins, which is described below under the 'Basin Plan' subheading.

#### National Pollutant Discharge Elimination System

Title 40 of the Code of Federal Regulations (40 CFR) includes EPA regulations to implement the NPDES permit system, which was established under the federal Clean water Act (CWA) to regulate municipal and industrial discharges to surface waters of the U.S. Each NPDES permit contains limits on allowable concentrations and mass emissions of pollutants contained in the discharge. Section 402 of the CWA contains general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that EPA must consider in setting effluent limits for priority pollutants. The U.S. Environmental Protection Agency (USEPA) has delegated permitting responsibility within California to state agencies. For additional discussion of NPDES permitting requirements relevant to the Project, please refer to the discussion of state level regulations, below.

### *Floodplain Regulations*

As described above, FEMA administers the NFIP. Federal regulations governing development in a floodplain are set forth in Title 44, Part 60 of the Code of Federal Regulations (CFR). FEMA imposes building regulations on development within flood hazard areas depending upon the potential for flooding within each area. Building regulations are incorporated into the municipal code of jurisdictions participating in the NFIP. Title 15, Chapter 15.32, Floodplain Damage Prevention, of the Lincoln City Code includes requirements for compliance with Title 44, Part 60 of the CFR. FEMA allows non-residential development in the floodplain, provided it meets regulatory standards for that type of development.

## State

The SWRCB and RWQCB are responsible for ensuring implementation and compliance with the provisions of the federal CWA, California's Porter-Cologne Water Quality Control Act, and NPDES program. Along with the SWRCB and RWQCB, water quality protection is the responsibility of numerous water supply and wastewater management agencies, as well as city and county governments, and requires the coordinated efforts of these various entities.

### *Porter-Cologne Water Quality Control Act*

The Porter-Cologne Water Quality Control Act establishes the SWRCB and each RWQCB as the principal State agencies for coordinating and controlling water quality in California. Specifically, the Porter-Cologne Water Quality Control Act authorizes the SWRCB to adopt, review, and revise policies for all waters of the state (including both surface water and groundwater) and directs the RWQCBs to develop regional Basin Plans. Section 13170 of the California Water Code also authorizes the SWRCB to adopt water quality control plans on its own initiative.

### *Basin Plan*

The CVRWQCB has the authority to implement water quality protection standards through the issuance of permits for discharges to waters at locations within its jurisdiction. Water quality standards for the Sacramento River and its tributaries are specified in Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin (Basin Plan) prepared by the CVRWQCB in compliance with the CWA and the State Porter-Cologne Water Quality Control Act. Because the project site is located within the Sacramento River Basin, all discharges are subject to the surface water and groundwater water quality standards set forth in the Basin Plan.

The principal elements of the Basin Plan are a statement of beneficial water uses protected under the plan; water quality objectives necessary to protect the designated beneficial water uses; and strategies and time schedules for achieving the water quality objectives. Beneficial uses and their associated water quality objectives, together, comprise the relevant water quality standards. The water quality objectives are achieved primarily through the establishment and enforcement of Waste Discharge Requirements (WDRs). WDRs may include effluent limitations or other requirements that are designed to implement applicable water quality control plans, including designated beneficial uses and the water quality objectives established to protect those uses and prevent the creation of nuisance conditions.

The beneficial uses of any specifically identified water body generally apply to its tributary streams. The designated beneficial uses for the Sacramento River reach to which Stony Creek drains include municipal and domestic supply; agricultural irrigation supply; water contact and non-contact water recreation; warm and cold freshwater habitat; wildlife habitat; warm and cold migration of aquatic organisms; warm and cold spawning, reproduction, and/or early development; and, navigation. For unidentified water bodies, the beneficial uses are be evaluated on a case-by-case basis. Designated beneficial uses or potential beneficial uses for groundwater include municipal and domestic supply; industrial process and service supply; and, agriculture.

In instances where water quality is better than that prescribed by the objectives, the State Antidegradation Policy applies (State Board Resolution 68-16: Statement of Policy with Respect to Maintaining High Quality of Waters in California). This policy is aimed at protecting relatively uncontaminated aquatic systems where they exist and preventing further degradation. The state's Anti-degradation Policy is consistent with the federal Anti-degradation Policy, as interpreted by the SWRCB in State Board Order No. 86-17.

### *NPDES Stormwater Regulations*

There are two applicable types of diffuse-source discharges[2] that are controlled by the NPDES program: discharges caused by general construction activities and stormwater in municipal stormwater systems (either as part of a combined system or as a separate system in which runoff is carried through a developed conveyance system to specific discharge locations).

The SWRCB adopted a statewide NPDES General Permit for Storm Water Discharges Associated with Construction Activity (Construction General Permit) (Order No. 2009-0009-DWQ, NPDES No. CAR000002) in September 2009. The Permit was subsequently amended by Order Nos. 2010-0014-DWQ and 2012-0006-DWQ. Every construction project that disturbs one or more acres of land surface or that are part of a common plan of development or sale that disturbs more than one acre of land surface would require coverage under the Construction General Permit. Construction activities subject to the Construction General Permit include clearing, grading, and disturbances to the ground, such as stockpiling or excavation. The proposed project would be required to implement the construction permit requirements.

To obtain coverage under the Construction General Permit, the landowner or other applicable entity must file Permit Registration Documents (PRDs) prior to the commencement of construction activity, which include a Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPPP), and other documents required by the Construction General Permit.

The Construction General Permit requires specific minimum Best Management Practices (BMPs), depending upon the project sediment risk (Risk Level 1 through 3). Risk Level 1 projects are subject to minimum BMP and visual monitoring requirements; Risk Level 2 projects are subject to numeric actions levels (NALs) and some additional monitoring requirements; and Risk Level 3 projects are subject to numeric effluent limitations (NELs) and more rigorous monitoring requirements, such as receiving water monitoring and, in some cases, bioassessment. The risk is a calculated value that is determined when the SWPPP is prepared. The SWPPP will identify the appropriate risk level and related BMPs and other requirements. The results of monitoring and corrective actions, if any, must be reported annually to the SWRCB. This permit also specifies minimum qualifications for SWPPP developers and construction site inspectors. All BMPs include a description of the action that must be taken to protect water quality, a schedule,

[2] Diffuse sources originate over a wide area rather than from a definable point. Stormwater runoff is a diffuse source pollution regulated under the NPDES program because it is discharged at a discrete location through a conveyance system.

details regarding maintenance and inspection, and the individual(s) or entity that are responsible for implementation of the measure.

### *Waste Discharge Requirements*

California's regional boards also oversee permitting as authorized under the Porter-Cologne Water Quality Control Act. If a project does not require federal permitting, it may still require a state permit. Found in Division 7 of the California Water Code, the Porter-Cologne Act requires persons who discharge waste that could affect the quality of waters of the State to file a Report of Waste Discharge with the appropriate regional board. Each regional board can adopt Waste Discharge Requirement (WDR) General Orders (GOs) or individual WDR orders to regulate such discharges, and a given discharger will be subject to Waste Discharge Requirements (WDRs) either under a GO or a project specific state permit. WDRs usually include discharge prohibitions and discharge specifications including flow volumes and water quality constituent limitations to which a discharger must adhere. WDRs usually impose water quality monitoring requirements, and may require liner systems or other engineered features.

The limitations imposed by WDRs vary from region to region and from project to project, depending upon proposed discharge characteristics, and sensitivities of affected resources. In this manner, WDRs protect waters of the State from significant water quality degradation. Alternatively, if no degradation of water quality is anticipated from a proposed discharge, the regional board may issue a conditional waiver of WDRs.

### *Central Valley Flood Protection Board*

The CVFPB works in close partnership with local agencies, DWR, and USACE to reduce the risk of catastrophic flooding in California's Central Valley. The geographic extent of CVFPB jurisdiction includes the Central Valley and all tributaries and distributaries of the Sacramento and San Joaquin Rivers and the Tulare and Buena Vista basins. Under California law, any modification to the federal/State flood control system, encroachment, or project on or near the Sacramento and San Joaquin Rivers or their tributaries must be approved by the CVFPB. The CVFPB and its staff make sure that there are no negative hydraulic, geotechnical, or other structural impacts associated with the approved alterations, encroachments, or projects. Title 23, Waters, Division 1, Central Valley Flood Protection Board, of the California Code of Regulations (CCR) contain the regulations enforced by the CVFPB.[3] Stony Creek is located within CVFPB jurisdiction. As shown in Figure 2.3, Site Plan, the southernmost portion of the Project Study Area is located within the CVFPB Designated Floodway. The term Designated Floodway refers to the channel of the stream and that portion of the adjoining floodplain reasonably required providing for the passage of a design flood[4]; it is also the floodway between existing levees as adopted by the CVFPB or the Legislature. The Project may require a permit from the CVFPB.

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3 California Code of Regulations. *Title, 23, Waters, Division 1, Central Valley Flood Protection Board.*

4 Design floods are hypothetical floods used for planning and floodplain management investigations. A design flood is defined by its probability of occurrence. It represents a flood that has a particular probability of occurring in any given year.

## Local

### *Glenn County Code*

#### Surface Water Quality

The Glenn County Code does not specifically address operation of municipal solid waste (MSW) materials recovery facilities (MRF), transfer stations (TS), or anaerobic digestion (AD) facilities. Title 7, Health and Safety, Section 07.080.170, Disposal areas--Environmental control, states: "No hazardous, unusual or regulated waste or substance shall be deposited or dumped in disposal areas in violation of any applicable federal, state or local law, statute, or regulation relative to public health and safety, fish and wildlife protection, air pollution, water quality control, or environmental control." Therefore, the State and federal regulations described above are what apply to the Project.

#### Drainage

Title 15, Unified Development Code, Section 15.650, Drainage, of Glenn County Code includes regulations on new stormwater drainage systems. Section 15.650.010, General Requirement, states: "All subdivisions shall be protected from flood hazard and inundation by storm waters originating without and within the proposed subdivision. The design and construction of drainage facilities shall be such that water courses traversing the subdivision and water emanating from within the subdivision will be carried through and off the subdivision without injury to improvements, residential sites, or adjacent properties. Drainage waters shall not be discharged onto existing county rights-of-way except in manner approved by the public works director. All proposed subdivisions, whether or not they front on existing county rights-of-way, shall meet the minimum requirements of this chapter." Note that the term subdivision does apply to the Project even though it does not include residential uses. Section 15.650.030, Drainage Systems, states: "Drainage systems and all bridges shall be designed to pass a one hundred-year frequency flood without damage to the structure or adjacent property, except that drainage systems draining an area smaller than one square mile may be designed for ten-year frequency floods if ponding due to the one hundred-year flood will not cause damage." The location of the main facilities (the MRF/AD Area) is approximately 8.5 acres, which is less than one square mile. Therefore, the MRF/AD Area drainage system would be required to pass at least a 10-year flow provided that ponding due to the 100-year flood would not cause damage to the proposed facilities.

#### Groundwater

Title 20, Water, Section 20.030, Groundwater Coordinate Resource Management Plan, addresses groundwater quantity and quality. Section 20.030.010, Purpose, states: "It is the purpose and intent of this chapter to establish an effective policy concerning groundwater and coordinated resource management that will assure the overall health, welfare, safety, economy and environment of County is not adversely affected by excessive groundwater use. The County seeks to foster prudent groundwater practices, and to coordinate them with other water management practices to avoid significant adverse environmental, social, and economic impacts." The County does not regulate, in any manner, the use of groundwater; unless safe yield is exceeded or there is a threat to public health, welfare, or safety, but instead focuses on monitoring programs that will allow for the effective management of groundwater availability (groundwater level), groundwater quality, and indications of land subsidence. The Preliminary Plan for Groundwater and Coordinated Water Management (Preliminary Plan) was adopted by the Board in May 2006 and incorporated goals and tasks for water management. With the implementation of the Preliminary Plan, the County works toward a better understanding of managing water as a resource and provide an organization for management of the resource.

### *Glenn County General Plan*

The Glenn County General Plan was used to determine what local policies are in place relating to hydrology and water quality. The main source of domestic water in Glenn County is groundwater, and maintenance of groundwater quality is of primary importance to County residents. The following goals and policies focus on support of existing regulatory and compliance efforts that protect groundwater and surface water quality.

Goal NRG-2: Protection and management of local water resources.

Policy NRP-24: Recognize the following local priorities when dealing with questions of ground and surface water use:

Highest 1) Household/Domestic
2) Agriculture
3) Industrial/Commercial
4) Wildlife/Conservation
Lowest 5) Exportation

Policy NRP-25: Protect groundwater recharge areas in the county from over-covering and contamination by carefully regulating the type of development which occurs within these areas.

Policy NRP-26: Discourage onsite sewage disposal systems in areas with high groundwater recharge potential and eliminate existing concentrations of septic tanks in such areas through construction of community sewage treatment and disposal systems.

Policy NRP-27: Prohibit uses with the potential to accidentally discharge harmful groundwater pollutants in areas of high groundwater recharge, unless appropriate mitigation measures have been incorporated into the operation of such uses.

Policy NRP-29: Limit structural coverage and impervious surfaces within areas of high groundwater recharge through application of zoning that recognizes the importance of this feature.

Policy NRP-30: Protect important watershed areas from poor development practices and potential degradation.

# 3.6.3 Impacts and Mitigation Measures

## Significance Criteria

Per Appendix G of the CEQA Statute and Guidelines, the Project would result in a significant effect if it would:

1) Violate any water quality standards or waste discharge requirements;
2) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted);
3) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation onsite or offsite;
4) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding onsite or offsite;
5) 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;
6) Otherwise substantially degrade water quality;
7) 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;
8) Place within a 100-year flood hazard area structures which would impede or redirect flood flows;
9) 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; and/or
10) Results in inundation by seiche, tsunami, or mudflow.

The first portion of significance criterion (5) above, “Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems” is addressed in Section 3.9, Utilities and Services. The remainder of this significance criterion is addressed below under Impact 3.6-2.

## Methodology

The following impact analyses are qualitative and based on existing hydrologic and water quality information. It is assumed that all aspects of the Project would comply with all applicable laws, regulations, design standards, and plans. Impacts on water quality were evaluated by considering the type of pollutants the project would generate during construction and operation and whether meeting the requirements of applicable regulations would reduce potential impacts to a less than significant level. Onsite drainage impacts were evaluated in the same manner as water quality impacts. Potential impacts related to flooding were analyzed by comparing the 100-year floodplain boundary as defined by FEMA and the Designated Floodway boundary as defined by the CVFPB with the location of the Project site. The analysis of impacts to groundwater considers how redevelopment of the Project site would influence groundwater recharge based on increases in impervious surfaces as a result of the project and the existing and projected condition of the groundwater basin. An analysis of impacts to water supply, sewer, and stormwater infrastructure is included in Section 3.9, Utilities and Services.

## Impacts Not Evaluated Further

The Project would not result in impacts relating to the following CEQA criteria:

> **The Project would 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. (No Impact)**

The Project does not include the construction of housing, and, therefore, no impact would occur. Impacts associated with flooding and the proposed land uses are analyzed below.

> **The Project would result in inundation by seiche, tsunami, or mudflow. (No Impact)**

The Project site is not located near a lake or other enclosed or partially enclosed body of water where a seiche could occur or near large hillslopes where mudflows occur. The Project site is located outside of a mapped tsunami inundation area (CDOC, 2015). Therefore, no impact would occur.

## Impacts and Mitigation Measures

**Impact 3.6-1: The Project could degrade water quality. (Less than Significant with Mitigation)**

The following analysis evaluates impacts under significance criteria (1), (3), (5), and (6). As stated above, the first portion of significance criterion (5), “create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems” is addressed in Section 3.9, Utilities and Services. The remainder of significance criterion (5) is addressed below.

### *Construction*

The delivery, handling, and storage of construction materials and wastes, as well as the use of construction equipment, could result in stormwater contamination that could degrade water quality and result in the violation of a water quality standard. Soils are very permeable on the Project site, and any accidental releases would likely impact local groundwater. Spills or leaks from heavy equipment and machinery can result in oil and grease contamination, and some hydrocarbon compound pollution associated with oil and grease can be toxic to aquatic organisms at low concentrations. Staging areas or building sites can also be the source of pollution because of the use of paints, solvents, cleaning agents, and metals during construction. Impacts associated with metals in stormwater include toxicity to aquatic organisms, such as bioaccumulation, and the potential contamination of drinking supplies. Pesticide use (including herbicides and fungicides) during site preparation work is another potential source of stormwater contamination. Pesticide impacts to water quality include toxicity to aquatic species and bioaccumulation in larger species. Larger pollutants, such as trash, debris, and organic matter, are additional pollutants that could be associated with construction activities. Potential impacts include human health hazards and aquatic ecosystem damage.

The Project would include construction activities such as clearing and grubbing, pavement laying, excavation and trenching for foundations and utilities, soil compaction, cut and fill activities, and grading, all of which would temporarily disturb soils and alter existing drainage patterns. Disturbed soils are susceptible to high rates of erosion from wind and rain, resulting in sediment transport from the site. Erosion and sedimentation affects water quality through interference with photosynthesis, oxygen exchange, and the respiration, growth, and reproduction of aquatic species. Additionally, other pollutants, such as nutrients, trace metals, and hydrocarbons, can attach to sediment and be transported downstream, which can contribute to degradation of water quality.

Project construction would require compliance with and coverage under the Construction General Permit. The Construction General Permit requires that specific minimum water quality BMPs during construction, as well as additional BMPs, be identified in a Stormwater Pollution Prevention Plan (SWPPP). These include specific minimum BMPs such as good site management, or ‘good housekeeping’ for construction materials (e.g., trash disposal, sanitary wastes, recycling, and proper material handling), waste management, specific vehicle storage and maintenance practices, and installation of erosion control measures during the rainy season.

The SWPPP must include specific minimum erosion and sediment control BMPs for activities associated with construction. Erosion and sediment controls are the structural and non-structural practices used during the construction process to keep sediment in place (erosion control) and to capture any sediment that is moved, usually by stormwater, before it leaves the site (sediment control). The general methods of erosion control include: minimizing disturbed area; phasing construction activities; controlling stormwater flowing onto and through the project site; stabilizing soils promptly after disturbance; and protecting slopes. General sediment control methods include: protecting storm drain inlets; establishing perimeter controls; retaining sediment onsite; establishing stabilized construction exits; and inspecting and maintaining controls.

As described above under Regulatory Setting, the specific BMPs that are appropriate for the Project would be identified during preparation of the SWPPP, in coordination with the Regional Water Quality Control Board. All BMPs include a description of each action that must be taken to protect water quality, a schedule, details regarding maintenance and inspection, and the individual(s) or entity that is responsible for implementation of the measure. Preparation of the SWPPP and construction site inspection and monitoring must be prepared and performed by qualified personnel as noted in the Construction General Permit. As described above under Regulatory Setting, the goal of the NPDES stormwater regulations is to improve the quality of stormwater discharged to receiving waters to the “maximum extent practicable” through the use of BMPs.

## *Operation*

### Phase 1

Under Phase 1, incoming material would be sorted through the proposed MRF, in order to separate organic materials for use as composting feedstock or AD feedstock at another digester, recyclables, and residual materials for landfill disposal. As discussed in Chapter 2, incoming trucks would deliver waste materials inside the MRF building, thereby eliminating potential for contact with stormwater. Sorting activities would also be completed inside the MRF building, and all stormwater would be directed away from contact with waste, including incoming waste and separated recyclable, organic, and residual landfill materials. Incoming construction and demolition materials would be managed within the Construction and Demolition Receiving and Processing Area.

Generally, incoming feedstocks to the facility could contain high levels of sediment, organic matter, nutrients, inorganic salts, and fugitive trash. Depending on the composition of the feedstock, other potential water quality pollutants may be present in small quantities, including sediment, heavy metals, hydrocarbons, and other species. During processing, wash down of equipment and handling operations may result in the loss of a small amount of incoming material. In this manner, pollutants associated with Phase 1 operations could be accidentally released from the project site or discharged during storm events, and enter surface waters or leach into groundwater.

Stormwater would be managed so as to be directed away from temporary construction and demolition waste stockpiles, and away from the proposed MRF facilities, which would reduce potential for degradation of water quality.

### Phase 2

CleanWorld estimates the AD facility would generate a maximum of approximately 28,000 gallons of process wastewater per day. This includes approximately 15,000 gallons per day of water injected into the process to maintain appropriate water content. The process water would be treated in onsite aerobic stabilization ponds to reduce Biological Oxygen Demand (BOD) and ammonia to acceptable levels, allowing the water to be recirculated back into the process. In this manner, all process water would be recirculated between the aerobic stabilization ponds and the digester tanks, with no anticipated discharge.

There is a potential for the inadvertent release of liquids from certain parts of the planned facility. These areas include:

1. The Royal Flush wet organics separation process tank.
2. The AD system tanks and interconnecting piping system.
3. The $H_2S$ removal system vessel and piping.
4. The screw press that dewaters the digestate generated from the AD system tanks.
5. The aerobic stabilization ponds.

Any liquid that has come in contact with solid waste and is put into a tank, vat, or vessel is considered to be contaminated. Spills and leaks can occur due to equipment failure and operator error. A contaminated liquid spill can occur in the process from several actions:

- A tank accidentally being overfilled (i.e., a supply pump malfunctions).
- A tank bottom drain accidentally being left open.
- A blockage in the outflow pipe of a tank causing an overflow.
- A forklift or other mobile equipment hits and breaks a process pipe.
- A tanker carrying digestate or liquid is overfilled or loses liquid through an open drain valve or improper hose connection.
- The aerobic ponds could be overfilled by a pump malfunction or a pipeline from the screw press to the ponds breaks.
- The liner of the aerobic pond develops a leak.

Many, if not all, of these inadvertent liquid release points can be mitigated by standard design safety features that include providing properly designed secondary leak containment piping and/or structures made of impermeable, sturdy, and chemical resistant materials. If these features are incorporated and trained operators and other appropriate spill response equipment is readily available, a release should normally be captured within the leak containment and result in little or no significant lasting adverse effect on water quality.

However, sometimes with an unexpected operating problem, it may be necessary to pump out contents of the larger tanks or a portion of the pond liquid into a tanker truck. This is typically done with portable pumps and hoses and the truck is located outside of a secondary containment structure. This situation presents an elevated risk of a spill having more direct access to the environment and the potential for having a deleterious effect on water quality is higher.

The other location where a release or spill has a higher risk of producing an adverse water quality is at the proposed aerobic stabilization ponds. The pipeline coming from the AD system buffer tank to the pond may be placed underground. The pipeline could develop a leak which could go unnoticed and over time could result in groundwater being at higher risk of being affected. Also, the lining system of the ponds can develop a leak. If not discovered and fixed, the leak could result in groundwater being at higher risk of being affected.

The Project would likely experience some unplanned releases of liquids, solid byproducts, and emissions, which would result in some level of surface water and groundwater quality degradation. This is typical of nearly every waste processing facility. The design of the Project and the use of technology, an effective personnel training program, and a good operating and maintenance plan can significantly reduce and mitigate many of these potentially adverse events.

During post-processing, digestate would be dewatered to separate residual solids and liquids. Residual solids would then be hauled offsite to a compost site for further processing or hauled offsite to a permitted landfill. The liquid fraction of the digestate would be conveyed to aerobic stabilization ponds and recirculated back to the digesters. The Project would not discharge the process water to land or Stony Creek.

After digestion, residual solids may contain water quality pollutants. The type and concentration of pollutants in residual solids can vary substantially depending upon the feedstock composition and digestion practices. In general, residual solids are expected to contain substantial amounts of organic matter and sediment, as well as significant levels of salt, nutrients, and in some cases, heavy metals, pathogens, and toxic organic and/or inorganic pollutants. Residual solids containing high levels of heavy metals or toxins would be required to be handled as a waste and disposed of in an appropriately permitted landfill where they would not have a significant potential to adversely impact surface water or groundwater.

In general, liquid digestate may contain elevated levels of nutrients (nitrogen and phosphorous compounds), salts (inorganic dissolved solids), microbes (some of which may be pathogenic), heavy metals, and other organic and inorganic constituents associated with the feedstock. Discharge to an evaporation pond would result in evaporation of the water fraction of liquid digestate, and would leave behind a slurry or solid fraction, which would include any salts, sediment, heavy metals, and other pollutants that were present in the digestate. The solid fraction would be periodically removed and disposed of in an appropriate landfill or, if appropriate, be hauled offsite as compost feedstock. Liquid from evaporation ponds could potentially leak and adversely impact groundwater quality.

Discharge of liquid digestate to surface waters can only occur pursuant to an NPDES permit promulgated by the CVRWQCB. Adherence to the permitting requirements for such a permit would be expected to reduce or minimize the concentration of water quality pollutants discharged to surface waters. However, Project design does not include discharge of liquid digestate or other process waters to surface waters.

During construction, potential for water quality degradation would be minimized by adhering to the requirements of the Construction General Permit. During Project operation, process water, stormwater from the Project operations area, and solids, unless carefully monitored and managed to protect water quality, could result in degradation of natural waters. This impact is considered potentially significant. Implementation of Mitigation Measures 3.6-1a through 3.6-1f would be required.

### Mitigation Measures

> **Mitigation Measure 3.6-1a:** All chemical holding tanks and vessels shall be equipped with secondary spill/leak containment features that are sized, as a minimum, to hold 100% of the contents of the single largest tank or vessel (if they are completely covered from rain), and the containment volume adjusted up to compensate for any other equipment that reduces the containment volume. Containment areas shall also have automatic leak sensors and audible alarms and should send a signal to the control room should a leak be detected. All tanks and vessels holding process liquids shall be equipped with containment structures or features sufficient to convey overflow to the proposed aerobic stabilization ponds, which shall be designed to include sufficient freeboard to contain any potential overflow from the system, including rainfall.

**Mitigation Measure 3.6-1b:** The stabilization pond design shall include use of a double-lined geomembrane system with an interstitial leak detection zone that can periodically be sampled to determine if a leak is occurring in the primary liner. The geomembranes shall be underlain by a geosynthetic clay liner (GCL).

**Mitigation Measure 3.6-1c:** During pre-processing, all water that contacts MRF, construction and demolition area, and digester feedstock, including stormwater from feedstock handling and storage facilities and water from equipment washdown and feedstock wetting, shall be contained until appropriately disposed or utilized. Best Management Practices (BMPs) may be used to reduce loading of sediment, nutrients, trash, organic matter, and other pollutants. These BMPs may include, but are not limited to, trash grates and filters, oil-water separators, mechanical filters such as sand filters, vegetated swales, engineered wastewater treatment wetlands, settling ponds, and other facilities to reduce the potential loading of pollutants into surface waters or groundwater.

**Mitigation Measure 3.6-1d:** The project applicant shall ensure that (1) drainage from all feedstock loading, unloading, and storage areas is contained onsite or treated to remove trash and stray feedstock, and sediment prior to release as permitted; (2) in all feedstock loading and unloading areas, and all areas where feedstock is moved by front loaders or other uncovered or uncontained transport machinery, the applicant shall ensure that mechanical sweeping and/or equivalent trash control operational procedures are performed at least daily, during operations; and (3) the facility operator shall train all employees involved in feedstock handling so as to discourage, avoid, and minimize the release of feedstock or trash during operations.

**Mitigation Measure 3.6-1e:** In order to minimize water quality degradation associated with accidental spills, the applicant shall complete and adhere to the requirements of a Spill Prevention, Control, and Countermeasure (SPCC) Plan (SPCC), which is based on the federal SPCC rule. Notification of the SPCC Plan shall be provided to the local Certified Unified Program Agency (CUPA). The SPCC Plan shall contain measures to prevent, contain, and otherwise minimize potential spills of pollutants during facility operation, in accordance with federal, state, and local U.S. EPA requirements. The SPCC Plan shall provide for installation and monitoring of secondary containment and/or leak detection systems to ensure that AD liquids are not accidentally discharged to Stony Creek. Monitoring of these systems shall be in accordance with SPCC Plan requirements.

**Mitigation Measure 3.6-1f:** For any proposed discharge of process water to a pond, as relevant, the applicant shall acquire WDRs from the CVRWQCB. The applicant shall ensure that all ponds and discharges to such ponds adhere to all requirements under applicable WDRs. The need for pond liners in order to protect groundwater quality would be assessed during the CVWQCB’s review of the Project, and requirements for pond liners would be included in the WDRs, as warranted. If appropriate, the WDRs would impose requirements for Class II surface impoundments as presented in Title 27 of the California Code of Regulations. Requirements include, but are not limited to, groundwater monitoring, double liner systems with leachate collection, water balance, a preliminary closure plan for clean closure, seismic analysis, and financial assurances. Compliance with WDRs may require the installation of facilities such as tanks and containers to store and process the digestate, the use of filter presses, and implementation of other water quality protection practices.

**Impact Significance After Mitigation:** Implementation of Mitigation Measures 3.6-1a through 3.6-1f would result in the minimization of water quality degradation to the maximum extent practicable, and therefore would reduce impacts to less than significant levels.

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**Impact 3.6-2: Implementation of the Project could increase the risk of flooding onsite or offsite. (Less than Significant with Mitigation)**

The following analysis evaluates impacts under significance criteria (4), (8), and (9). Note that the Project site is not located in the vicinity of levees, and, therefore, the Project would not expose people or structures to a significant risk of loss, injury or death involving as a result of the failure of a levee (USACE, 2015). Potential risks associated with levees are not evaluated further.

### Phases 1 and 2

Currently, stormwater runoff from the Project site drains to existing, onsite infiltration sedimentation basins (0.25 acre-foot capacity), which were historically used to capture sediment from former quarry operations. A preliminary drainage plan for the Project has been prepared. Under Phases 1 and 2, all stormwater from new impervious surfaces (pavement, buildings, and AD tank area) at the Project site would be routed by drainage ditches into a proposed stormwater that would be unlined and provide for retention and infiltration. The proposed basin would be constructed south of the Waste Receiving Phase I Separation Building (see Figure 2-3). The stormwater basin would be designed to hold up to 4.23 acre-feet of water.

Based on calculations completed in the preliminary drainage plan, assuming annual average rainfall of 21.8 inches and a runoff coefficient of 0.9, the Project is estimated to generate a total of 7.6 acre-feet of stormwater runoff per year, on average. However, this volume would be spread over the rainy season, as shown in **Table 3.6-2**.

**TABLE 3.6-2**
**MONTHLY PROJECT STORMWATER VOLUMES**

| Month | Stormwater Volume (Acre-Feet) |
|---|---|
| January* | 3.95 |
| February | 1.71 |
| March | 1.56 |
| April | 0.51 |
| May | 0.43 |
| June | 0.18 |
| July | 0.04 |
| August | 0.07 |
| September | 0.18 |
| October | 0.52 |
| November | 1.23 |
| December | 1.34 |

* January volume is equivalent to the 24-hour, 100-year storm event, which is conservatively assumed to occur each year. Actual average January stormwater volumes would be less than this amount.

SOURCE: Richgels Environmental Services, 2015.

For the purposes of this analysis, the January event was set to be equivalent to the 100-year, 24-hour storm event, which would generate a stormwater volume of 3.95 acre-feet. The proposed retention/infiltration basin would be of sufficient capacity to contain this volume of water. Soils onsite are of high permeability. As discussed in the preliminary drainage plan, onsite soils have a permeability of approximately 187 to 242 inches per hour, which would be sufficient to infiltrate the anticipated stormwater volumes. Therefore, all stormwater from the Project site would be contained within the basin, and no discharge would occur.

As shown in Figure 2-3, a small portion of the southwestern corner of the Project Study Area is within the 100-year flood hazard zone (Zone A) along Stony Creek. As shown in Figure 2-3, Site Plan, there are no structures proposed within this portion of the Project Study Area, and flood flows would not be impeded or redirected. As shown in Figure 2-3, the southernmost portion of the Project Study Area is located within the CVFPB Designated Floodway. Thus the Project may require a permit from the CVFPB. The CVFPB and its staff make sure that there are no negative hydraulic, geotechnical, or other structural impacts associated with proposed projects. Through compliance with the CVFPB permit process, potential impacts on the floodplain would be minimized.

The Project site is located within the inundation area of the Black Butte Dam (Butte County, 2005). This means that if the Black Butte Dam were to fail, the Project site would be inundated with flood waters and significant loss, injury, or death could occur. The Black Butte Dam inundation area extends several miles north of Orland, east to and beyond the Sacramento River, and south to the Sutter Buttes. Orland, Hamilton City, Butte City, and portions of Colusa are within the inundation area. Black Butte Dam was constructed to protect downstream areas from flooding. The dam is maintained by the Army Corps of Engineers, and it is very unlikely that the dam will fail.

Because the preliminary drainage plan has not yet been finalized, the proposed drainage volumes and calculations discussed above are also considered preliminary. Therefore, potential drainage related impacts are considered potentially significant, and implementation of Mitigation Measure 3.6-2 would be required in order to ensure that potential drainage impacts would be minimized.

#### Mitigation Measures

> **Mitigation Measure 3.6-2:** Prior to issuance of a grading permit, the applicant shall provide to the Glenn County Planning and Public Works Agency a drainage plan complies with all relevant portions of the Glenn County Code, such that onsite and offsite flooding would not occur as a result of the Project drainage system. This includes the ability to capture at least a 10-year flow, and ensure that ponding due to a 100-year flood would not cause damage to the proposed facilities. The Glenn County Engineering Division, as well as, jurisdictional agencies shall confirm that the drainage system is implemented as designed.

**Impact Significance After Mitigation:** Implementation of Mitigation Measure 3.6-2 would ensure that the Project drainage system would be designed and implemented to avoid onsite and offsite flooding and discharge to downstream areas, and, therefore, would reduce impacts to less-than-significant levels.

**Impact 3.6-3: The Project could substantially deplete groundwater supplies. (Less than Significant)**

The following analysis evaluates impacts under significance criterion (2). As discussed for Impact 3.6-2, the Project may optionally include installation of a lined stormwater retention basin, which could be used as a supplemental source of water supply for the Project. However, the following analysis conservatively assumes that this optional water supply would not be available to offset groundwater use.

#### Construction

Proposed construction activities would not include site dewatering or other forms of groundwater extraction. Soil compaction and placement of equipment and construction materials on the Project site during construction may temporarily interfere with groundwater recharge. Construction activities are temporary and the Project site is a small area relative to the aquifer. Temporary soil compaction and placement of construction materials on the Project site would not be of a sufficient scale to result in a net deficit in aquifer volume or lowering of the local groundwater table. Therefore, impacts on groundwater recharge during construction would be minimal.

#### Operation

##### *Phase 1 and 2*

As discussed in Section 3.9, Utilities and Services, the Project would extract groundwater via existing onsite wells, and would not require any new or expanded entitlements. In addition, stabilized process water would be used for AD process water. The new demand that would be introduced by the Project is 14,200 gallons per day (gpd) (1,200 gpd for employee domestic use, and 13,000 gpd for AD tank water demand). This is equivalent to 15.9 acre-feet per year. This volume of water would not be sufficient to noticeably deplete groundwater supplies. Additionally, the project would install approximately 8.5 acres of new impervious surfaces, in an area surrounded by existing pervious and highly-pervious soils and sediments. Therefore, the Project's comparatively small size and limited groundwater withdrawals are not anticipated to substantially interfere with groundwater recharge or directly draw down groundwater levels, such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. The impact would be less-than-significant.

**Mitigation:** None required.

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### *Cumulative Impact*

#### Geographic Context

The geographic context for changes in the hydrology and water quality due to development of the Project includes Glenn County as well as areas within the Stony Creek watershed that are located outside of Glenn County. There are no known cumulative projects within this area that would be constructed or operational at the same time as the Project.

**Impact 3.6-4: Construction and operation of the Project would not result in a cumulatively considerable impact on hydrology, water quality, or groundwater. (Less than Significant)**

Potential cumulative impacts on hydrology and water quality are attributed to development not only within Glenn County, but in the watershed areas outside of the County limits. As shown in Figure 3.6-1, the Stony Creek Watershed includes portions of Glenn, Colusa, and Tehama counties. The context for the evaluation of potential cumulative impacts on hydrology and water quality is development within the Stony Creek Watershed. Cumulative impact analyses under CEQA first determine whether a cumulative impact would occur, and if so, whether the contribution of a project would have a cumulatively considerable contribution to the identified impact. Glenn, Colusa, and Tehama counties are rural, primarily agricultural areas with little planned development. There is not sufficient proposed development within the Stony Creek Watershed to result in a cumulative impact to surface water or groundwater quality, onsite or offsite flooding, or groundwater supplies. Therefore potential cumulative scenario impacts would not be cumulatively considerable.

**Mitigation:** None required.

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# 3.7 Noise and Vibration

This section characterizes and discusses the potential effects of the Project on the existing noise environment at the Project site and surrounding area. The following discussion summarizes the current regulatory framework, an analysis of potential noise impacts that would result from implementation of the Project, and mitigation measures where appropriate.

No comments regarding noise or vibration were received in response to the Notice of Preparation (NOP).

## 3.7.1 Environmental Setting

### Technical Background and Noise Terminology

Noise can be generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as sound level) that is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing and 120 to 140 dB corresponding to the threshold of pain. Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, when assessing potential noise impacts, sound is measured using an electronic filter that de-emphasizes the frequencies below 1,000 Hz and above 5,000 Hz in a manner corresponding to the human ear’s decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as A-weighting and is expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of frequency de-emphasis and is typically applied to community noise measurements. Some representative noise sources and their corresponding A-weighted noise levels are shown in **Figure 3.7-1**.

Noise exposure is a measure of noise over a period of time. Noise level is a measure of noise at a given instant in time. Community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual receptor. These successive additions of sound to the community noise environment vary the community noise level from

| COMMON OUTDOOR ACTIVITIES | NOISE LEVEL (dBA) | COMMON INDOOR ACTIVITIES |
|---|---|---|
| | 110 | Rock band |
| Jet flyover at 1,000 feet | | |
| | 100 | |
| Gas lawnmower at 3 feet | | |
| | 90 | |
| Diesel truck at 50 feet at 50 mph | | Food blender at 3 feet |
| | 80 | |
| Noisy urban area, daytime | | |
| Gas lawnmower at 100 feet | 70 | Garbage disposal at 3 feet |
| Commercial area | | Normal speech at 3 feet |
| Heavy traffic at 300 feet | 60 | |
| | | Large business office |
| Quiet urban daytime | 50 | Dishwasher in next room |
| Quiet urban nighttime | 40 | Theater, large conference room (background) |
| Quiet suburban nighttime | | |
| | 30 | Library |
| Quiet rural nighttime | | Bedroom at night, concert hall (background) |
| | 20 | |
| | | Broadcast/recording studio |
| | 10 | |
| | 0 | |

SOURCE: ESA, 2013

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**Figure 3.7-1**
Typical Noise Levels

instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts.

This time-varying characteristic of environmental noise is described using statistical noise descriptors. The most frequently used noise descriptors are summarized below:

$L_{eq}$: the energy-equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The $L_{eq}$ is the constant sound level, which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).

$L_{max}$: the instantaneous maximum noise level for a specified period of time.

$L_{50}$: the noise level that is equaled or exceeded 50 percent of the specified time period. The $L_{50}$ represents the median sound level.

$L_{90}$: the noise level that is equaled or exceeded 90 percent of the specific time period. This is considered the background noise level during a given time period.

$L_{dn}$: also abbreviated DNL, it is a 24-hour day and night A-weighted noise exposure level which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night (“penalizing” nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.

CNEL: similar to DNL, the Community Noise Equivalent Level (CNEL) adds a 5-dBA “penalty” for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

## Effects of Noise on People

When a new noise is introduced to an environment, human reaction can be predicted by comparing the new noise to the ambient noise level, which is the existing noise level composed of all sources of noise in a given location. In general, the more a new noise exceeds the ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A change in level of at least 5-dBA is required before any noticeable change in human response would be expected.
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause an adverse response (Caltrans, 2013).

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

## Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dBA for hard sites and 7.5 dBA for soft sites for each doubling of distance from the reference measurement. Hard sites are those with a reflective surface between the source and the receiver, such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. Soft sites have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dBA (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement (Caltrans, 2013).

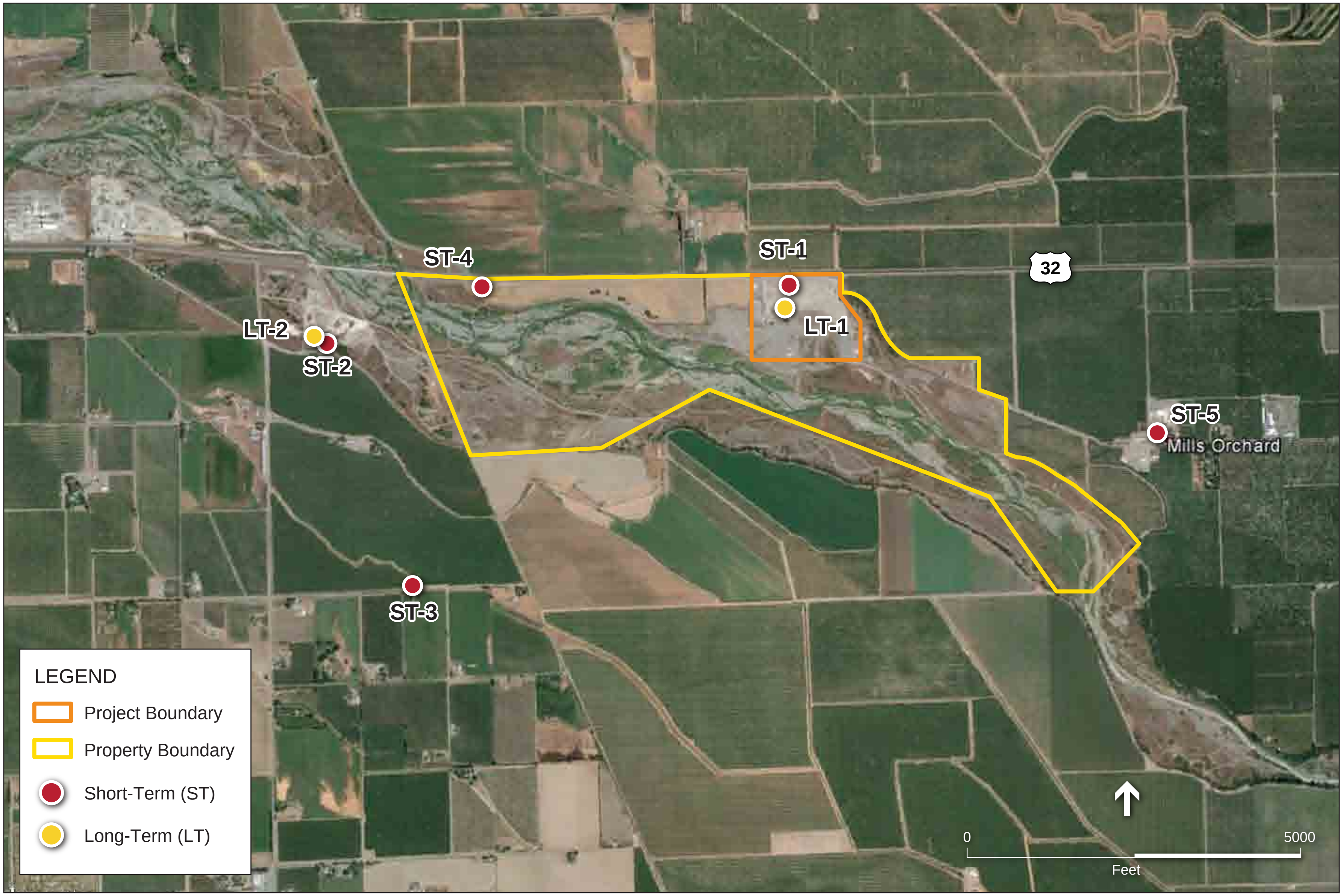
## Existing Noise Environment

The ambient noise environment surrounding the Project site is primarily the result of traffic noise from State Route 32 (SR 32). Other noise sources in the area include distant aircraft overflights from the Orland Haigh Field Airport and wildlife sounds such as birds chirping. The Project site location is currently undeveloped, structures that are on the parcel do not generate noise that would affect the Project.

To quantify the existing ambient noise levels in the Project vicinity, a noise survey was conducted within and near the Project site. The noise measurement survey was conducted from August 10 - 12, 2015 and consisted of five 15-minute short-term noise measurements and two 48-hour long-term noise measurements. These locations are illustrated in **Figure 3.7-2**. The area surrounding the Project site is dominated by localized traffic noise, which was monitored to be as high as 55.8 dBA $L_{eq}$ at some locations. The results of the 15-minute short-term noise measurement survey, which include the measured $L_{eq}$ levels and descriptions of localized noise sources at all five monitoring locations, are presented in **Table 3.7-1**. The results of the 48-long-term noise measurement survey are broken into two 24-hour periods showing the 24-hour $L_{eq}$'s and $L_{dn}$'s. The results of the 48-hour long-term noise measurement survey can be found in **Table 3.7-2**. All noise measurements were conducted using a Metrosonics Model db-308 sound level meter (SLM). The noise meter was calibrated before and after the noise measurement survey.

## Sensitive Receptors

Land uses surrounding the site are mostly consisting of sporadic rural residential dwellings. Noise sensitive land uses are typically defined as residences, schools, places of worship, hospitals, care centers and hotels. The nearest noise sensitive land use to the Project site consists of a single-family home located near SR 32 located approximately 1,040 feet northwest of the Project site, across SR 32. Other than the single family home located northwest of the Project site, all other sensitive noise receptors are at least 5,000 feet from the Project site.




SOURCE: Google Earth Pro, basemap, 2015; ESA 2015

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**Figure 3.7-2**
Noise Measurement Locations

**TABLE 3.7-1**
**15-MINUTE SHORT-TERM AMBIENT NOISE MONITORING RESULTS**

| Measurement Location | Start time | $L_{eq}$ (dBA) | $L_{max}$ (dBA) | Primary Noise Source(s) |
|---|---|---|---|---|
| ST-1 | 9:00 | 55.8 | 71.6 | Traffic along State Route 32 |
| ST-2 | 9:33 | 48.7 | 66.2 | Traffic along 5th Avenue |
| ST-3 | 9:55 | 42.5 | 63.6 | Traffic along County Road 18 |
| ST-4 | 10:20 | 57.4 | 76.4 | Traffic along State Route 32 |
| ST-5 | 10:45 | 43.9 | 63.0 | Traffic along Rd Vv |

SOURCE: ESA, 2015

**TABLE 3.7-2**
**24-HOUR LONG-TERM AMBIENT NOISE MONITORING RESULTS**

| | Day 1[1,2] | | | Day 2[3,4] | | |
|---|---|---|---|---|---|---|
| Monitor | 24-Hour $L_{eq}$ (dBA) | $L_{dn}$ (dBA) | $L_{max}$ (dBA) | 24-Hour $L_{eq}$ (dBA) | $L_{dn}$ (dBA) | $L_{max}$ (dBA) |
| LT-1 | 49.5 | 57.0 | 80.4 | 48.3 | 56.3 | 71.5 |
| LT-2 | 44.2 | 51.0 | 72.0 | 47.8 | 54.6 | 72.6 |

NOTES:
1 LT-1 Day 1 noise measurement began on August 10, 2015 at 9:00 a.m. and ended on August 11, 2015 at 9:00 a.m.
2 LT-2 Day 1 noise measurement began on August 10, 2015 at 10:00 a.m. and ended on August 11, 2015 at 10:00 a.m.
3 LT-1 Day 2 noise measurement began on August 11, 2015 at 9:00 a.m. and ended on August 12, 2015 at 9:00 a.m.
4 LT-2 Day 2 noise measurement began on August 11, 2015 at 10:00 a.m. and ended on August 12, 2015 at 10:00 a.m.

SOURCE: ESA, 2015

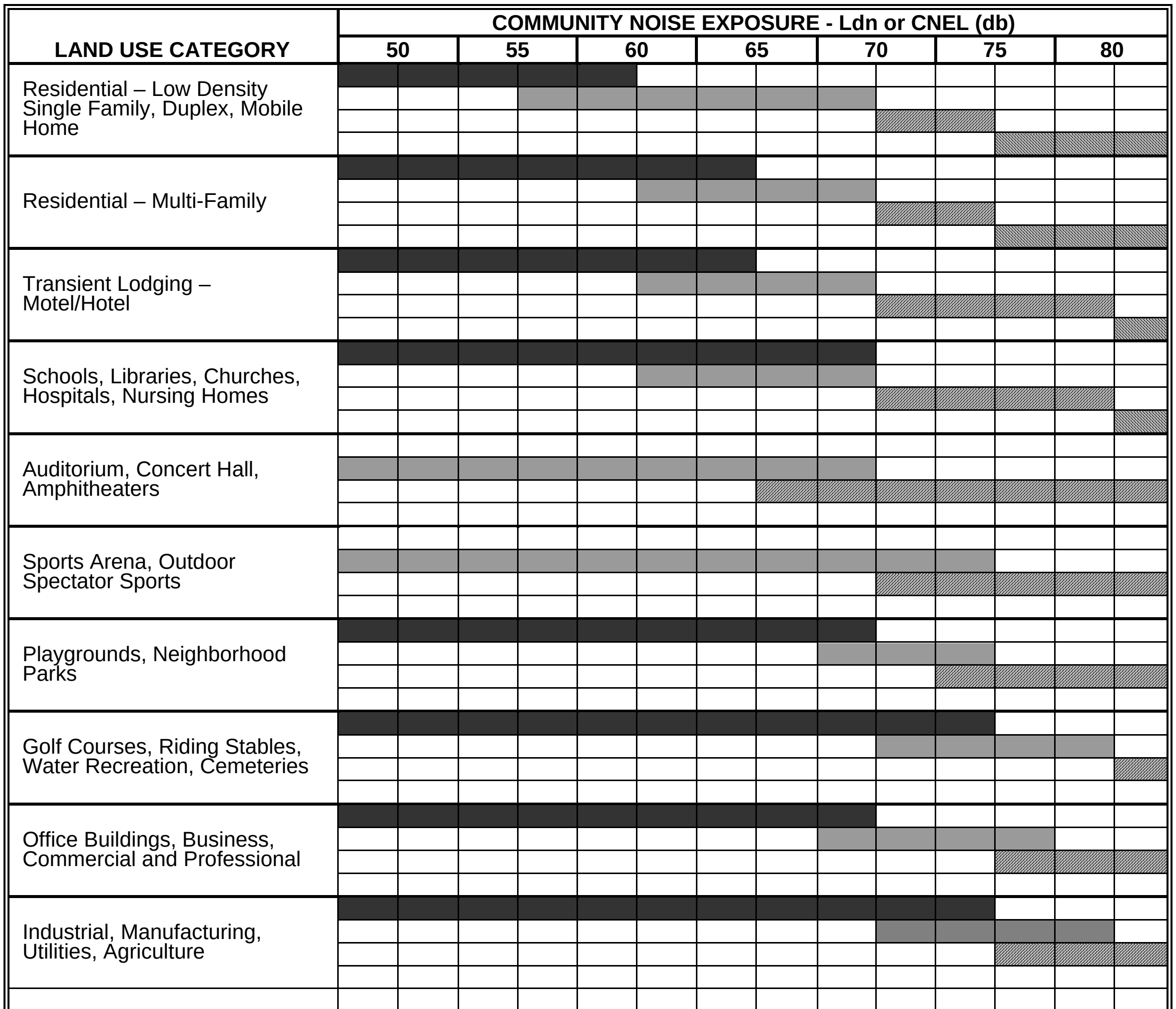
## 3.7.2 Regulatory Setting

### Federal

Federal regulations establish noise limits for medium and heavy trucks (more than 4.5 tons, gross vehicle weight rating) under 40 Code of Federal Regulations (CFR) Part 205, Subpart B. The federal truck pass-by noise standard is 80 dB at 15 meters from the vehicle pathway centerline. These controls are implemented through regulatory controls on truck manufacturers.

### State

The State has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure, as shown in **Figure 3.7-3**. The State of California also establishes noise limits for vehicles licensed to operate on public roads. For heavy trucks, the State pass-by standard is consistent with the federal limit of 80 dB. The State pass-by standard for light trucks and passenger cars (less than 4.5 tons, gross vehicle rating) is also 80 dBA at 15 meters from the centerline. These standards are implemented through controls on vehicle manufacturers and by legal sanction of vehicle operators by state and local law enforcement officials.




| | |
|---|---|
| **Normally Acceptable** | Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements. |
| **Conditionally Acceptable** | New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice. |
| **Normally Unacceptable** | New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design. |
| **Clearly Unacceptable** | New construction or development generally should not be undertaken. |

SOURCE: State of California, Governor's Office of Planning and Research, *General Plan Guidelines*, 1998.

**Figure 3.7-3**
Land Use Compatibility for Community Noise Environment

## Local

In California, local regulation of noise involves implementation of General Plan policies and Noise Ordinance standards. Local General Plans identify general principles intended to guide and influence development plans, and Noise Ordinances set forth the specific standards and procedures for addressing particular noise sources and activities.

General Plans recognize that different types of land uses have different sensitivities toward their noise environment; residential areas are considered to be the most sensitive type of land use to noise and industrial/commercial areas are considered to be the least sensitive.

### *Glenn County General Plan*

The Glenn General Plan establishes the following goals and policies that are relevant to noise:

Goal PSG-7: Protection of county residents from the harmful and annoying effects of exposure to excessive noise and preservation of the rural noise environment in Glenn County.

Policy PSP-51: Require acoustical analyses for any development proposal which does not meet the recommended noise level standards, subject to the requirements contained in this General Plan.

Policy PSP-52: Require that noise mitigation measures necessary to achieve compliance with land use compatibility guidelines and noise level standards be incorporated into site planning and project design.

### *Glenn County Code*

The Glenn County Code contains additional guidance with the intent to control noise and vibration, and to promote and maintain the health, safety, and welfare of its citizens. Portions of the Glenn County Code with the potential to pertain to the Project are represented below.

> **15.560.100: Noise (A)** – Maximum sound emissions for any use shall not exceed equivalent sound pressure levels in decibels, A-weighted scale, for any one hour as stipulated in **Table 3.7-3**. These maximums are applicable beyond any property lines of the property containing the noise.

**TABLE 3.7-3**
**MAXIMUM ONE-HOUR EQUIVALENT SOUND PRESSURE LEVELS (DBA)**
**RECEIVING PROPERTY ZONING DISTRICT**

| Time of Day | Receiving Property Zoning District | | |
|---|---|---|---|
| | Residential | Commercial | Industrial |
| 7:00 a.m. - 10:00 p.m. | 55 | 60 | 65 |
| 10:00 a.m. - 7:00 p.m. | 45 | 55 | 60 |

NOTE: The residential category also includes all resource zoning districts

SOURCE: Glenn County Municipal Code 15.560.100: Noise (A.), Table B

**15.560.100: Noise (B) -** In the event the receiving property or receptor is a dwelling, hospital, school, library or nursing home, even though it may be otherwise zoned for commercial or industrial and related uses, maximum one-hour equivalent sound pressure received shall be as indicated in **Table 3.7-4**.

**TABLE 3.7-4**
**MAXIMUM ONE-HOUR EQUIVALENT SOUND PRESSURE LEVELS (DBA) FOR SENSTIVE RECEPTORS**

| Time of Day | Level |
|---|---|
| 7:00 a.m. - 10:00 p.m. | 57 |
| 10:00 a.m. - 7:00 p.m. | 50 |

SOURCE: Glenn County Municipal Code 15.560.100: Noise (B.), Table C

**15.560.100: Noise (C) -** Noises of Short Duration. For noises of short duration or impulsive character, such as hammering, maximum one-hour sound pressure levels permitted beyond the property of origin shall be seven decibels less than those listed in Table 3.7-4.

**15.560.100: Noise (F) -** Exemptions. Local noise standards set forth in this section do not apply to the following situations and sources of noise provided standard, reasonable practices are being followed:

1. Emergency equipment operated on an irregular or unscheduled basis;
2. Warning devices operated continuously for no more than five minutes;
3. Bells, chimes or carillons;
4. Nonelectronically amplified sounds at sporting, amusement and entertainment events;
5. Construction site sounds between 7:00 a.m. and 7:00 p.m.;
6. Lawn and plant care machinery fitted with correctly functioning sound suppression equipment and operated between 7:00 a.m. and 8:00 p.m.;
7. Aircraft when subject to federal or state regulations;
8. Agricultural equipment when operated on property zoned for agricultural activities.

**15.560.100: Noise (G) -** Exceptions. Upon written application from the owner or operator of an industrial or commercial noise source, the director or planning commission, as part of a use permit approval, may conditionally authorize exceptions to local noise emission standards in the following situations:

1. Infrequent noise;
2. Noise levels at or anywhere beyond the property lines of the property of origin when exceeded by an exempt noise, as listed in subsection (E) of this section, in the same location;
3. If after applying best available control technology (BACT), a use existing prior to the effective date of the ordinance codified in this chapter, is unable to conform to the standards established by this section

## 3.7.3 Impacts and Mitigation Measures

### Significance Criteria

This analysis of noise and vibration evaluates the potential effects of the Project on the existing environment within or adjacent to the Project area. Significance criteria for this analysis are based on Appendix G of the State CEQA Guidelines (California Code of Regulations, Title 14, Chapter 3, Appendix G).

Effects are considered significant if an alternative would result in any of the following:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project
- 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
- 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

**Construction Noise Threshold.** Noise impacts from short-term construction activities could exceed noise thresholds and could result in a significant construction impact if short-term construction activity occurred outside of the exempt daytime hours permitted by the County's noise ordinance.

**Stationary Source Noise Threshold.** A resulting off-site noise level at residences from stationary non-transportation sources that exceed 55 dBA between the hours of 7:00 a.m. to 10:00 p.m. and 45 dBA between the hours of 10:00 p.m. and 7:00 a.m. (see Table 3.7-3) would be significant according to the Glenn County Code.

**Traffic Noise Threshold.** The Project would result in significant traffic noise impacts if it would increase noise levels in excess of the thresholds shown in **Table 3.7-5**.

### Methodology

Noise impacts are assessed based on a comparative analysis of the noise levels resulting from the Project and the noise levels under baseline or existing conditions.

An analysis of the temporary construction noise effects on nearby noise-sensitive receptors was assessed using methodology outlined in the Federal Highway Administration (FHWA) Road

**TABLE 3.7-5**
**THRESHOLDS OF SIGNIFICANCE FOR NOISE EXPOSURE**

| Ambient Noise Level Without Project ($L_{dn}$) | Significant Impact Assumed to Occur if the Project Increases Ambient Noise Levels By: |
|---|---|
| <60 dB | + 5.0 dB or more |
| 60-65 dB | + 3.0 dB or more |
| >65 dB | + 1.5 dB or more |

SOURCE: Federal Interagency Committee on Noise (FICON), 1992.

Construction Noise Model (RCNM) User's Guide (FHWA, 2006). The analysis was based on typical construction phases and equipment noise levels and attenuation of those noise levels due to distances between sensitive receptors in the Project vicinity and the construction activity. The modeled construction-related noise levels were modeled to gauge whether or not they would exceed the County of Glenn noise level thresholds, shown in Table 3.7-3, during the County's construction non-exempt hours. Traffic noise impacts during existing, existing plus Project and future 2040 conditions were assessed using the FHWA Highway Traffic Noise Prediction Model (FHWA-RD-77-108). The model was based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume and speed. The model was used to predict $L_{dn}$ values 50 feet from all roadway segments near the Project.

## Impacts Not Evaluated Further

The Project would not result in impacts related to the following criteria:

> **Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels**

No impact discussion is provided for this topic because Project construction would not involve activities that are typically associated with significant ground-borne vibration (i.e., pile driving, blasting, rock drilling).

> **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.**

> **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 discussion is provided for these topics because the site lies outside a two-mile radius of a public airport or private airstrip (approximately 3.1 miles from Haigh Field Airport, the nearest airport).

## Impacts and Mitigation Measures

### Impact 3.7-1: Project construction could temporarily expose persons to or generate noise levels in excess of the County's noise standards. (Less than Significant)

Construction activity noise levels at and near the construction areas would fluctuate depending on the particular type, number, and duration of uses of various pieces of construction equipment. Construction-related material haul trips would raise ambient noise levels along haul routes, depending on the number of haul trips made and types of vehicles used. In addition, certain types of construction equipment generate impulsive noises (such as pile driving), which can be particularly disruptive. Pile driving, however, is not proposed during Project construction. **Table 3.7-6** shows typical noise levels produced by various types of construction equipment.

**TABLE 3.7-6**
**REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS AT 50 FEET**

| Type of Equipment | $L_{max}$, dBA | Hourly $L_{eq}$, dBA/% Use |
|---|---|---|
| Backhoe | 80 | 76/40% |
| Concrete Mixer Truck | 85 | 81/40% |
| Loader | 85 | 81/40% |
| Pneumatic Tools | 85 | 82/50% |
| Air Compressor | 81 | 77/40% |

NOTES: % used during the given time period (usually an hour – Hourly $L_{eq}$) were obtained from the FHWA Roadway Construction Noise Model User's Guide, (FHWA, 2006).

SOURCE: Federal Transit Administration, 2006.

According to the County Code (15.560.100: Noise (F)), noise generated during construction are exempt from the County's noise standards provided standard, reasonable practices are being followed and construction occurs between the hours of 7:00 a.m. and 7:00 p.m. Any onsite construction activities occurring outside of these hours would be required to comply with the County day and night noise standards. Violation of the County Code would result in a significant impact.

The nearest off-site noise-sensitive land use to the Project is a single-family home located approximately 1,040 feet northwest of the Project site, across SR 32. Noise from construction activities generally attenuates at a rate of 6 to 7.5 dB per doubling of distance. Assuming an attenuation rate of 7.5 dB per doubling of distance due to site topography and vegetation, the nearest residence to the Project site during the operation of the two loudest equipment listed in Table 3.7-6 (concrete Mixer Truck, loader) could be exposed to a maximum noise level of approximately 51 dBA $L_{eq}$ along the north perimeter of the Project area. The construction noise levels at this noise-sensitive land use located within 1,040 feet of the Project site would be below the Glenn County maximum allowed daytime noise standard. Therefore, short-term construction noise is considered to be a **less-than-significant impact**.

**Mitigation:** None required.

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**Impact 3.7-2: Operation of the Project could expose persons to or generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies. (Less than Significant with Mitigation)**

The Project would consist of two operational phases. Phase 1 would include a materials recovery facility (MRF) that would first remove bulky materials and then separate materials as organic materials for the anaerobic digestion (AD) facility, recyclable materials or residual materials (for landfill disposal). Phase 2 includes the AD facility that would produce methane fuel gas and digestate. The operational noise impacts associated with each of these phases are discussed below:

### Phase 1

Operation of the MRF would occur between the daytime hours and could generate noise at nearby sensitive receptors that would exceed the County of Glenn's daytime noise standard (see Table 3.7-3). Operational activities associated with the MRF that would generate the highest noise levels would include preprocessing, vehicle circulation, operation of certain off-road equipment such as front end loader or forklift, and stationary equipment such as conveyor belts, compressors, generators, and other equipment. The loudest equipment that would be in operation at the Project site would be the front end loader. The conveyor belts, compressors and generators were also considered, but they would be located within the facility and would not generate enough noise to be heard at the nearest sensitive receptor. However, the front end loader, that would be used to transport material onsite, outside of the facility, and could generate noise levels that would exceed the County's daytime noise standard. Daytime noise levels generated by the front end loader are shown in **Table 3.7-7**. As seen in Table 3.7-7, daytime operations equipment would not exceed the 55 dBA $L_{eq}$ daytime limit for residential uses set by the Glenn County Municipal Code.

**TABLE 3.7-7**
**DAYTIME NOISE LEVELS ASSOCIATED WITH PROJECT OPERATIONS AT THE NEAREST SENSTIVE RECEPTOR**

| Equipment | Reference Noise Level (dBA Leq) | Distance to Nearest Receptor | Maximum Noise Level of Equipment at Nearest Receptor (dBA Leq) | Violate the County's daytime Maximum Allowed Noise Threshold? | Attenuation needed to meet Standard |
|---|---|---|---|---|---|
| Front End Loader[a,b] | 79 dBA at 50 feet | 1,040 | 46 | No | None |

a Reference noise level from the Federal Transit Administration (FHWA) Roadway Construction Noise Model (RCNM) User's Guide, (FHWA, 2006).
b The reference noise for a front end loader includes reverse backup alarms; however does not include other noise levels specific to its operations at the facility such as scrapping and dropping large heavy objects (e.g., refrigerators, wash/drying machines). To account for such operational noise sources a 3 dB weighting was added to the front end loaders reference noise level taken from RCNM.

SOURCE: ESA, 2015

### Phase 2

The CleanWorld High Rate Digestion (HRD) system would be used to for the anaerobic digestion process. The HRD system would include receiving and preprocessing, a liquid transfer module, a heat module, digesting tanks, a microturbine to generate electricity for on-site uses, ancillary pumps and flares. Operational activities associated with the HRD system that would generate the highest noise levels would be the microturbine, ancillary pumps and flares. These microturbines, ancillary pumps and flares could operate 24 hours per day. Because the closest noise sensitive receptor is located 1,000 feet or more from the Project site, it is unlikely that noise during operation of the HRD system would be as loud as those generated during Phase 1. However, unlike Phase 1, they would operate 24 hours a day and would be subject to the lower nighttime standard of 45 dBA $L_{eq}$. Depending on various factors the use of the microturbine, ancillary pumps, and flares could exceed 45 dBA $L_{eq}$ at night at the nearest sensitive receptor, if not adequately attenuated. This would be a potentially significant impact without mitigation.

### Mitigation Measures

> **Mitigation Measure 3.7-2:** HRD system equipment that would be in operation during the nighttime hours, as defined by the Glenn County Code, shall be required to be attenuated to a level that does not exceed 45 dBA $L_{eq}$ at the nearest residences. Once the construction is complete and the facility is operational, the applicant shall submit to the County a Noise Technical Memorandum from a qualified acoustical consultant showing the nighttime noise levels at the nearest noise sensitive receptor to the Project site while the HRD system equipment is in operation. If post-construction monitoring indicates higher nighttime noise levels from the HRD system equipment at sensitive receptor locations, then additional noise barriers (such as fences or walls that block any direct line of site to receptors) or sound insulated equipment enclosures would be required to attenuate operations noise to acceptable levels.

**Impact Significance After Mitigation:** Implementation of Mitigation Measure 3.7-1 would reduce operation-related noise to below the County of Glenn’s nighttime noise standard by requiring additional attenuation to reduce operational noise generated by HRD equipment where nighttime operations are found to exceed the County’s noise standards. By blocking line-of-sight between the HRA equipment and the nearest receptor noise levels could be reduced by as much as 10 dB, depending the material used. This would reduce this impact to a less-than-significant level.

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**Impact 3.7-3: Traffic associated with operation of the Project would result in an increase in ambient noise levels on nearby roadways used to access the Project site. (Less than Significant)**

Most of the noise generated by the implementation of the Project would primarily be traffic-generated noise. The Project would contribute to an increase in local traffic volumes, resulting in higher noise levels along local roadways. Using algorithms from the FHWA’s Highway Traffic Noise Prediction Model (FHWA-RD-77-108) and the estimated Project traffic volumes provided by Abrams Associates Traffic Engineering, Inc. (Abrams Associates, 2015), traffic noise levels were analyzed for five roadway segments. The segments analyzed and results of the modeling are shown in **Table 3.7-8**.

**TABLE 3.7-8**
**SUMMARY OF TRAFFIC NOISE MODELING RESULTS (EXISTING/EXISTING PLUS PROJECT)**
**NOISE EXPOSURE ($L_{DN}$) AT 50 FEET FROM ROADWAY CENTERLINE**

| | Traffic Noise Level, dBA, Ldn[1] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Existing | Existing Plus Project | Incremental Increase | | Cumulative Near Term No Project | Cumulative Near Term Plus Project | Incremental Increase | | Incremental Increase | |
| **Roadway Segment** | **A** | **B** | **(B - A)** | **Significant? (Yes or No)[2]** | **C** | **D** | **(D - A)** | **Overall Cumulatively Significant? (Yes or No)[2]** | **(D - C)** | **Cumulatively Considerable? (Yes or No)[2]** |
| 1. SR 32, west of Project entrance. | 70.4 | 70.5 | 0.1 | No | 71.0 | 71.1 | 0.7 | No | 0.1 | No |
| 2. SR 32, between Project entrance and Canal Road | 70.4 | 70.5 | 0.1 | No | 71.0 | 71.0 | 0.7 | No | 0.1 | No |
| 3. SR 32, east of Canal Road | 70.6 | 70.6 | 0.1 | No | 71.2 | 71.2 | 0.6 | No | 0.0 | No |
| 4. Canal Road, south of SR 32 | 64.8 | 64.9 | 0.2 | No | 65.4 | 65.5 | 0.7 | No | 0.1 | No |
| 5. Canal Road, north of SR 32 | 64.9 | 64.9 | 0.0 | No | 65.5 | 65.5 | 0.6 | No | 0.0 | No |

NOTES: **BOLD** values show potentially significant noise increases prior to any mitigation.

1 Noise levels 50 feet from roadway were determined using FHWA Traffic Noise Prediction Model (FHWA RD-77-108).
2 Where the existing traffic noise levels are less than 60 dB $L_{dn}$ at the existing sensitive use, an increase of at least 5 dBA $L_{dn}$ at the existing sensitive receptor due to increased roadway capacity would be considered significant and where existing traffic noise levels are greater than 60 dBA $L_{dn}$ at the sensitive use, an increase of 1.5 dBA $L_{dn}$ would be considered significant. Where existing levels are between 60 and 65 dBA $L_{dn}$, an increase of at least 3 dBA $L_{dn}$ at the existing sensitive receptor would be considered significant.

SOURCE: ESA, 2015

As shown in Table 3.7-8, the greatest effect on ambient levels would occur at the existing residential land uses located along Canal Road, south of SR 32, where traffic noise would increase by as much as 0.2 dBA $L_{dn}$. All other roadways analyzed would be expected to experience a traffic noise increase no greater than 0.1 dBA $L_{dn}$. For this analysis, where the existing traffic noise levels are less than 60 dB $L_{dn}$ at the existing sensitive use, an increase of at least 5 dBA $L_{dn}$ at the existing sensitive receptor due to increased roadway capacity would be considered significant and where existing traffic noise levels are greater than 60 dBA $L_{dn}$ at the sensitive use, an increase of 1.5 dBA $L_{dn}$ would be considered significant. Where existing levels are between 60 and 65 dBA $L_{dn}$, an increase of at least 3 dBA $L_{dn}$ at the existing sensitive receptor would be considered significant. The highest increase in traffic noise at the residential sensitive land uses (located adjacent to a roadway segment affected by the Project) would be 0.2 dBA $L_{dn}$, which would not result in a substantial increase in traffic noise. Therefore, all existing residential land uses located adjacent to roadways that would be affected by the Project would not experience a substantial increase in traffic noise. Consequently, none of the roadway segments analyzed would result in a significant increase in traffic noise from the Project versus the existing scenario; therefore traffic noise associated with the Project is **less than significant**.

**Mitigation:** None required.

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## *Cumulative Impact*

### Geographic Context

The geographic context for changes in the noise environment due to development of the Project would be localized in a rural area of the County of Glenn, as well as along roadways that would serve the Project. In order to contribute to a cumulative noise impact, another project in close proximity would have to be constructed or operational at the same time as the Project. There are no known cumulative projects near the Project site that would be constructed or operational at the same time as the Project. Since there would be no cumulative projects that would coincide or would be located within close proximity of the Project, off-site sensitive receptors would not be exposed to noise levels higher than what was previously predicted under the Project. These impacts are not discussed further.

**Impact 3.7-4: Increases in traffic from the Project, in combination with other development, would not result in cumulatively considerable noise increases. (Less than Significant)**

A cumulative impact arises when two or more individual projects, when considered together compound or increase environmental impacts. There are no development projects currently in the planning process located in the vicinity of the Project that would produce stationary and mobile noise sources. Traffic generated by the Project, combined with increased regional traffic growth, would not result in a significant cumulative noise impact to existing sensitive receptors.
Table 3.7-8 shows existing and cumulative traffic noise, and the difference between cumulative levels.

As shown in Table 3.7-8, the Project in conjunction with existing and future cumulative traffic would not result in noise exposure that would exceed the established allowable noise incremental increases detailed in Table 3.7-5 at residential uses along any of the roadway segments analyzed. Therefore, the roadway segments analyzed would not result in a cumulative considerable contribution to on-road traffic noise. Consequently, the Project would result in a **less-than-significant impact**.

**Mitigation:** None required.

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## References

Abrams Associates Traffic Engineer, Inc. *Transportation Impact Analysis Solid Waste Conversion Facility Glenn County*. Received June 30, 2015.

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County of Glenn, 1993. *County of Glenn General Plan*. Adopted June 15, 1993.

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Federal Highway Administration (FHWA). *FHWA highway traffic noise prediction model (FHWA-RD-77-108)*. December 1978.

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State of California. *General Plan Guidelines.* Governor's Office of Planning and Research, 1998.

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# 3.8 Transportation, Traffic and Circulation

This section characterizes and discusses the potential effects of the Project on transportation, traffic and circulation. The following discussion summarizes the current regulatory framework, an analysis of potential transportation, traffic and circulation impacts that would result from implementation of the Project, and mitigation measures where appropriate. The information and impact analysis presented in this section used the *Solid Waste Conversion Facility (Glenn County) Transportation Impact Analysis* report prepared by Abrams Associates (June 30, 2015) as a resource, modified/augmented as appropriate by the County and its EIR consultant.

Several comments relating to transportation, traffic and circulation were received on the Notice of Preparation (NOP) (**Appendix A**), including concerns about the effects of Project traffic on traffic flow and safety State Route (SR) 32 (e.g., effects from increased truck traffic, and turns between the SR 32 and the Project site). Caltrans comments referred to the requirement for encroachment permits for Project work within state rights-of-way, and the City of Orland requested description of the proposed alternate truck haul route around the city.

## 3.8.1 Environmental Setting

Based on the Project's estimated trip generation, and the distribution of those trips, the focus of the analysis of the potential impacts is on State Route 32 (SR 32) and the Project site's access intersection with SR 32. **Figure 2-3** (Project Description chapter) shows the location of the Project site entrance.

### Roadway Network

**State Route 32 (SR 32)** is an east-west two-lane conventional highway (Classified as a Rural Principal Arterial and an Urban Principal Arterial for some portions near Interstate 5 [I-5]) beginning at the I-5 interchange in the City of Orland and ending at SR 36 in Tehama County. SR 32 is the primary connection between the cities of Orland, Hamilton City, and Chico and is the only transit corridor; the alignment is straight (has no curves) between the cities of Orland and Hamilton City. There are segments with a center left-turn median in Orland, and areas with left-turn lanes at intersections. The average daily traffic volume in the vicinity of the Project site is approximately 9,000 vehicles (Caltrans, 2015).

**State Route 45 (SR 45)** is a north-south two-lane conventional highway that connects SR 32 in Hamilton City with SR 20 in the City of Colusa. The intersection of SR 45 and SR 32 is signalized. The average daily traffic volume south of SR 32 is about 2,350 vehicles (Caltrans, 2015).

**Interstate 5 (I-5)** is a north-south four-lane divided freeway that runs the length of the state. Access to and from the current Glenn County Landfill is at the I-5 / County Road 33 interchange, and as said above, there is an I-5 / SR 32 interchange in the City of Orland. The average daily traffic volume on I-5 in the area of the SR 32 interchange is about 25,000 vehicles (Caltrans, 2015).

### Transit Service

Glenn Transit Service is a joint powers agency with a governing body known as the Regional Transit Committee and is administered by the Glenn County Department of Public Works. Glenn Transit Service provides three types of public transportation service including Glenn Ride inter-city bus service, Glenn Transport Dial-a-Ride, and a Volunteer Medical Transport.

Glenn Ride is a fixed-route bus service that runs on SR 32, but that accommodates requests for deviation from the regular route for up to 3/4 of a mile. Seven trips are provided Monday through Friday with approximately two-hour headways with service from about 6:00 AM to 6:00 PM. There are three round trips provided on Saturdays and no Sunday Service. The nearest regular stop to the Project is located about three miles to the east of the Project site in Hamilton City near the intersection of SR 32 with SR 45.

### Bicycle and Pedestrian Facilities

There are sidewalks, and bicyclists can ride along SR 32 in the City of Orland. However, although bicyclists are allowed on SR 32, there are no bicycle facilities (e.g., bike lane or designated bike route) in the Project area. Due to the rural nature of Glenn County, longer travel distances, and the lack of existing bikeway and pedestrian facilities, bicycling and walking is generally not used as a travel mode in the area.

### Planned Roadway Improvements

The 2009/10 Glenn County Regional Transportation Plan Update identifies a planned roadway improvement under study in the Project area (Glenn County, 2010). The improvements would interconnect County Road 27 with County Road P to develop a truck route between I-5 (on County Road 27) to County Road P to State Highway 32, east of the City of Orland; thereby, reducing truck traffic through the City of Orland and providing a safe, reliable and efficient route for trucks through the County to the east or west. However, there is currently no established schedule for the completion or specifics of the bypass.

## 3.8.2 Regulatory Setting

### Federal

There are no federal regulations applicable to construction and operation of the Project related to transportation, traffic and circulation.

### State

#### *California Department of Transportation (Caltrans)*

Caltrans has jurisdiction over state highways, with controls over all construction, modification, and maintenance of state highways, such as SR 32. Any changes to, or work within the right-of-way of, these roadways would require Caltrans' approval. The Guide for the Preparation of

Traffic Impact Studies provides consistent guidance for Caltrans staff who review local development and land use change proposals. The Guide also informs local agencies about the information needed for Caltrans to analyze the traffic impacts to state highway facilities which include freeway segments, on- or off-ramps, and the intersections of ramps with other roadways.

### Local

#### *Glenn County General Plan*

The Glenn County General plan was adopted on June 15, 1993. The Transportation/Circulation section (Section 5.3.2) of the General Plan provides information and policy guidance to Glenn County to ensure that adequate transportation and circulation resources are available (Glenn County, 1993). The relevant goals and policies are listed below.

Goal CDG-5: Development and maintenance of an efficient and effective road system.

Policy CDG-56: Establish a minimum level of service for local roadways.

Policy CDG-57: Determine the impact proposed development will have on the local road system and ensure that the established level of service is maintained.

Policy CDG-58: Require new development to pay its fair share for the improvement of roadways.

Policy CDG-60: Limit access to Principal Arterial streets consistent with their primary function as carriers of through traffic.

#### *Glenn County Transportation Regional Plan Update*

The transportation policies that are currently applicable within Glenn County are based on the 2009/10 Glenn County Regional Transportation Plan. This document identifies the criteria for analyzing transportation impacts and sets forth plans for future roadway improvements in the county.

## 3.8.3 Impacts and Mitigation Measures

### Significance Criteria

According to CEQA guidelines, a Project would have a significant impact if it 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.

- 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.

- 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.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate emergency vehicle access.
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities.

The Glenn County Regional Transportation Plan references the *State Route 32 Transportation Concept Report* (prepared by Caltrans), which establishes Level of Service (LOS) standards for the various segments of SR 32 within Glenn County. For Segment 3 (within which the Project access would exist), the standard is LOS D. Within the City of Orland and from Hamilton City east to the Glenn/Butte County Line, the standard is LOS E.

The Glenn County Regional Transportation Plan also establishes maximum daily volume thresholds for roadways in the County. SR 32 is designated as a Rural Principal Arterial in the Project area which means that to maintain LOS D operations the maximum average daily traffic cannot exceed 16,900 vehicles per day.

Project-related operational impacts on intersections are considered significant if Project-generated traffic causes the level of service to deteriorate from LOS D or better to LOS E or F.

## Methodology

Potential transportation, traffic and circulation impacts were assessed for the following scenarios:

- *Existing Plus Project* – Existing traffic volumes plus the trips from the Project.
- *Baseline Plus Project Conditions* – Baseline traffic volumes (existing volumes plus 0.5% per year growth in background traffic for five years) plus the trips from the Project.
- *Cumulative Plus Project Conditions* – Cumulative 2040 volumes (based on the Countywide Travel Demand Model forecasts from the Glenn County Regional Transportation Plan Update) plus the trips from the Project.

Analysis of traffic operations was conducted using the 2010 *Highway Capacity Manual* (*HCM*) Level of Service (LOS) methodology. Level of service is a characterization, in the form of a scale, of the relationship between the capacity of an intersection (or roadway segment) and the volume of traffic moving through it at any given time. The level of service scale describes traffic flow with six ratings ranging from A to F, with LOS A indicating relatively free flow of traffic, and LOS F indicating stop-and-go traffic.

For signalized intersections, the *HCM* methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average control delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average control delay and LOS are presented for the intersection. **Table 3.8-1** summarizes the relationship between LOS and average control delay at signalized intersections.

**TABLE 3.8-1**
**INTERSECTION LEVEL OF SERVICE CRITERIA**

| Level of Service | Description | Signalized Delay (Seconds) | Unsignalized Delay (Seconds) |
|---|---|---|---|
| A | Operations with very low delay occurring with favorable progression and/or short cycle length. | ≤ 10.0 | ≤ 10.0 |
| B | Operations with low delay occurring with good progression and/or short cycle lengths. | > 10.0 to 20.0 | >10.0 to 15.0 |
| C | Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear. | > 20.0 to 35.0 | >15.0 to 25.0 |
| D | Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable. | > 35.0 to 55.0 | >25.0 to 35.0 |
| E | Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. | > 55.0 to 80.0 | >35.0 to 50.0 |
| F | Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths. | > 80.0 | >50.0 |

SOURCE: Transportation Research Board, *Highway Capacity Manual*, 2010.

For side-street stop-controlled unsignalized intersections, the average control delay and LOS operating conditions are calculated by approach and movement for those movements that are subject to delay. The operating conditions for unsignalized intersections are presented for the worst approach. Table 3.8-1 summarizes the relationship between LOS and average control delay at unsignalized intersections.

## Impacts Not Evaluated Further

The Project would not result in impacts related to the following criterion:

> **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.**

No impact discussion is provided for this topic because the location and height of the Solid Waste Conversion Facility and transportation of MSW to the Project facility would not include any activities that would adversely affect air traffic patterns. Therefore, this significance criterion does not apply to the Project, and no further impact discussion is provided herein.

## Impacts and Mitigation Measures

**Impact 3.8-1: The Project would not 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, nor would the Project conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures. (Less than Significant)**

### Project Trip Generation

Glenn County owns and operates the Glenn County Landfill (GCLF), located at the end of County Road 33 approximately five miles west of the community of Artois in Glenn County, California. The GCLF is operated as a Class III Waste Management Unit, and is permitted to receive up to 200 tons per day (tpd) of municipal solid waste (MSW) and to receive 200 waste hauling vehicles per day. The GCLF is scheduled for closure by approximately December 2016. The Project is intended to accommodate the current and historical operational conditions at the GCLF, with the Project's proposed processing facilities limited to processing 500 tpd of MSW.

The Project would receive up to 200 tpd of MSW from the City of Chico (carried in approximately 32 trips from municipal packer trucks per day). Given that the existing GCLF is permitted to receive 200 tpd with approximately 200 vehicles per day, it is proportionally estimated that the Project could receive up to 300 vehicles per day based on the remaining 300 tpd of processing capacity (500 tpd minus the 200 tpd coming from the City of Chico).

Based on a projected 70 percent recovery rate (and an average of 6.5 tons per vehicle), it is conservatively estimated that about 54 trucks per day would be associated with the off-haul of recovered material and other resulting products at maximum processing capacity. Staffing of the Project facility would be up to 20 employees associated with the waste receiving operations, another 10 employees associated with the recovery operations, and up to 9 delivery vehicles per day. The total trip generation reflects all vehicle trips that would be counted at the Project driveways, both inbound and outbound. As shown in **Table 3.8-2**, under the maximum processing capacity scenario, the Project would generate about 850 one-way vehicle trips per day.

**TABLE 3.8-2
PROJECT TRIP GENERATION
(*MAXIMUM PROCESSING CAPACITY SCENARIO*)**

| Component of Project Traffic | Number of Vehicles Per Day |
|---|---|
| Waste Hauling Vehicles at Maximum Capacity | 332 vehicles |
| Transfer Station Employee Vehicles | 20 vehicles |
| Vehicles Off-Hauling Recovered Material | 54 vehicles |
| Recovery Operations Employee Vehicles | 10 vehicles |
| Contractors and Deliveries | 9 vehicles |
| Total Daily Vehicles | 425 vehicles |
| **Total Daily Vehicle Trips** | **850 one-way trips** |

SOURCE: Abrams Associates, 2015

Based on the existing hourly distribution of traffic throughout the day, the Project would generate about 51 one-way trips during the AM peak hour (about 6 percent of the daily trips) and about 60 one-way trips during the PM peak hour (about 7 percent of the daily trips). Based on this information and the traffic records from the landfill entrance, the maximum peak hourly trips would be about 128 one-way trips (about 15 percent of the average daily traffic) during the early afternoon.

### Project Trip Distribution

The trip distribution assumptions are based on the area roadway network, the existing directional split at other nearby local driveways and intersections, and the overall land use patterns in the area. The distribution also takes into account the 200 tpd of MSW proposed to come from the City of Chico. On that basis, approximately 55 percent of the Project traffic would be to and from the west (in the direction of Orland), approximately 25 percent would be to and from the east (in the direction of Chico) and approximately 20 percent would be to and from the south via SR 45.

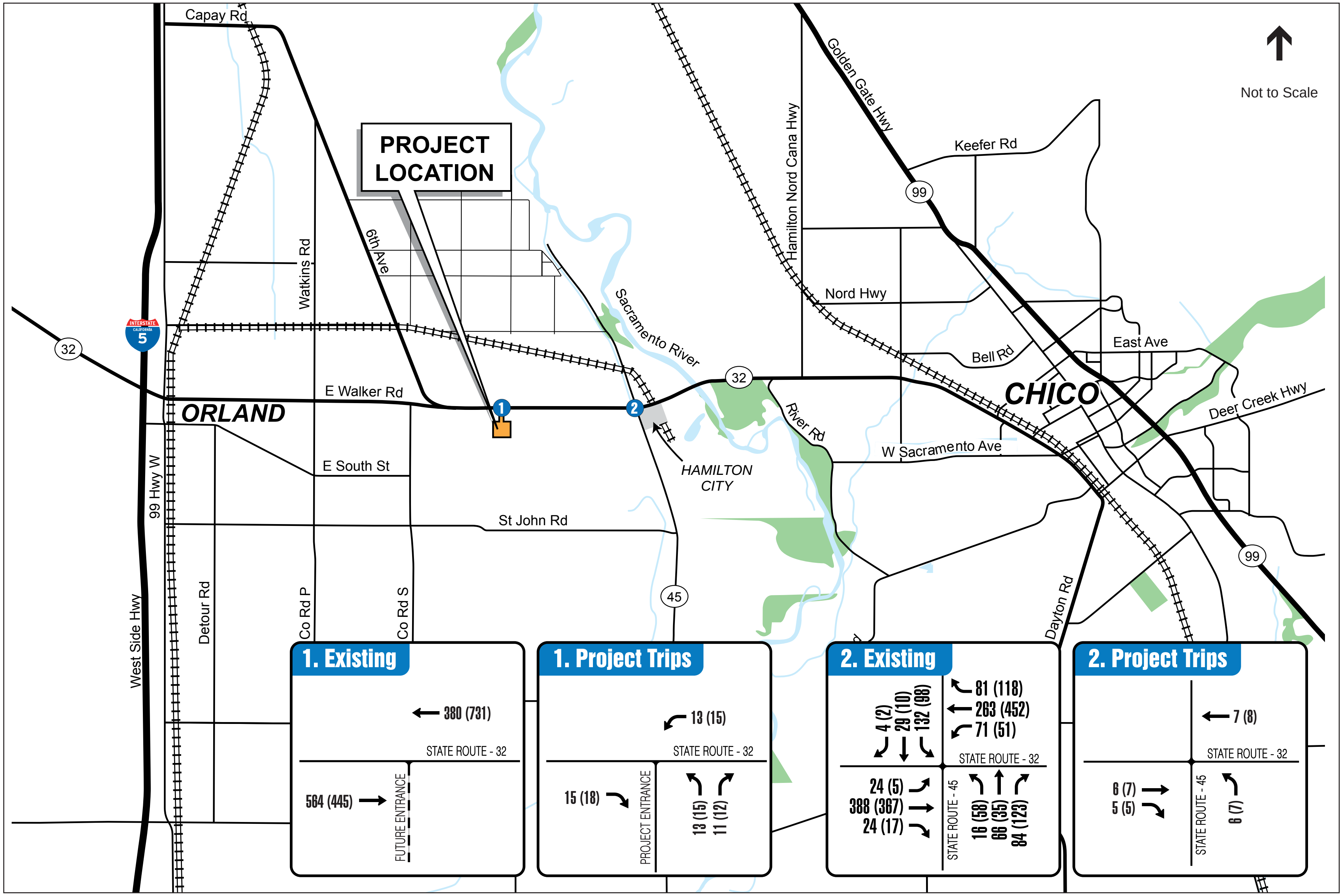
### Existing Plus Project Traffic Conditions

This scenario evaluates impacts associated with the addition of Project-generated traffic on top of existing volumes at the study intersections (see **Figure 3.8-1**). The capacity calculations for the Existing plus Project scenario are shown in **Table 3.8-3**. As shown in the table, the estimated peak-hour vehicle trips would result in minor changes to the average delay per vehicle under existing plus Project conditions; the Project entrance intersection and the intersection of SR 32 / SR 45 would operate at very good to good levels of service (LOS C or better) during the weekday AM and PM peak hours.

**TABLE 3.8-3**
**LEVELS OF SERVICE (LOS) AND AVERAGE VEHICLE DELAY (SECONDS PER VEHICLE)**
**EXISTING VS. EXISTING PLUS PROJECT CONDITIONS**

| | Existing | | | | Existing Plus Project | | | |
|---|---|---|---|---|---|---|---|---|
| | AM Peak Hour | | PM Peak Hour | | AM Peak Hour | | PM Peak Hour | |
| Study Intersection | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 1. State Route 32 at Project Access (*unsignalized*) | -- | -- | -- | -- | 16.8 | C | 20.6 | C |
| 2. State Route 32 at State Route 45 (*signalized*) | 19.5 | B | 19.6 | B | 19.9 | B | 20.1 | C |

SOURCE: Abrams Associates, 2015




SOURCE: Abrams Associates 2015



**Figure 3.8-1**
Existing AM (PM) Peak Hour Traffic Volumes and Project Trips

### Baseline Plus Project Traffic Conditions

The Baseline scenario evaluates conditions with the addition of five years of background traffic growth (at 0.5% per year) on top of existing volumes (see **Figure 3.8-2**). The Baseline plus Project traffic forecasts were developed by adding Project-related traffic to the baseline traffic volumes. As shown in **Table 3.8-4**, the estimated peak-hour vehicle trips would result in minor changes to the average delay per vehicle under Baseline plus Project conditions; the Project entrance intersection and the intersection of SR 32 / SR 45 would operate at good levels of service (LOS C) during the weekday AM and PM peak hours.

**TABLE 3.8-4**
**LEVELS OF SERVICE (LOS) AND AVERAGE VEHICLE DELAY (SECONDS PER VEHICLE)**
**BASELINE PLUS PROJECT CONDITIONS**

| | Baseline Plus Project | | | |
|---|---|---|---|---|
| | AM Peak Hour | | PM Peak Hour | |
| Study Intersection | Delay | LOS | Delay | LOS |
| 1. State Route 32 at Project Access (*unsignalized*) | 17.3 | C | 21.3 | C |
| 2. State Route 32 at State Route 45 (*signalized*) | 20.4 | C | 20.6 | C |

SOURCE: Abrams Associates, 2015

Therefore, the Project would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness (LOS standards) for the performance of the circulation system (e.g., the goal of Glenn County and Caltrans is to maintain a LOS D or better on all roads and intersections in the Project area). The Project's impact would be ***less than significant***.

**Mitigation:** None required.

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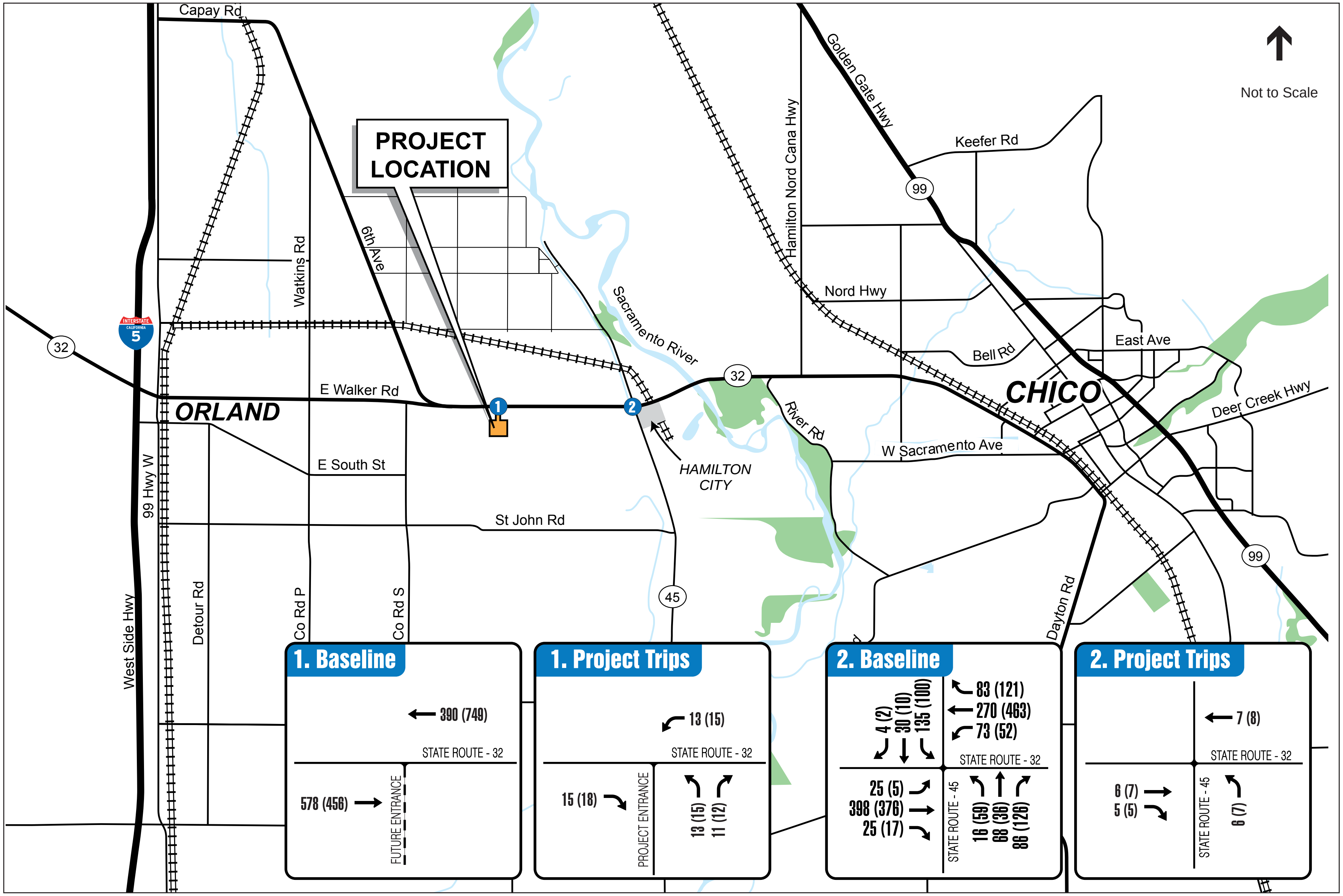
**Impact 3.8-2: The Project would not substantially increase hazards due to a design feature or incompatible uses. (Less than Significant with Mitigation)**

The Project would have an unsignalized access driveway on SR 32. It is expected that, for traffic safety considerations, Caltrans would require that separate left-turn and right-turn lanes be provided on SR 32 before they would approve the addition of a new access on the state highway. These lanes would provide space for decelerating vehicles (especially trucks) to ensure that conflicts with through traffic would not develop. Without the turn lanes, the potential increased traffic hazards associated with trucks turning between SR 32 and the Project site would be considered a ***significant*** impact.

No internal site circulation or access issues have been identified that would cause a traffic safety problem or any unusual traffic congestion or delay. The Project site design has been required to conform to County design standards and is not expected to create any significant impacts to pedestrians, bicyclists or traffic operations.




SOURCE: Abrams Associates 2015



**Figure 3.8-2**
Baseline AM (PM) Peak Hour Traffic Volumes and Project Trips

### Mitigation Measures

> **Mitigation Measure 3.8-2:** The Project applicant would coordinate with Caltrans for (and would pay its fair share towards) construction of separate left-turn and right-turn lanes on State Route 32 at the Project access intersection.

**Impact Significance After Mitigation:** Implementation of Mitigation Measure 3.8-2 would provide space for decelerating vehicles (especially trucks) to ensure that conflicts with through traffic would not develop, and therefore would reduce impacts to less than significant levels.

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**Impact 3.8-3: The Project would not result in inadequate emergency access. (Less than Significant with Mitigation)**

Sufficient emergency access is determined by factors such as number of access points, roadway width, and proximity to emergency service providers (e.g., fire stations). The land use plan for the Project includes a primary entrance on SR 32. All lane widths within the Project site would meet the minimum width needed to accommodate an emergency vehicle. Without a secondary emergency vehicle access for the Project site, the resulting inadequate emergency access would be considered a ***significant*** impact.

### Mitigation Measures

> **Mitigation Measure 3.8-3:** The Project applicant would coordinate with the Hamilton City Fire Protection District for construction of a secondary site driveway (for emergency vehicle access) at the northwest corner of the Project site.

**Impact Significance After Mitigation:** Implementation of Mitigation Measure 3.8-3 would provide secondary access to the Project site to ensure adequate accommodation of emergency vehicles, and therefore would reduce impacts to less-than-significant levels.

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**Impact 3.8-4: The Project would not conflict with any 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)**

**Transit Impacts.** The Project would not interfere with any existing bus routes, would not remove or relocate any existing bus stops, and would not prevent implementation of any future transit service. In addition, the Project is not forecast to generate any new transit patrons.

**Pedestrian and Bicycle Impacts.** The Project would not include any design features that would affect pedestrian and/or bicycle conditions in the area. Although it is possible an employee could commute by bicycle to the site, it is expected that the lack of bicycle facilities (no bike lanes or designated bike route) on SR 32 would discourage such a travel mode choice.

The Project would not directly or indirectly affect any adopted, or to be adopted, policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities. For these reasons, the transportation of MSW to the Project facility would have a ***less-than-significant*** impact to alternative transportation facilities.

**Mitigation:** None required.

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**Impact 3.8-5: Construction activities associated with the Project would result in an increase in traffic to and from the site and could lead to unsafe conditions near the Project site. (Less than Significant)**

Once initiated, Project construction would last about 12 months, generally occurring between 7:00 a.m. and 4:00 p.m., Monday through Friday; no construction activity is expected on weekends. Construction activities that would generate off-site traffic would include the initial delivery of construction vehicles and equipment to the Project site, the daily arrival and departure of construction workers, and the delivery of materials throughout the construction period, and removal of construction debris. The construction staging area would be onsite. Parking for construction workers would be located onsite.

Based on past construction of similar projects, there would be up to about 100 construction workers onsite on days during the period of peak construction activity. If all workers commuted in their own vehicles, then there would be up to 200 daily vehicle trips. The construction worker arrival peak (100 trips) would occur between 6:30 and 7:30 a.m. and the departure peak (100 trips) would occur between 4:00 and 5:00 p.m.

Approximately eight pieces of heavy equipment are estimated to be transported on and off the site each month, though not each day, throughout the construction of the Project. Transportation permits from the County and/or Caltrans would be required for any oversized and/or overweight vehicles.

Prior to issuance of grading and building permits, the Project applicant would be required to submit a Traffic Control Plan to the County and/or Caltrans. The requirements within the Traffic Control Plan include, but are not limited to, the following:

- Truck drivers would be notified of, and required to use, the most direct, designated truck route between the site and I-5, as determined by the County Engineering Department;
- All site ingress and egress would occur only at the main driveway to the Project site, to be monitored and controlled by flaggers for large construction vehicle ingress and egress; and
- Warning signs indicating “truck entry/exit ahead” would be posted on SR 32.

This analysis assumed construction of the entire Project in one phase to identify the potential worst-case traffic effects. If the Project were built in more than one phase, the effects of each phase would be the same or less (depending on work crew size and equipment needed). Each phase would be subject to a Traffic Control Plan and oversight by the County Engineer.

The impact of construction truck traffic would be a temporary lessening of the capacities of SR 32 due to the size, slower acceleration, and larger turning radii of trucks, which may temporarily affect traffic operations and increase traffic conflicts near the Project site. Overall, because construction activities would be temporary, and activities are required to be conducted in accordance with County (and Caltrans as state highways are affected) requirements, construction-related transportation impacts of the Project would be ***less than significant***.

**Mitigation:** None required.

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## *Cumulative Impact*

### Geographic Context

The cumulative context for transportation and traffic impacts of the Project includes the regional and local roadways that would be used to access the Project site. Increased traffic volumes on the affected roads could result in unacceptable LOS conditions. Considerable contribution to such unacceptable LOS would result in a significant cumulative impact.

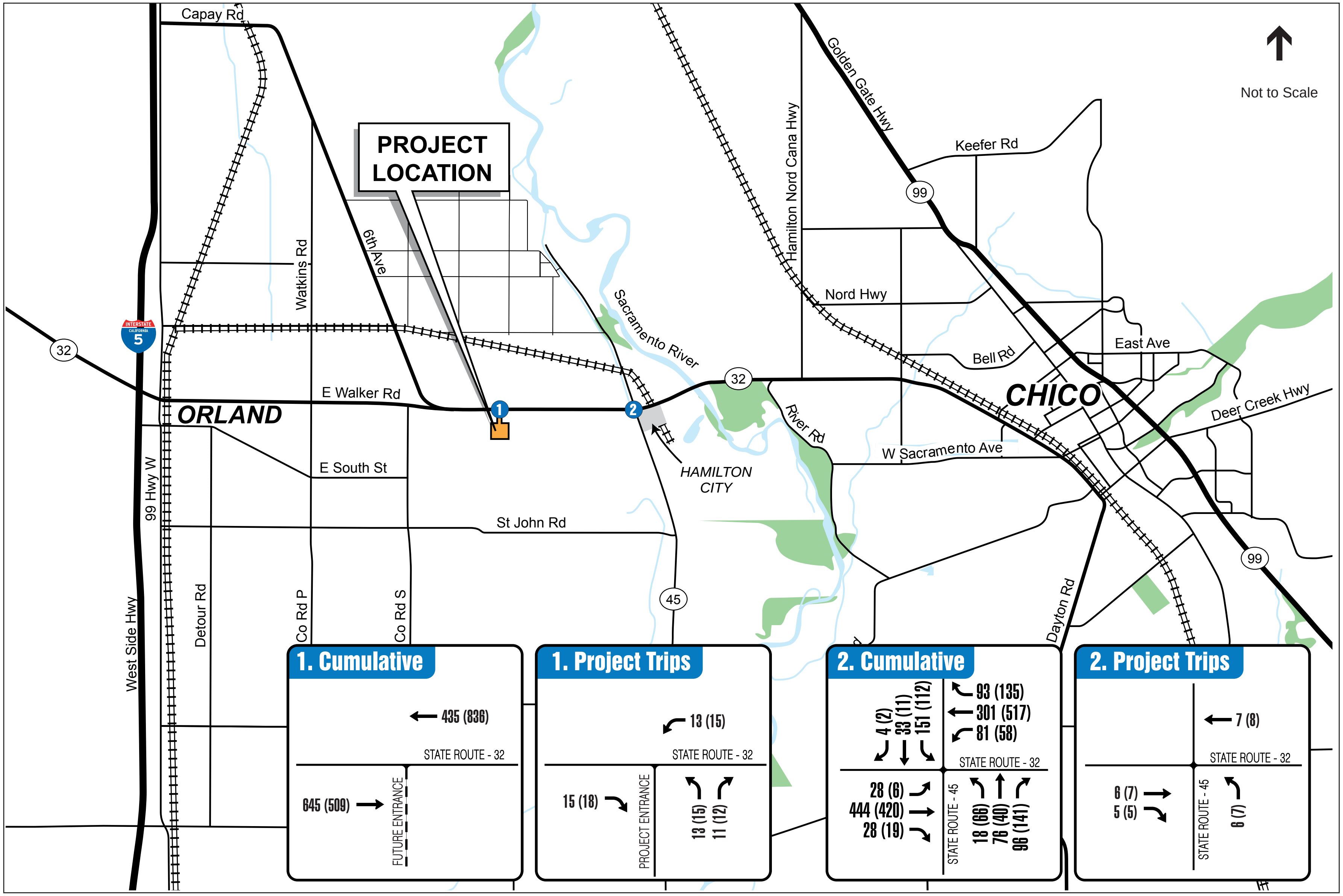
**Impact 3.8-6: The Project, in combination with past, present, and reasonably foreseeable future projects would not result in a substantial contribution to cumulative transportation impacts. (Less than Significant)**

For the cumulative (Year 2040) conditions, the intersection traffic volumes were based on the addition of traffic from all planned and approved projects plus the addition of growth estimated by the County's traffic model (see **Figure 3.8-3**). As shown in **Table 3.8-5**, the estimated peak-hour vehicle trips would result in minor changes to the average delay per vehicle under Cumulative plus Project conditions; the Project entrance intersection and the intersection of SR 32 / SR 45 would operate at acceptable levels of service (LOS D or better) during the weekday AM and PM peak hours.

**TABLE 3.8-5**
**LEVELS OF SERVICE (LOS) AND AVERAGE VEHICLE DELAY (SECONDS PER VEHICLE)**
**CUMULATIVE (2040) PLUS PROJECT CONDITIONS**

| | Baseline Plus Project | | | |
|---|---|---|---|---|
| | AM Peak Hour | | PM Peak Hour | |
| Study Intersection | Delay | LOS | Delay | LOS |
| 1. State Route 32 at Project Access (*unsignalized*) | 19.3 | C | 25.1 | D |
| 2. State Route 32 at State Route 45 (*signalized*) | 23.4 | C | 24.4 | C |

SOURCE: Abrams Associates, 2015




SOURCE: Abrams Associates 2015



**Figure 3.8-3**
Cumulative AM (PM) Peak Hour Traffic Volumes and Project Trips

Therefore, cumulative conditions (and the Project's contribution to those conditions) would not conflict with an applicable plan, ordinance or policy establishing measures of effectiveness (LOS standards) for the performance of the circulation system (e.g., the goal of Glenn County and Caltrans is to maintain a LOS D or better on all roads and intersections in the Project area). The Project's cumulative impact from traffic would be ***less than significant***.

**Mitigation:** None required.

## References

California Department of Transportation (Caltrans), 2015. *2014 Traffic Volumes on California State Highways*.

California Department of Transportation (Caltrans), 2014. *Transportation Concept Report for State Route 32,* August 2014.

Glenn County Planning & Public Works Department (Planning Division), 1993. *General Plan: Transportation/Circulation*.

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# 3.9 Utilities and Services

This section provides a discussion of the utilities in the Project area that may be affected by implementing the Project. Issues associated with wastewater treatment, water supply, and solid waste disposal are discussed. Potential impacts addressed include construction-related disturbance to existing service utility infrastructure that could be located within or adjacent to construction areas. Impacts associated with drainage system capacity are addressed in Section 3.6, Hydrology and Water Quality.

One comment letter relating to Utilities and Services was received on the Notice of Preparation (NOP) (**Appendix A**), that included comments from the Glenn County Health and Human Services Agency, Environmental Health Department, regarding land application of digestate, household hazardous waste, stormwater runoff and leachate, and wells and septic systems.

## 3.9.1 Environmental Setting

### Solid Waste

Solid waste in Glenn County is generally collected by franchised haulers and taken to the existing Glenn County Landfill, a Class III facility. Some solid waste is transported to the landfill by private vehicles. The landfill is operated by Glenn County under a Joint Powers Agreement with the cities of Orland and Willows. As of June 8, 2010, the landfill had a remaining capacity of 348,223 cubic yards and a maximum permitted throughput of 200 tons per day (CalRecycle, 2015). As previously discussed in Chapter 2, Project Description, the Glenn County Landfill plans to cease receiving wastes and close by approximately December 2016.

### Wastewater

Municipal wastewater treatment facilities are limited to urbanized portions of Glenn County. Wastewater treatment in areas not served by municipal facilities is provided by individual septic tank and leachline systems. Water treatment using a septic system depends on gravity to move sewage effluent through the soil, where the effluent is treated by the biological activity in the soil. Some properties may also employ either an aerobic treatment unit or a sand filter, or both, to assist in treatment.

### Water Supply

Potable water in Glenn County is primarily provided by groundwater. Private municipal or community water providers supply water to urban areas within Glenn County such as Willows, Hamilton City, and Orland. Water supply not provided by community systems in the unincorporated area of Glenn County is typically obtained by individual onsite wells. Wells can be drilled successfully and are numerous in the region.

The water demands of the Project would be potable water for a workforce of approximately 15 full-time employees (FTEs) and the AD process. The employee water demand would be approximately 1,200 gallons per day (gpd). This water would be provided from an onsite groundwater well. The Project site has three water supply wells, two of which are planned to be used for the Project. The main well can pump 3,000 gallons per minute (gpm) and the second largest well pumps 850 gpm. The Project would also require an onsite water supply for fighting fires.

## Gas and Electric Service

Digester biogas would be the primary source of gas used in the production of compressed natural gas (CNG) fuel for use at a CNG fueling station for fleet vehicles; however, Pacific Gas and Electric Company (PG&E) natural gas would also be used for the CNG fueling station. The PG&E natural gas would be used as a backup should the biogas be temporarily depleted. It is anticipated that an existing service line to the west of the shop building on the Project site would be used as a connection to the PG&E natural gas. If this service line is unable to be used as a connection, a connection at Mills Orchard to the east of the Project site would be analyzed for backup supply to the CNG fueling station. The PG&E natural gas is methane ($CH4$) and must be used as the backup supply; rather than higher carbon gases (i.e., butane, propane, etc.) that can overheat CNG-fired engines.

Three existing power lines connect to the Project site. One runs along the eastern boundary of the Project site, bordering the orchard on the east. The second runs into a transformer pad near the center of the Project site. The third runs to the existing shop on the western boundary of the Project site.

## Drainage / Stormwater Service

### *Phase I and II Drainage*

The Project site contains an existing infiltration basin that was used to capture sediment laden water from the former gravel operations. The proposed stormwater basin for the Project (see Figure 2-3) would prevent stormwater from flowing into Stony Creek. Stormwater would flow into a proposed, 4.23-acre-foot stormwater basin. As discussed in greater detail in Section 3.6, Hydrology and Water Quality, stormwater would infiltrate rapidly through the moderate to coarse-grained soils located onsite. The proposed stormwater basin would be sized to contain and infiltrate up to the 100-year, 24-hour storm event. Therefore, the Project would not discharge stormwater to Stony Creek. For additional detail regarding stormwater management including stormwater volumes, refer to Section 3.6.

The industrial wastewater (from the AD tanks) would be contained in the lined aerobic stabilization ponds and would not be discharged to Stony Creek, or contact groundwater. The aerobic stabilization ponds would be classified as Class II Impoundments with a double lining system with leak detection.

# 3.9.2 Regulatory Setting

## Federal

There are no known federal regulations applicable to construction and operation of the Project related to utilities and services.

## State

### *California Public Utilities Commission*

The California Public Utilities Commission (CPUC) regulates privately owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies, in addition to authorizing video franchises. The CPUC establishes service standards and safety rules and authorizes utility rate changes.

### *Integrated Waste Management Act of 1989 (Assembly Bill 939)*

The California Integrated Waste Management Act of 1989 requires state, county and local governments to divert at least 50% of regional solid waste from landfills by the year 2000. The Act is overseen by the CalRecycle, formerly California Integrated Waste Management Board (CIWMB). CalRecycle oversees a reporting program for local jurisdictions to account for levels of diversion achieved. Implementation is often carried out by a local entity called a Local Enforcement Agency (LEA). The LEA for the Project would be the Glenn County Health and Human Services Agency.

## Local

### *Glenn County General Plan*

The Glenn County General plan was adopted on June 15, 1993. The Solid and Hazardous Waste section (Section 5.2.8). Public Services and Facilities section (Section 5.3.4) of the General Plan provides information and policy guidance to Glenn County to ensure that adequate public facilities and services are available (Glenn County, 1993).

#### Solid Waste

Goal PSG-8: Reduce the County's reliance on landfilling, reduce the volume of the solid waste stream, increase recovery of materials, and dispose of remaining waste in the most environmentally and fiscally responsible manner available.

Policy PSP-57: Achieve maximum waste diversion through the expansion and/or development of cost effective recycling and source reduction programs tailored for both rural and urbanized jurisdictions in the county.

Policy PSP-58: Extend the useful life of the existing landfill site.

Policy PSP-59: Formulate alternatives to the current facilities for the collection and disposal of solid waste based on capacity and use of transfer stations.

**Wastewater**

Policy CDP-48: Consider septic system and septage disposal limitations when determining areas suitable for new development not served by wastewater treatment facilities, and assure that density standards allow adequate area for septage disposal.

**Water**

Goal NRG-2: Protection and management of local water resources.

## 3.9.3 Impacts and Mitigation Measures

The significance criteria for utilities and service systems analysis are based on the criteria presented in Appendix G of the *CEQA Guidelines.* For this analysis, the Project would result in significant impacts if it would:

- 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;
- Have insufficient water supplies available to serve the project from existing entitlements and resources, or need new or expanded entitlements;
- Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments;
- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs; or
- Not comply with federal, state, and local statutes and regulations related to solid waste.

### Methodology

The assessment of utilities is based on qualitative analysis of existing services and resources available in the Project area as well as a determination of whether the Project includes adequate provisions to ensure continued service that meets acceptable standards.

### Impacts Not Evaluated Further

The Project would not result in impacts related to the following criterion:

**Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board**

As described in Chapter 2, Project Description, it is estimated that the Project would require a maximum of approximately 28,000 gallons of process waste water per day. The process wastewater would be treated in onsite aerobic stabilization ponds to reduce BOD and ammonia to acceptable levels allowing it to be recirculated back into the process. Therefore, no increase in wastewater diverted to wastewater treatment facilities would occur and the Project would not exceed wastewater treatment requirements.

> **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 or result in a determination by the wastewater treatment provider which serves or may serve the Project that it has inadequate capacity to serve the Project's projected demand in addition to the provider's existing commitments.**

As stated, the process water would be treated in onsite aerobic stabilization ponds to reduce BOD and ammonia to acceptable levels allowing it to be recirculated back into the process. Therefore, no new or expanded water or wastewater facilities would be required and no additional wastewater treatment capacity would be required by a local provider. No impact would occur.

## Impacts and Mitigation Measures

**Impact 3.9-1: The Project could have insufficient water supplies available to serve the project from existing entitlements and resources, or need new or expanded entitlements. (Less than Significant)**

The Project would use existing onsite water well(s) and would not require new or expanded entitlements. The Project site has three water supply wells. The main water supply well pumps 3,000 gallons per minute (gpm) and the second largest well pumps 850 gpm. In addition, the recirculated water from the aerobic stabilization ponds would be used for AD process water. According to the Hamilton City Fire Protection District, the fire demand for this facility type is 3,500 gallons per minute (gpm). The onsite wells should be capable of providing enough water supply for the fire demand requirement (see also Section 3.10) and ongoing requirements for AD process water, and the impact to water supplies would be less than significant.

**Mitigation:** None required.

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**Impact 3.9-2: The Project could generate solid waste that would be disposed of at a landfill without sufficient permitted capacity or violate statutes and regulations related to solid waste. (Less than Significant)**

The Project would include a MRF, which would first remove bulky materials and then separate materials as organic materials for AD, recyclable materials or residual materials (for landfill disposal). The materials designated for landfill disposal could be taken to Ostrom Road Landfill, Anderson Landfill or Neal Road Recycling and Waste Facility. Ostrom Road Landfill has a ceased operation date of December 2066 and had a remaining capacity of 39,223,000 cubic yards in June 2007. Anderson Landfill has a ceased operation date of January 2055 and had a remaining capacity of 11,914,025 cubic yards in March 2008. The Neal Road Recycling and Waste Facility has a cease operation date of January 2033 and had a remaining capacity of 20,847,970 cubic yards in July 2009. As such, several possible locations for solid waste transfer should have adequate remaining capacity to accommodate the Project for 20 to 50 years.

The amount of solid waste generated by the Project would be significantly less than the amount generated under existing conditions. As discussed previously, approximately 30 -40 percent (or higher) of materials currently landfilled (at the Glenn County Landfill) could be recovered above what is currently recycled. The Project would be required to operate in compliance with the California Integrated Waste Management Act of 1989, potentially new more aggressive statewide resource recovery goals (i.e., AB 341 policy goal of 75% reduction) and General Plan policies. The policies address reducing consumption of non-renewable resources, and reuse and recycling of resources. Un-salvageable materials generated from the Project would be disposed of at authorized sites in accordance with all applicable federal, state, and local statutes and regulations. The facility has been designed to increase the recovery of resources; both at the MFR and the AD facility. The Project impact on solid waste landfill capacity and solid waste regulation would be less than significant.

**Mitigation:** None required.

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**Impact 3.9-3: Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (Less than Significant)**

The Project would include a stormwater management system to divert stormwater run-off away from waste contact and capture stormwater from new impervious surfaces. The system would incorporate ditches and swales to convey stormwater. The system would channel stormwater from the Project's new impervious surfaces (pavement and buildings) to a proposed 4.23 acre-foot stormwater basin (see Project Description, Figure 2-3). The stormwater system would flow into an onsite stormwater retention/infiltration basin, as described in Section 3.6, Hydrology and Water Quality. Site drainage design would be based on annual average rainfall and peak runoff flow volumes from a design storm with a 1-percent chance of occurrence every year (100-year storm).The Project has been designed to prevent discharge into Stony Creek. For additional discussion of impacts on hydrologic resources related to stormwater and drainage, refer to Section 3.6, Hydrology and Water Quality.

As described in Section 3.6, Hydrology and Water Quality, construction of the Project would require a National Pollutant Discharge Elimination System (NPDES) general construction permit, which calls for the preparation of a construction-specific stormwater pollution prevention plan (SWPPP). Implementation of this SWPPP would ensure that any potential impacts to water quality as a result of constructing the Project would be less than significant.

**Mitigation:** None required.

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## *Cumulative Impact*

### Geographic Context

The cumulative context for public services and utilities would include projects within the service area serving the project that would increase demand and effect levels of service or capacity requiring modification of existing or construction of new services or utilities.

**Impact 3.9-4: Construction and operation of the Project, in combination with other development, would not result in cumulatively considerable impacts to utilities and services. (Less than Significant)**

Other development or projects in the cumulative setting of the Project may have a cumulative impact on water supplies in Glenn County. The degree to which these projects may utilize local water supplies varies depending on the use. Though each project identified would require varying amounts of water, depending on the nature of the use, given that the Project would use an existing onsite water well (or wells) and would not require any new or expanded entitlements, and that the stabilized water could be used for AD process water, it is assumed that the development of these projects would not result in a significant, cumulative effect on the County's water supply.

The Project would result in solid waste disposal at local landfills; however, Project operations would significantly reduce the amount generated under current conditions through recovery of recycled materials and AD.

The Project and other projects in the cumulative setting would be required to operate in compliance with the California Integrated Waste Management Act of 1989 and local general plan policies. The policies address reducing consumption of non-renewable resources, and reuse and recycling of resources. Solid waste generated from the Project would be disposed of at permitted facilities in compliance with all applicable federal, state, and local statutes and regulations. As a result, the Project would not make a considerable contribution to cumulative increases in the demand for public services and utilities or in the amount of solid waste being disposed of at the local landfills, including Ostrom Road Landfill, Anderson Landfill, or Neal Road Recycling and Waste Facility (which, as discussed previously, all have adequate remaining capacity and closure dates). Therefore, this cumulative impact is less than significant.

As described previously, the Project would include a stormwater management system and be required to implement a SWPPP to mitigate potential impacts to water quality from constructing the Project. Therefore the Project would not result in a cumulatively considerable contribution toward the cumulative impact.

**Mitigation:** None required.

## References

CalRecycle, 2015. Facility/Site Summary Details: Glenn County Landfill Site (11-AA-0001) http://www.calrecycle.ca.gov/SWFacilities/Directory/11-AA-0001/Detail/. Accessed on August 13, 2015.

Glenn County, 1993. Glenn County General Plan. June 15, 1993.

Richgels Environmental Services, 2015. Stormwater Management Technical Memo. Chris Richgels, PE. October 19, 2015.

# 3.10 Fire Protection Services

This section describes the existing fire protection services and potential effects from Project implementation on the site and surrounding area. The following discussion summarizes the current regulatory framework, an analysis of potential impacts. Fire protection services is one of the public services covered in the California Environmental Quality Act (CEQA) Appendix G Environmental Checklist Form. This section focuses on impacts related to fire protection services. Other public services from the CEQA Appendix G Environmental Checklist (i.e., police protection, schools, and parks) are discussed in Section 4.1, *Resources Without Project Impacts* of this EIR.

The Hamilton City Fire Protection District submitted a comment letter in response to the Notice of Preparation (NOP) (Appendix A) that addressed potential impacts of the Project on fire protection services.

## 3.10.1 Environmental Setting

### Fire Protection

Fire protection in Glenn County is provided by twelve individual fire districts, including the cities of Willows and Orland. The Project site is located within the boundaries of the Hamilton City Fire Protection District (HCFPD). The HCFPD is headquartered in Hamilton City approximately 4 miles from the Project site. The HCFPD response area is approximately 60 square miles, the majority of which lies outside of the Hamilton City Community Service District. The HCFPD has mutual aid agreements with other Glenn County Fire Protection Districts and automatic aid agreements with Butte County Fire and Ord Fire Protection District (Glenn LAFCO, 2011).

The HCFPD has one full time staff supplemented by one half-time staff member, and an average of 30 volunteer responding firefighters. The HCFPD responds to an average of 220 calls per year (James, 2015). Estimated response times within the HCFPD response area vary from three to five minutes in areas near the vehicle housing locations, to over fifteen minutes in outlying areas of the HCFPD response area. Longest response times are experienced in the southern and southwest portions of the response area (Glenn LAFCO, 2011). The HCFPD has an Insurance Service Office (ISO) split rating of 5/7; 5 within 1000 feet of a fire hydrant and 7 over 1000 feet from a fire hydrant (James, 2015).

## 3.10.2 Regulatory Setting

### Federal

There are no federal regulations which apply to this discussion.

### State

There are no state regulations which apply to this discussion.

## Local

### *Glenn County General Plan*

The goals and policies of the Glenn County General Plan that are potentially applicable to the Project are listed below.

Goal CDG-17: Provision of adequate and cost-effective public services.

Policy CDP-111: Establish level of service standards for public services which can be used to evaluate the impact of development on the various services, and to evaluate service distribution and expansion needs.

Goal PSG-2: Protection and enhancement of the quality of life by reducing the loss of life and personal property due to fire

Policy PSP-10: Maintain existing fire service levels and not allow their deterioration

Policy PSP-11: Determine the impact proposed development will have on the provision of fire protection services, and ensure that the established level of service is maintained

Policy PSP-14: Encourage fire districts to work with the County to require new development to pay its fair share for the provision of new fire stations, equipment, personnel and fire suppression improvements necessary to provide fire protection services.

Policy PSP-16: Require new development to be designed with fire protection and prevention in mind.

Policy PSP-17: Apply contemporary fire prevention standards to all development.

# 3.10.3 Impacts and Mitigation Measures

## Significance Criteria

Appendix G, Environmental Checklist, of the CEQA Guidelines, establishes the following threshold for public services impacts:

- Would the project result in substantial adverse physical impacts associated with the provision of, 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:

    a) Fire Protection? (see discussion below)

    b) Police Protection? (Refer to Section 4.1 in this EIR, *Resources Without Project Impacts*)

    c) Schools? (Refer to Section 4.1 in this EIR, *Resources Without Project Impacts*)

    d) Parks? (Refer to Section 4.1 in this EIR, *Resources Without Project Impacts*)

    e) Other public facilities? (Refer to Section 4.1, in this EIR *Resources Without Project Impacts*)

## Methodology

The Project was evaluated for its potential impacts on fire protection services serving the Project site. The potential for adverse impacts on fire protection services was evaluated based on information concerning the current service levels and the ability of service providers to accommodate the increased demand created by the Project.

## Impacts and Mitigation Measures

**Impact 3.10-1: The Project could substantially increase demands on fire protection services (Less than Significant with Mitigation)**

The Project site currently includes an inactive gravel processing facility with several structures. Operation of the Project would increase the risk of fire at the Project site. The MRF would process waste that would include materials that are flammable such as cardboard, paper, clothing, and plastic. The production and utilization of biogas at the Project site would also increase the risk of fires and explosions at the Project site. The Project is required to comply with fire and building codes. Compliance with building and fire codes will be determined by the Building Inspection Division.

In a comment letter to the Glenn County Planning Department, Fire Chief Dan James expressed concerns related to the ability of the HCFPD to reach the roof of the building or the top of the AD tanks without a ladder truck, which they assumed would be 50 feet tall. With changes to the preferred AD technology, the height of the digester tanks has been reduced to 16 to 22 feet tall, not 50 feet in height as indicated in the comment letter. It should also be noted that other than methane, the tanks would contain water and AD process water that would not be a likely source of fire if an explosion were to occur. The HCFPD also indicated that they would need Confined Space Rescue Technician training and 4-way gas monitors to respond to emergencies at the project site. During operations the air space in the AD tanks would be anaerobic with no oxygen (confined spaces). In addition, the HCFPD indicated that on-site backup power and storage would be required.

The Project could result in an increase in the number of emergency responses in the HCFPD. In addition, he HCFPD could require additional training and equipment to respond to fires and emergencies at the project site. Therefore, impacts to fire protection services is considered to be a **potentially significant impact**.

> **Mitigation Measure 3.10-1:** The project applicant and/or their architects and engineers shall consult with the Hamilton City Fire Protection District (HCFPD) and the Glenn County Planning and Public Works Agency to determine the specific equipment, supplies, storage, and levels of manpower necessary to sustain acceptable service levels at the Project site and in the HCFPD.

**Impact Significance After Mitigation:** Implementation of Mitigation Measure 3.10-1 would reduce impacts to fire protection services to less than significant.

### *Cumulative Impact*

#### Geographic Context

The geographic context for impacts to fire protection services is the area within the boundaries of the HCFPD. The cumulative conditions for fire protection services include existing, approved, proposed, and other development anticipated in the HCFPD that could require new or altered facilities in order to maintain acceptable level of service, response times, or other performance objectives of HCFPD.

**Impact 3.10-2: The Project combined with other related cumulative projects, could have a substantial adverse impact on fire protection services. (Less than Significant with Mitigation)**

The Project combined with related projects is expected to result in a cumulative increase in demand for fire protection services. The Project combined with other projects in the District could require additional staffing, equipment, and facilities. However, the need for additional services would be funded by an assessment of property tax of properties within the HCFPD boundary and also by Proposition 218 on each housing unit. In addition, each of the related projects would be subject to HCFPD review and would be required to comply with all applicable fire safety requirements in order to adequately mitigate fire protection service impacts. Implementation of the mitigation measure 3.10-1 would reduce the Project's cumulative impact to fire protection services to a less-than-significant level.

**Mitigation:** Implementation of Mitigation Measure 3.10-1

**Impact Significance After Mitigation:** Implementation of Mitigation Measure 3.10-1 would reduce the cumulative impacts of the Project to fire protection services to less than significant.

## References

County of Glenn, 1993. *County of Glenn General Plan*. Adopted June 15, 1993.

Glenn Local Agency Formation Commission (LAFC0), 2011. *Draft Fire Protection Districts Municipal Service Review (MSR) and Sphere of Influence (SOI)*. January 2011.

James, Dan, 2015. Letter to the Glenn County Planning Department regarding the KVB Project. January 16, 2015.

# CHAPTER 4
# Other CEQA Considerations

## 4.1 Resources Without Project Impacts

As required by CEQA, this EIR focuses on expected significant or potentially significant environmental effects (CEQA Guidelines §15143). During preparation of this Draft EIR, several CEQA resource areas were found to carry no impact or less than significant impacts, without requiring mitigation. As such, no further impact analysis is required. The following discussions summarize the minimal impacts related to these CEQA resource areas.

### 4.1.1 Aesthetics

All proposed AD facilities would be located in a rural area located approximately four miles east of Orland, and three miles west of Hamilton City. The nearest sensitive receptors include a single-family residence located approximately 1,040 feet northwest of the Project site. Other residences are located at least 5,000 feet from the Project site. Neither the Project site nor its vicinity includes any scenic vistas, rock outcroppings, or other substantial aesthetic resources. The Project area is not located along or near any scenic highways or other designated scenic resources. The Project would include limited nighttime lighting for security purposes, which would be installed in accordance with Glenn County lighting requirements. The Project would not include any new sources of glare.

The Project site includes existing industrial buildings, gravel storage, various small buildings, and other facilities associated with the site's existing industrial use. The Project would include installation of additional industrial facilities at the site. However these changes would generally be consistent with existing use, and would not substantially alter the visual character of the site. Therefore, impacts associated with aesthetics would be less than significant without mitigation, and no further analysis is required.

### 4.1.2 Agriculture and Forest Resources

The Project site is currently zoned for and has been historically operated under industrial use. There are agricultural uses in the lands surrounding the site. The Project site does not include any forest resources or existing agriculture. Additionally, the Project would not introduce a new land use that would conflict with or interfere with existing agricultural activities located on adjacent sites. For example, all Project operations would be maintained on site, and would not result in the construction of new housing or other land uses that would potentially conflict with existing adjacent agricultural use. Therefore, impacts associated with agriculture and forest resources would be avoided or less than significant without mitigation, and no further analysis is warranted.

### 4.1.3 Land Use and Planning

The Project is located in a rural area and is currently zoned for industrial and agricultural use. The Project would not be located within an existing community, and therefore would not divide or result in the division of an existing community. The uses proposed under the Project would be consistent with existing zoning, and with designated uses under the County's General Plan. The Project site is located within the scope of the Lower Stony Creek Watershed Restoration Plan, but as discussed in Chapter 3.2, Biological Resources, the Project would not conflict with that plan. The Project site is not located within any other habitat conservation plan or other conservation plan boundary. Therefore, impacts associated with land use and planning would be avoided, and no further analysis is warranted.

### 4.1.4 Mineral Resources

The MRF/AD area would be located on an existing inactive gravel processing facility. The gravel quarry facility has been inactive for over 10 years and the MRF/AD area would only take up a small portion of the parcel and not displace the facilities. In addition, the primary source of the gravel is within Stony Creek and the construction and operation of the Project would not preclude future gravel recovery. Therefore, impacts associated with mineral resources would be avoided or less than significant without mitigation, and no further analysis is warranted.

### 4.1.5 Population and Housing

The Project would result in installation of a new MRF and AD facility designed to replace current use of the County's existing landfill. The Project would not result in installation of new housing or new commercial businesses, nor would the Project expand existing roadways or other transportation or other infrastructure within the County, that could result in increased demand for housing. The Project would be in a rural area that is not currently used for housing. Therefore the Project would not displace any existing housing. Finally, the existing Project site is used only for industrial purposes; no people or populations would be displaced as a result of Project construction or operation. Therefore, impacts associated with population and housing would be avoided or less than significant without mitigation, and no further analysis is warranted.

### 4.1.6 Public Services

The Project would result in the installation of new solid waste management facilities, sufficient to offset losses in the in-county waste management capacity due to anticipated closure of the County's existing landfill. The Project would not substantially increase public use of any facility, and would not require substantially increased police protection. The Project would not install new housing or other uses that would drive increased public demand for schools, parks, or other public facilities. Therefore, impacts associated with potential increases in demand on public services would be avoided or would be less than significant without mitigation, and no further analysis is warranted. The impacts related to fire protection services are analyzed in Section 3.10, Fire Protection Services.

### 4.1.7 Recreation

The Project would be located in an area that is currently used for industrial and agricultural uses; it does not serve as an access route to any recreational areas, nor is it located adjacent to any public recreational areas, including parks or public open space. Therefore the Project would not restrict access to, or otherwise directly affect, recreation areas. Additionally, the Project would not increase population or substantially alter existing public use patterns, such that an increase in demand on recreational facilities would occur. Therefore, potential impacts on recreation would be avoided or less than significant without mitigation, and no further analysis is warranted.

## 4.2 Cumulative Impacts

CEQA Guidelines §15130(a) requires that an EIR discuss the cumulative impacts of a project when the project's incremental effect is "cumulatively considerable," meaning that the project's incremental effects are considerable (as defined in §15065(c)). Cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts (CEQA Guidelines §15355). Further, such impacts can result from individual effects which may be minor, but collectively significant over time. The discussion on cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence (CEQA Guidelines §15130(b)). CEQA Guidelines note that the cumulative impacts discussion does not need to provide as much detail as is provided in the analysis of project-only impacts and should be guided by the standards of practicality and reasonableness. Considering this, CEQA Guidelines §15130(b)(1) recommends the use of a "list" or "projection" approach in the discussion of significant cumulative impacts to adequately address cumulative impacts.

The cumulative impact analysis considered the combined effect of the Project and other closely related, past, present and reasonably foreseeable future projects that may be constructed or commence operation during the time of activity associated with the Project. The cumulative impacts of the Project are analyzed in detail in the final impact discussion located in each of the environmental resource sections (Sections 3.1 – 3.9). Please refer to those impacts for a detailed discussion.

County staff are not aware of any major, reasonably foreseeable future projects on State Route 32 (SR 32) or otherwise in the vicinity of the Project that would result in cumulative impacts similar to Project impacts, including traffic. In the absence of other specific reasonably foreseeable projects the cumulative traffic impact was evaluated using projected traffic growth for the County (see Section 3.8 of this EIR.

## 4.3 Growth-Inducing Impacts

The CEQA Guidelines §15126.2(d) require that an EIR evaluate the growth-inducing impacts of a proposed action (Section). A growth-inducing impact is defined by the CEQA Guidelines as:

> [T]he ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth.... It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

A project can have direct and/or indirect growth-inducement potential. Direct growth inducement would result if a project involved construction of new housing. A project can have indirect growth-inducement potential if it would establish substantial new permanent employment opportunities (e.g., commercial, industrial or governmental enterprises) or if it would involve a substantial construction effort with substantial short-term employment opportunities and indirectly stimulate the need for additional housing and services to support the new employment demand. Similarly, under CEQA, a project would indirectly induce growth if it would remove an obstacle to additional growth and development, such as removing a constraint on a required public service. An example of this indirect effect would be the expansion of a wastewater treatment plant, which might allow for more development in service areas.

The Project would not result in a substantial increase in employment, and correspondingly, would not result in a substantial increase in population and associated demand for housing in the area. Mitigation of impacts resulting from the Project would not require the construction of any additional roadways (there would be widening at the Project entrance on SR 32) or public services or utilities. For these reasons, the Project is not anticipated to result in substantial growth inducement.

## 4.4 Significant and Unavoidable Environmental Impacts

CEQA §21100(b)(2) requires that any significant effect on the environment that cannot be avoided or becomes irreversible if the project is implemented must be identified in a detailed statement in the EIR. CEQA Guidelines §15126.2(b) provides that an environmental impact report must discuss, preferably separately, the significant environmental effects which cannot be avoided if the proposed project is implemented.

No significant unavoidable impacts are identified in the EIR.

## 4.5 Significant Irreversible Environmental Changes

Section 15126.2(c) of the CEQA Guidelines requires an EIR to describe significant irreversible environmental changes that would occur if a proposed project is implemented. The guidelines further state that:

> *Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts [such as highway improvement which provides access to a previously inaccessible area] generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.*

The Project would use non–renewable fuel resources during construction and such resources would also be used to some degree for the duration of the Project (i.e., some petroleum for deliveries and electricity generated off-site that is used for the MRF and AD facilities). However development of MRF and AD facilities would provide the ability to process the municipal solid waste to generate and capture biogas, which is a flexible renewable energy source. The MRF and AD facilities should have a net positive energy condition compared to the long-haul of MSW to offsite out-of-County landfills. In essence the development of the MRF and AD facilities would provide access for future generations to the equipment that can conserve resources (recyclable materials) and generate biogas (a flexible source of renewable energy).

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# CHAPTER 5
# Alternatives

## 5.1 Introduction

CEQA Guidelines §15126(a) requires an Environmental Impact Report (EIR) to describe a range of reasonable alternatives to the Project which would feasibly attain most of the basic objectives of the Project but would avoid or substantially lessen any of the significant effects of the Project, and evaluate comparative merits of the alternatives. A range of reasonable alternatives to the Project must be addressed because the EIR will identify ways to mitigate or avoid the significant effects that a Project may have on the environment (CEQA Guidelines §15126.6(b)). Consideration of a range of potentially feasible alternatives promotes informed decision making and public participation. An EIR is not required to consider infeasible alternatives, but the alternatives discussion should present alternatives to the Project which are capable of avoiding or substantially lessening any significant effects of the Project, even if these alternatives would impede to some degree the attainment of the Project objectives, or would be more costly (CEQA Guidelines §15126.6(b)).

CEQA Guidelines §15126.2(f) provides that the range of alternatives is governed by the "rule of reason", requiring the EIR to set forth only those alternatives necessary to permit a reasoned choice. In the evaluation of alternatives, the EIR shall contain sufficient detail to allow meaningful evaluation, analysis and comparison with the Project. If an alternative would cause one or more significant effects in addition to those that would be caused by the Project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the Project as proposed (CEQA Guidelines §15126.6(d)).

The EIR must evaluate a "No Project" alternative in order to provide a comparison between the impacts of approving the Project with the impacts of not approving the Project (CEQA Guidelines §15126.6(e)). CEQA Guidelines §15126(e) requires that the alternatives analysis must identify the "environmentally superior" alternative among those considered. If the "No Project" alternative is identified as the environmentally superior alternative, then the EIR must also identify an environmentally superior alternative among the other alternatives.

This chapter discusses the following alternatives to the Project:

1. No Project Alternative
2. Glenn County Landfill Location Alternative
3. Materials Recovery Facility (MRF) Only Alternative
4. Accept Waste from Glenn County Only Alternative
5. Alternative Project Location (Other than the Glenn County Landfill)

6. Co-digestion at Wastewater Treatment Facility Alternative
7. Co-digestion at Dairy Manure Digester Alternative
8. Thermal Conversion Alternative

The components of these eight alternatives are described below, including a discussion of their impacts and how they would differ from the significant impacts of the Project as proposed. A discussion of the environmentally superior alternative is included in this chapter.

## 5.1.1 Factors in the Selection of Alternatives

CEQA Guidelines §15126.6(c) recommends that an EIR briefly describe the rationale for selecting the alternatives to be discussed. A reasonable range of alternatives is considered for this analysis. The following factors were considered in identifying a reasonable range of alternatives to the Project:

- Does the alternative accomplish all or most of the primary Project objectives?
- Is the alternative feasible, from an economic, environmental, legal, social and technological standpoint?
- Does the alternative avoid or lessen any significant environmental effects of the Project?

## 5.1.2 Project Objectives

As also stated in Chapter 2, Project Description, the objectives for the Project covered by this EIR are:

- Divert and recycle up to 70 percent of County solid waste from landfill disposal
- Provide a replacement solid waste management system for the County, up to the currently permitted waste management level of 200 tons per day, due to the planned closure of the Glenn County Landfill.
- Assist the County in complying with State mandates to divert solid waste from landfill disposal.
- Support the *General Plan Energy Element* goal to see the development of renewable energy facilities in Glenn County that support a diversified and stable economic base while preserving valuable agricultural land and protecting public health and safety and the environment.
- Support Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, greenhouse gas (GHG) reduction measures related to the use of anaerobic digestion:
  - Measure E-3. Achieve a 33 percent renewable energy mix by 2020. (AD facilities produce biogas, which is a renewable energy source.)
  - Measure RW-3. High Recycling/ Zero Waste. (AD is one of five subcategories listed under this measure.)
- Establish a waste recovery facility within the Glenn County Recycling Market Development Zone (RMDZ). The RMDZ program combines recycling with economic development to fuel new businesses, expand existing ones, create jobs, and divert waste

from landfills. The RMDZ program provides attractive loans, technical assistance, and free product marketing to businesses in a RMDZ that use materials from the waste stream to manufacture their products. Each RMDZ differs in target materials to be diverted from the waste stream and incentives for using materials from the waste stream.

- Include wastes from Chico that would increase tipping-fee revenues and biogas production that could both directly or indirectly make Phase II (AD facility) more successful.

The Project objectives are considered in the evaluation of the fully analyzed alternatives.

## 5.2 Alternatives that Were Considered but Not Further Analyzed

The CEQA Guidelines §15126.6(a) require that an EIR briefly describe the rationale for selecting the alternatives to be discussed, and suggest that an EIR also identify any alternatives that were considered by the lead agency but were rejected as infeasible (CEQA Guidelines §15126.6(c)). The following alternatives were considered, but were eliminated from further consideration and analysis for the reasons expressed below.

### 5.2.1 Accept Waste from Glenn County Only Alternative

Under this alternative, the Project would accept waste only from Glenn County and would not receive or process commercially hauled waste from the City of Chico or other jurisdictions. Eliminating waste from the City of Chico and other jurisdictions would reduce the amount of waste received and processed by the facility from 500 tons per day to 200-300 tons per day. This alternative is not further analyzed since it would not utilize the full capacity of the Project and it would not meet the Project objective of including wastes from Chico that would increase tipping-fee revenues and biogas productions that could both directly or indirectly make Phase II (AD facility) more successful.

### 5.2.2 Alternative Project Location (Other Than the Glenn County Landfill)

Under this alternative, the Project would be located at an alternative location other than the existing Glenn County Landfill (GCLF) site which is analyzed as a separate alternative below. One of the alternative locations considered included the Compost Solutions, Inc. compost facility located on County Road 27 southeast of Orland. This site was considered an option since there are composting activities processing green, livestock, agricultural, and dairy manure waste at the site. However, this location was deemed unsuitable due to its small size (approximately 40 acres; almost all of which is currently used for composting) and its proximity to several residences.

Alternative locations outside of Glenn County were considered but not further analyzed since there are already MRFs located outside of the County. Locating the Project in Glenn County is more central to receive Glenn County wastes. In addition, locating the Project outside of the county would not meet objective of the Project to establish a waste recovery facility within the Glenn County RMDZ.

## 5.2.3 Co-digestion at Wastewater Treatment Facility Alternative

Anaerobic digesters are used at wastewater treatment facilities to reduce the volume of biosolids in sewage sludge before they are land applied, used as fuel, beneficially used at landfills, or otherwise disposed. Organic materials can be added to anaerobic digesters at wastewater treatment plants with excess capacity to increase energy production.

Some Wastewater Treatment Plants (WWTPs) have successfully co-digested liquid wastes, such as fats, oils, and grease (FOG), in an effort to increase biogas production. A small number wastewater treatment facilities have experimented with adding food waste to their existing digesters. The East Bay Municipal Utilities District (EBMUD) in Oakland, California is co-digesting food waste from local restaurants, grocery stores and produce markets with municipal wastewater solids at their Main Wastewater Treatment Plant. EBMUD found that food waste increases biogas production and reduces biosolid volume (EBMUD, 2008).

Under this alternative, organic waste from the Project would be transported to a WWTP with excess capacity to be co-digested with municipal wastewater. In California approximately 137 WWTPs have anaerobic digesters and these have an overall excess capacity of 15–30 percent (EBMUD, 2008). This could reduce the need for, or the size of, the AD facility at the Project. However, this alternative is not further analyzed because there are no wastewater treatment facilities in the County with anaerobic digesters.

## 5.2.4 Co-digestion at Dairy Manure Digester Alternative

Manure anaerobic digesters at diaries are used to produce biogas, reduce the mass of solid wastes, and generate a high nutrient soil amendments. *The Dairy Manure Digester Program EIR* prepared by the Central Valley Regional Water Quality Control Board. (CVRWQCB, 2010a) and the *Waste Discharge Requirements General Order for Dairies with Manure Anaerobic Digester or Co-Digester Facilities* (CVRWQCB, 2010b) were approved December 10, 2010. These documents allow co-digester facilities at dairies which can accept food waste and green materials to be added to dairy manure.

Under this alternative, the organic waste from the Project would be transported to be co-digested with dairy manure at a diary manure anaerobic digester to enhance the production of biogas. This could reduce the need for, or the size of, the AD facility at the Project. This alternative is not further analyzed since there are no dairies with manure digesters in Glenn County.

## 5.2.5 Thermal Conversion Alternative

Combustion and non-combustion thermal conversion technologies such as transformation, biomass conversion, and gasification can be used to produce energy from solid waste. The following thermal conversion technologies are discussed in the *Statewide Anaerobic Digester Facilities for the Treatment of Municipal Solid Waste Program Environmental Impact Report* (CalRecycle, 2011).

Transformation is the mass-burn incineration of mixed solid waste with heat energy recovery to generate electricity. Pyrolysis is identified in California law as a type of transformation. Pyrolysis produces char (or "biochar" if the feedstock is a biomass) and a pyrolitic oil in addition to a combustible gas. Biochar is known to have nutrient and water retention characteristics that can make it a valuable soil amendment. Waste processed at transformation facilities is considered disposed and would not meet the objective of diverting County solid waste from landfill disposal. Transformation facilities also do not qualify as renewable energy facilities under the California Energy Commission's Renewable Portfolio Standard Eligibility Commission Guidebook (CEC-300-2007-006-ED3-CMF, p. 16).

Biomass conversion is the controlled combustion of woody biomass to produce electricity or heat. In California, biomass conversion facilities are not considered a solid waste facility if only the waste types identified in PRC 40106[1] are processed. Biomass facilities are limited in the type of feedstock they can receive and would not result in the diversion of other County solid wastes from landfill disposal.

Non-combustion thermal technologies convert organic material under low-oxygen and high temperature conditions. Unlike direct incineration, these technologies prevent immediate combustion of product gasses. The resultant products can be used from combustion for energy, transportation of fuels, industrial chemicals and soil amendments.

Gasification is a non-combustion thermal technology that has been developed commercially worldwide for various applications, including generating gas from coal, oil refining, conversion of municipal solid waste (MSW) and other organic feedstocks, and charcoal production. Gasification processes have the potential to create combustible gasses and other products from the conversion of organic feedstocks, and both would likely require pre-processing to remove excess moisture from the organic feedstocks (Los Angeles County, 2007). In some cases, compression/pelletization may be required before the organic feedstocks could be thermally converted.

Non-combustion thermal conversion facilities are capable of processing all of the organics in mixed solid wastes but efficiency and energy output is higher using dryer feedstocks. Since non-combustion thermal conversion involves driving moisture out of a feedstock, organic feedstrocks such as food waste with relatively high moisture contents are not ideal feedstocks. Subsets of the organics waste stream such as mixed solid waste, yard waste and woody components of construction and demolition debris may be more suitable for non-combustion thermal conversion.

[1] 40106. (a) "Biomass conversion" means the controlled combustion, when separated from other solid waste and used for producing electricity or heat, of the following materials:(1) Agricultural crop residues.(2) Bark, lawn, yard, and garden clippings.(3) Leaves, silvicultural residue, and tree and brush pruning.(4) Wood, wood chips, and wood waste.(5) Nonrecyclable pulp or nonrecyclable paper materials.(b) "Biomass conversion" does not include the controlled combustion of recyclable pulp or recyclable paper materials, or materials that contain sewage sludge, industrial sludge, medical waste, hazardous waste, or either high-level or low-level radioactive waste.(c) For purposes of this section, "nonrecyclable pulp or nonrecyclable paper materials" means either of the following, as determined by the board:(1) Paper products or fibrous materials that cannot be technically, feasibly, or legally recycled because of the manner in which the product or material has been manufactured, treated, coated, or constructed. (2) Paper products or fibrous materials that have become soiled or contaminated and as a result cannot be technically, feasibly, or legally recycled.

The feedstock limitations of thermal conversion technologies is the reason that the Thermal Conversion Alternative (including transformation, biomass conversion and non-combustion thermal conversion technologies) is not further analyzed in this chapter. The *Program Environmental Impact Report Landfill Strategic Plan for Glenn County, California* (Glenn County Planning and Public Works Agency, 2009) proposed anaerobic digestion as the preferred waste-to-energy conversion technology to replace the Glenn County Landfill. Anaerobic digestion was identified as the most suitable waste-to-energy conversion technology based on the service requirements of the County waste stream.

# 5.3 Alternatives Selected for Further Consideration

## 5.3.1 No Project Alternative

CEQA Guidelines §15126.6(e) provides that a No Project Alternative shall also be evaluated along with its impact. According to the CEQA Guidelines, the No Project Alternative shall discuss the existing conditions at the time the Notice of Preparation was published, as well as what would be reasonably expected to occur in the foreseeable future if the Project were not approved, based on current plans and consistent with available infrastructure and community services.

Under the No Project Alternative, KVB would not develop the Project. A temporary transfer station is proposed to be constructed at the Glenn County Landfill prior to the closure of the landfill. Under the No Project Alternative the transfer station would become permanent since there will be no other method of waste disposal in the County. The closure of the Glenn County Landfill and the development of a transfer station was considered as one of the options in the 2009 *Program Environmental Impact Report Landfill Strategic Plan for Glenn County, California* (Glenn county Planning and Public Works Agency, 2009). A transfer station at the Glenn County Landfill was further analyzed in the *Glenn County Transfer Processing Station Solid Waste Facility Permit Negative Declaration* (Glenn county Planning and Public Works Agency, 2014).

The transfer station would receive the waste stream of the County which would ultimately be transferred to the most cost-effective facility that is permitted to accept waste from out-of-area sources. Landfills that could accept the waste from Glenn County include the Anderson Landfill, located 61 miles from GCLF and the Ostrom Road Landfill located 83 miles away, near the City of Wheatland. The maximum capacity for waste transfer of the transfer station would be 200 tons per day.

### Impacts

The No Project Alternative would result in less significant impacts than the Project. Most of the potentially significant impacts associated with the construction and operation of the Project would not occur under this alternative.

The No Project Alternative would fail to meet most of the objectives of the Project. The construction of a transfer station would not assist in diverting solid waste from landfill disposal or establish a waste recovery facility within the Glenn County RMDZ. It would also not support the

*General Plan Energy Element* goal to see the development of renewable energy facilities in Glenn County. The No Project Alternative does not support measure of E-3 or Measure RW-3 of Assembly Bill 32 since it would not produce renewable energy or result in high recycling/zero waste. This alternative would also not include wastes from Chico because the transfer station would have a maximum capacity of 200 tons per day.

## 5.3.2 Glenn County Landfill Location Alternative

This alternative would involve construction of the Project at the site of the existing Glenn County Landfill (GCLF). The GCLF is located at the western terminus of County Road 33, approximately 5 miles west of Interstate 5 (I-5) and the unincorporated town of Artois. The GCLF site is comprised of 193 acres, approximately 87 of which are used for waste disposal (Glenn County Planning and Public Works Agency, 2009). Under this alternative, the GCLF would be closed and capped, and the Project would be constructed at the landfill property. The construction of a waste-to-energy conversion facility at the site of the Glenn County Landfill has been previously analyzed as one of the options in the *Program Environmental Impact Report Landfill Strategic Plan for Glenn County, California* (Glenn County Planning and Public Works Agency, 2009)

The City of Chico may elect not to transport their waste to the landfill location give its greater distance from the City. The Glenn County Landfill Location Alternative is located approximately 19 miles further from the City of Chico than the Project. Trucks traveling from Chico would have to travel and additional 38 miles round trip from the Project site to the Glenn County Landfill location. The additional mileage would result in the consumption of more CNG and may exceed the CNG fuel capacity or vehicle range of the trucks traveling from Chico. Without the waste stream from Chico, the Glenn County Landfill Location Alternative would include a smaller AD facility and less CNG production than the Project.

### Impacts

As shown in Table 5-1, the Glenn County Landfill Location Alternative would result in similar impacts as the Project. The Glenn County Landfill Location would result in the same odor impacts at nearby sensitive receptors as the Project. Biological and cultural impacts would be similar for this alternative since both the Glenn County Landfill Site and the Project site have been heavily disturbed by previous uses. Hazardous materials and hydrology and water quality impacts would also be equal to those of the Project.

This alternative would result in less significant transportation impacts than the Project because it would not include the potential increased traffic hazard associated with turning trucks and the need for turn lanes on SR 32. It would also result in less significant noise impacts than the Project since the nearest sensitive receptor is more than half a mile from the property boundary, while the nearest receptor to the Project is located approximately 1,040 feet from the Project site. Since the nearest noise-sensitive receptor is located a greater distance from the facility at the landfill location, noise levels from operation would be lower under this alternative at the nearest noise-sensitive receptor.

The Glenn County Landfill Location Alternative would result in less significant impacts to fire protection facilities than the Project. The Artois Fire Protection District provides fire protection services to the current landfill location. The *Program Environmental Impact Report Landfill Strategic Plan for Glenn County, California* (Glenn County Planning and Public Works Agency, 2009) determined that none of the options analyzed in the EIR (including a waste-to-energy conversion facility) would have a significant adverse effect on public services.

## 5.3.3 Materials Recovery Facility (MRF) Only Alternative

Under the MRF Only Alternative, the Project would be constructed without the anaerobic digestion facility. This alternative is the same as Phase I of the Project and would include the scale house road, PHWCF, weigh scale, construction and demolition receiving and processing area, waste receiving/ Phase I separation building, and four water supply wells.

This alternative would not include the Phase II facilities that include the anaerobic digestion station, aerobic stabilization ponds, CNG production facility, or vehicle fueling station. Instead, the organic material separated by the MRF would be transported to an anaerobic digestion facility or a local compost facility to be processed. These facilities could include Compost Solutions, Inc. in Glenn County or the Sacramento South Area Transfer Station (SATS) AD facility in Sacramento.

The MRF Only Alternative would not utilize energy from biogas to operate MRF machinery, since this alternative does not include an anaerobic digester to convert organic materials to energy onsite. In addition, CNG would not be used to power waste or other material hauling vehicles at the facility since CNG would not be generated onsite. If organic material were transported to another AD facility, the biogas generated there could be used for energy (electricity or vehicle fuels). If transported to an offsite location for compost feedstock there would not be capture of any biogas or energy.

### Impacts

The MRF Only Alternative would result in a smaller development area than the Project because it would not require the facilities required by the AD. As shown in Table 5-1, the MRF Only Alternative would result in impacts to biological and cultural resources equal to or less than those of the Project. Impacts to biological and cultural resources would be equal to those of the Project, but would occur in a smaller area.

The MRF Only Alternative would result in less significant air quality impacts than the Project. This alternative would result in odors generated by the MRF, but would not include odors that could be generated by AD facilities. The MRF Only Alternative would also result in less significant noise impacts than the Project since it would not include the continuous operation of the AD which could (without mitigation) exceed nighttime noise standards at nearby sensitive receptors.

The MRF Only Alternative would also eliminate any water quality impacts of the Project related to the aerobic stabilization ponds since this alternative would not include these facilities. Since the MRF Only Alternative does not include the generation of biogas, it would also result in less significant hazardous materials impacts than the Project. The MRF Only Alternative would also result in slightly less significant fire protection service impacts since it would not include the AD facilities and the associated training and equipment that would be required to respond to emergencies at these facilities.

The MRF Only Alternative would result in impacts equal to those of the Project related to transportation since it would require the same turn lanes and emergency vehicle access as the Project.

## 5.4 Comparison of Alternatives

The relative impacts of the various Project alternatives identified for consideration in this document, including the Project and No Project Alternative, are shown in **Table 5-1**. Only those Project effects that are identified as significant before mitigation are listed in **Table 5-1**. In addition, the significance of each impact is described prior to implementation of feasible mitigation measures. This is done in order to identify which alternatives would avoid or substantially lessen one or more potentially significant impacts, as required by CEQA Guidelines §15126.6(a). For the level of significance of the proposed Project after mitigation, refer to **Table ES-2** and the impact analysis in Sections 3.1 to 3.10. Many mitigation measures identified for the Project (**Table ES-2**) would also be feasible under the various alternatives.

**TABLE 5-1**
**PROJECT ALTERNATIVES: COMPARISON OF SIGNIFICANT EFFECTS[1]**

| | No Project Alternative | Glenn County Landfill Location Alternative | Materials Recovery Facility Only Alternative |
|---|---|---|---|
| 3.1. Air Quality and Greenhouse Gas | | | |
| **Impact 3.1-5:** Operation of the Project would not create objectionable odors affecting a substantial number of people. | LS | E | LS/E |
| 3.2 Biological Resources | | | |
| **Impact 3.2-1:** The Project would have a substantial adverse effect, either directly or through habitat modifications, on nesting raptors and other non-listed special-status nesting birds. | LS | E | LS/E |
| **Impact 3.2-2:** The Project would have a substantial adverse effect, either directly or through habitat modifications, on Swainson's hawk foraging habitat. | LS | E | LS/E |
| **Impact 3.2-3:** The Project would have a substantial adverse effect, either directly or through habitat modifications, on American badger. | LS | E | LS/E |
| **Impact 3.2-4:** The Project would have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by CDFW, or USFWS. | LS | E | E |
| **Impact 3.2-6:** The Project would have indirect impacts to special-status wildlife resulting from support of nuisance species. | E | E | E |
| **Impact 3.2-7:** Construction and operation of the project, in combination with other development, would not result in cumulatively considerable impacts to biological resources. | LS | E | E |

**TABLE 5-1 (Continued)**
**PROJECT ALTERNATIVES: COMPARISON OF SIGNIFICANT EFFECTS[1]**

| | No Project Alternative | Glenn County Landfill Location Alternative | Materials Recovery Facility Only Alternative |
|---|---|---|---|
| 3.3 Cultural Resources | | | |
| **Impact 3.3-1:** The Project could result in damage or destruction of known or previously unidentified archeological resources. | LS | E | LS/E |
| **Impact 3.3-2:** Ground-disturbing activities associated with construction of the Project could result in damage to previously unidentified paleontological resources. | LS | E | LS/E |
| **Impact 3.3-3:** Ground-disturbing activities associated with construction of the Project could result in damage to previously unidentified human remains. | LS | E | LS/E |
| 3.5 Hazardous Materials | | | |
| **Impact 3.5-1:** Implementation of the Project could create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. | E | E | E |
| **Impact 3.5-2:** The Project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. | LS | E | LS |
| 3.5 Hydrology and Water Quality | | | |
| **Impact 3.6-1:** The Project could degrade water quality. | LS | E | LS |
| **Impact 3.6-2:** Implementation of the Project could increase the risk of flooding onsite or offsite. | LS | E | E |
| 3.7 Noise and Vibration | | | |
| **Impact 3.7-2:** Operation of the Project could expose persons to or generate noise levels in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies. | LS | LS | LS |
| 3.8 Transportation, Traffic and Circulation | | | |
| **Impact 3.8-2:** The Project would not substantially increase hazards due to a design feature or incompatible uses. | LS | LS | E |
| **Impact 3.8-3:** The Project would not result in inadequate emergency access. | LS | E | E |
| 3.10 Fire Protection Services | | | |
| **Impact 3.10-1** The Project could substantially increase demands on fire protection services | LS | LS/E | LS/E |
| **Impact 3.10-2** The Project combined with other related cumulative projects, could have a substantial adverse impact on fire protection services. | LS | LS | LS/E |

NOTES:
PG = Potentially Greater impact than Project LS = Less Significant impact than Project E = Equal impact to the Project

1 The significance of each impact is described prior to implementation of feasible mitigation measures.

SOURCE: Environmental Science Associates, 2015

## 5.4.1 Ability to Achieve Project Objectives

**Table 5-2** shows the ability of each alternative to achieve the Project objectives. While the proposed Project meets all the objectives, the evaluation in **Table 5-2** shows that the No Project Alternative does not meet most of the Project objectives. The Glenn County Landfill Location Alternative meets most of the objectives of the Project. However, the Glenn County Landfill Location Alternative could result in the exclusion of Chico wastes, and would fail to meet the objective of the Project to include wastes from Chico that would increase tipping-fee revenues and biogas production that could both directly or indirectly make Phase II (AD facility) more successful. The MRF Only Alternative does not meet several of the Project objectives. It would not meet the Project objective of supporting the *General Plan Energy Element* goal for the development of renewable energy facilities in Glenn County, since the organic material would be transported to another AD facility outside of the County or used for composting. In addition, if the organic material separated by the MRF is transported to a compost facility instead of an anaerobic digester, the MRF Only Alternative would not meet the Project objective of supporting Measure E-3 of Assembly Bill 32, since the organic material would not be used to produce a renewable energy source. The MRF Only Alternative would also probably not be able to achieve the 70% recycling goal since the AD facility would not be included to process organic materials that would otherwise be difficult to recycle/compost/digest. In addition, the MRF Only Alternative could not meet the Project objective to include wastes from Chico that would increase tipping fee revenues and biogas production that could make Phase II (AD) more successful because this alternative does not include the AD.

## 5.4.2 Environmentally Superior Alternative

CEQA Guidelines §15126.6(d) requires that an EIR include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed Project. CEQA Guidelines §15126(e) requires that the alternatives analysis must identify the “environmentally superior” alternative among those considered. If the “No Project” alternative is identified as the environmentally superior alternative, then the EIR must also identify an environmentally superior alternative among the other alternatives. The No Project Alternative would result in less impacts in most areas when compared to the Project. However, the No Project Alternative completely fails to achieve any of the objectives of the Project and fails to achieve any of the environmental benefits of the Project.

As shown in Table 5-1, the MRF Only Alternative would lessen the environmental impacts when compared to the Project. However, as discussed above, The MRF Only Alternative would not meet several of the Project objectives. The MRF Only Alternative would not meet the objective of supporting Measure E-3 of Assembly Bill 32 if organic material is not transported to an AD and used to produce renewable energy or the objective to divert and recycle up to 70 percent of County solid waste from disposal. It would also not meet the objective to support the *Glenn County General Plan* goal to see the development of renewable energy facilities in Glenn County. In addition, the MRF Only Alternative could not meet the Project objective to include wastes from Chico that would increase tipping fee revenues and biogas production that could make Phase II (AD) more successful because this alternative does not include the AD.

**TABLE 5-2**
**PROJECT ALTERNATIVES: COMPARISON OF ABILITY TO ACHIEVE PROJECT OBJECTIVES**

| | Proposed Project | No Project Alternative | Glenn County Landfill Location Alternative | Material Recovery Facility Only Alternative |
|---|---|---|---|---|
| **Objective 1 –** Divert and recycle up to 70 percent of County solid waste from landfill disposal. | ✓ | 0 | ✓ | 0/✓ |
| **Objective 2 –** Provide a replacement solid waste management system for the County, up to the currently permitted waste management level of 200 tons per day, due to the planned closure of the Glenn County Landfill. | ✓ | ✓ | ✓ | ✓ |
| **Objective 3 –** Assist the County in complying with State mandates to divert solid waste from landfill disposal. | ✓ | 0 | ✓ | ✓ |
| **Objective 4 –** Support the *General Plan Energy Element* goal to see the development of renewable energy facilities in Glenn County that support a diversified and stable economic base while preserving valuable agricultural land and protecting public health and safety and the environment. | ✓ | 0 | ✓ | 0 |
| **Objective 5** – Support Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, greenhouse gas (GHG) reduction measures related to the use of anaerobic digestion:<br>• Measure E-3. Achieve a 33 percent renewable energy mix by 2020. (AD facilities produce biogas, which is a renewable energy source.)<br>• Measure RW-3. High Recycling/ Zero Waste. (AD is one of five subcategories listed under this measure.) | ✓ | 0 | ✓ | 0/✓ |
| **Objective 6 –** Establish a waste recovery facility within the Glenn County Recycling Market Development Zone (RMDZ). | ✓ | 0 | ✓ | ✓ |
| **Objective 7 –**Include wastes from Chico that would increase tipping-fee revenues and biogas production that could both directly or indirectly make Phase II (AD facility) more successful. | ✓ | 0 | 0 | 0 |

✓= Meets Objective
0 = Does not Meet Objective

Compared to the alternatives analyzed in this chapter, the Glenn County Landfill Location Alternative is the environmentally superior alternative because the changes in impacts are both slightly reduced by the two build Alternatives, but the Glenn County Landfill Location Alternative more clearly meets more of the objectives of the Project. However it should be noted that the original Project would meet all of the Project objectives and could be implemented with mitigation measures that would reduce all of the Project impacts to a level that would be less than significant.

## 5.5 References

California Department of Resources Recycling and Recovery (CalRecycle). 2011. Statewide Anaerobic Digester Facilities for the Treatment of Municipal Organic Solid Waste Program Environmental Impact Report. February 2011. Accessed August 31, 2015. http://www.calrecycle.ca.gov/swfacilities/compostables/AnaerobicDig/DPEIR.pdf

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# CHAPTER 6
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# CHAPTER 7
# List of Acronyms

| | |
|---|---|
| ug/m$^3$ | micrograms per cubic meter |
| AB | Assembly Bill |
| ACI | American Concrete Institute |
| ACM | asbestos-containing materials |
| AD | anaerobic digestion |
| AISC | American Institute of Steel Construction |
| AQMP | Air Quality Management Plan |
| ARB | California Air Resources Board |
| ASCE | American Society of Civil Engineers |
| AST | aboveground storage tank |
| BAAQMD | Bay Area Air Quality Management District |
| BACT | Best Available Control Technology |
| BAMMs | best available mitigation measures |
| BACT | best available control technology |
| BAT | best available technology economically achievable |
| BCT | best conventional pollutant control technology |
| BMPs | best management practices |
| BOD | Biological Oxygen Demand |
| BP | before present |
| Btu | British thermal unit |
| CalARP | California Accidental Release Prevention Program |
| CALFIRE | California Department of Forestry and Fire Protection |
| Cal-IPC | California Invasive Plant Council |
| Cal-OSHA | California Occupational Safety and Health Administration |
| Caltrans | California Department of Transportation |
| CARB | California Air Resources Board |
| CASGEM | California Statewide Groundwater Elevation Monitoring Program |

| | |
|---|---|
| CBC | California Building Code |
| CCAA | California Clean Air Act |
| CCR | California Code of Regulations |
| CDFW | California Department of Fish and Wildlife Service |
| CEC | California Energy Commission |
| CEQA | California Environmental Quality Act |
| CERCLA | Comprehensive Environmental Response, Compensation and Liability Act of 1980 |
| CESA | California Endangered Species Act |
| CFR | Code of Federal Regulations |
| $CH_4$ | methane |
| CNDDB | California Natural Diversity Database |
| CNEL | Community Noise Equivalent Level |
| CNG | Compressed Natural Gas |
| CNNP | California Native Plant Protection Act |
| CNPS | California Native Plant Society |
| CO | carbon monoxide |
| $CO_2$ | carbon dioxide |
| $CO_2e$ | $CO_2$ equivalents |
| CPUC | California Public Utilities Commission |
| CT | conversion technologies |
| CUPA | Certified Unified Program Agency |
| CVFPB | Central Valley Flood Protection Board |
| CVRWQCB | Central Valley Regional Water Quality Control Board |
| CWA | federal Clean Water Act |
| CWHR | California Wildlife Habitat Relationships |
| dB | decibels |
| dBA | A-weighted decibels |
| DGE | diesel gallon equivalent |
| DPM | diesel particulate matter |
| DWR | California Department of Water Resources |
| EIR | Environmental Impact Report |
| FCAA | Federal Clean Air Act |
| EPA | Environmental Protection Agency |

| | |
|---|---|
| FEMA | Federal Emergency Management Agency |
| FESA | Federal Endangered Species Act |
| FHWA | Federal Highway Administration |
| FIRMs | Flood Insurance Rate Maps |
| FGC | California Fish and Game Code |
| FTEs | full-time employees |
| GCAPCD | Glenn County Air Pollution Control District |
| GCLF | Glenn County Landfill |
| GCSWCF | Glenn County Solid Waste Conversion Facility |
| GHG | greenhouse gas |
| GOs | General Orders |
| gpm | gallons per minute |
| GWP | global warming potential |
| HAP | hazardous air pollutants |
| HFCs | hydrofluorocarbons |
| HHV | High Heating Value |
| HMTA | Hazardous Materials Transportation Act |
| HRD | High Rate Digestion |
| Hz | hertz |
| IBC | International Building Code |
| I.C. | internal combustion |
| IFC | International Fire Code |
| IPCC | International Panel on Climate Change |
| KVB | KVB, Inc. |
| LEA | Local Enforcement Agency |
| LHV | Low Heating Value |
| LOS | Level of Service |
| LRA | Local Responsibility Areas |
| MBTA | Migratory Bird Treaty Act |
| MEP | maximum extent practicable |
| MMRP | Mitigation Monitoring and Reporting Plan |
| MMT | million metric tons |
| MSW | municipal solid waste |
| MOU | Memorandum of Understanding |

| | |
|---|---|
| MRF | materials recovery facility |
| MSW | municipal solid waste |
| Mw | Moment Magnitude |
| $N_2O$ | nitrous oxide |
| NAAQS | National Ambient Air Quality Standards |
| NAHC | Native American Heritage Commission |
| NALs | numeric actions levels |
| NEHRP | National Earthquake Hazards Reduction Program |
| NELs | numeric effluent limitations |
| NESHAP | National Emissions Standards for Hazardous Air Pollutants |
| NFIP | National Flood Insurance Program |
| NHPA | National Historic Preservation Act |
| $NO_2$ | nitrogen dioxide |
| $NO_x$ | nitrogen oxides |
| NOP | Notice of Preparation |
| NPDES | National Pollutant Discharge Elimination System |
| NSVPA | Northern Sacramento Valley Planning Area |
| OEHHA | Office of Environmental Health Hazard Assessment |
| OES | Office of Emergency Services |
| OMP | Odor Management Plan |
| OPS | Office of Pipeline Safety |
| PCBs | polychlorinated biphenyls |
| PFCs | perfluorocarbons |
| PG&E | Pacific Gas and Electric Company |
| PHHWCF | Permanent Household Hazardous Waste Collection Facility |
| PHMSA | Pipeline and Hazardous Materials Safety Administration |
| PM | particulate matter |
| Porter-Cologne | Porter-Cologne Water Quality Control Act |
| ppm | parts per million |
| RCAP | Regional Climate Action Plan |
| RCRA | Resource Conservation and Recovery Act of 1976 |
| REHS | registered environmental health specialist |
| RFQ | Request for Qualifications |
| RMDZ | Recycling Market Development Zone |

| | |
|---|---|
| ROG | reactive organic gases |
| RSPA | Research and Special Programs Administration |
| RWQCB | Regional Water Quality Control Board |
| SCAQMD | Shasta County Air Quality Management District |
| SCFM | standard cubic feet per minute |
| SDC | Seismic Design Category |
| SIP | state implementation plan |
| SMMs | standard mitigation measures |
| $SO_2$ | sulfur dioxide |
| sf | square feet |
| $SF_6$ | sulfur hexafluoride |
| SR | State Route |
| SRA | State Responsibility Areas |
| SVAB | Sacramento Valley Air Basin |
| SVP | Society of Vertebrate Paleontology |
| SWFP | Solid Waste Facility Permit |
| SWPPP | Storm Water Pollution Prevention Plan |
| SWRCB | State Water Resources Control Board |
| TAC | toxic air contaminants |
| TDS | total dissolved solids |
| TMDLs | total maximum daily loads |
| tpd | tons per day |
| tpy | tons per year |
| TS | transfer station |
| USACE | U.S. Army Corps of Engineers |
| USDOT | U.S. Department of Transportation |
| USFWS | United States Fish and Wildlife Service |
| USGS | United States Geological Survey |
| UST | underground storage tank |
| VFD | Variable Frequency Drive |
| VOC | volatile organic compounds |
| WDR | Waste Discharge Requirements |
| WTE | waste-to-energy |

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# Appendix A
## Notice of Preparation

ESA

***NOTICE OF PREPARATION OF***
***DRAFT ENVIRONMENTAL IMPACT REPORT***
***AND NOTICE OF PUBLIC SCOPING MEETING***

**Project Title: Glenn County Solid Waste Conversion Facility (GCSWCF)**

**Project Applicant: KVB, Inc.**

Glenn County will be the lead agency under the California Environmental Quality Act (CEQA) and will prepare an Environmental Impact Report (EIR) for the proposed Glenn County Solid Waste Conversion Facility (GCSWCF) (the "project"). Glenn County is requesting information from Responsible and Trustee Agencies and other interested parties regarding the scope and content of the EIR. This is the first notice of the project EIR and an opportunity for the public and agencies to comment on the project. The public and agencies will have no less than 45 days to comment on the Draft EIR when it is published.

The Glenn County Landfill (GCLF) is located at the end of County Road 33, approximately five miles west of the community of Artois in Glenn County, California. The GCLF is nearing capacity and is scheduled for closure in approximately December 2016. The project plans to receive and process wastes that currently are delivered to the GCLF, and to provide a transition to a new waste management system. Incoming municipal solid wastes (MSW) at the GCLF have averaged approximately 20,000 tons per year in recent years, an average of approximately 65 tons per day.

In addition to solid waste from Glenn County, the GCSWCF may also receive and process MSW from other jurisdictions, including the City of Chico. The combined wastes from Glenn County and Chico would average up to approximately 400 tons per day of incoming materials (based on 5 days per week) and peak incoming materials could reach 500 tons per day. The incoming MSW from Chico could include organics, mixed recyclables, plastics, and household hazardous waste.

This project would include the construction and operation of a municipal solid waste (MSW) materials recovery facility (MRF) and anaerobic digester (AD) facility. The MRF would consist of a mechanical separation process to separate out marketable recyclable materials from the MSW waste stream through a combination of mechanical and manual sorting (a so-called "Dirty" MRF). Smaller residual particles (less than 2-inches) would undergo additional wet-process separation to remove inorganic materials from organic feedstock to be used for fueling the AD. Within the AD, feedstock would go through a process of biological decomposition in the absence of oxygen (anaerobic decomposition or digestion). The products of the AD process are biogas (consisting primarily of methane, carbon dioxide, and water vapor), the solid residue (digestate), and liquid effluent. Biogas would be used onsite as a fuel for power generation (e.g., using a microturbine), or further processed and converted to compressed natural gas (CNG) for vehicles. The project would include the construction of a new solid waste receiving and transfer facility, AD facility, on-site electrical generation facility, utilities connections, CNG production facility, vehicle fueling station and a

37-acre Land Application Area for the digestate. The MSW residuals that cannot be recycled or processed by the AD would be hauled off-site to a permitted landfill.

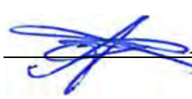
The MRF/AD Area is approximately 46.7 acres located along Highway 32, approximately three miles west of Hamilton City and five miles east of Orland, in unincorporated Glenn County. **Figure 1** shows the regional location of the project site. The project site is bordered by Highway 32 to the north and Stony Creek to the south, and was formerly used as a gravel quarry/processing facility. The proximity of the project site to the nearest town, Hamilton City, is also shown on **Figure 1**. **Figure 2** is an aerial map showing the location of the MRF/AD Area (where facilities would be built), the 37-acre Land Application Area (where digestate would be applied to the land) and the overall property boundary. The nearest residence is located approximately one-quarter mile to the northwest of the project site. The project site currently has areas zoned Agricultural and an area zoned Industrial. The areas surrounding the project site are zoned either Agricultural or Industrial. Access to the project site would be from Highway 32. The Assessor's Parcel Numbers for the entire property are 037-25-0-010-9, 037-26-0-004-9, 037-26- 0-005-9, and 037-26-0-007-9. The site is owned by the project applicant, and is located within the Glenn County Recycling Market Development Zone (RMDZ).[1]

Areas of potential environmental effect include traffic, hydrology and water quality (flooding and stormwater), air quality and greenhouse gas emissions, biological resources, cultural resources, hazards and hazardous materials, and geology, soils and seismicity. The EIR will focus on the significant effects of the project and indicate briefly its reasons for determining that other effects would not be significant or potentially significant. The project applicant has provided substantial analyses of potential environmental effects in background documents that the County will peer review and incorporate as appropriate in the preparation of the EIR.

**Public and Agency Comment:** If you are a Responsible Agency or Trustee Agency, we need to know the views of your agency as to the scope of the EIR, particularly the environmental issues that are germane to your agency's statutory responsibilities. Your agency may rely upon the EIR when considering your permit or other approval for the project.

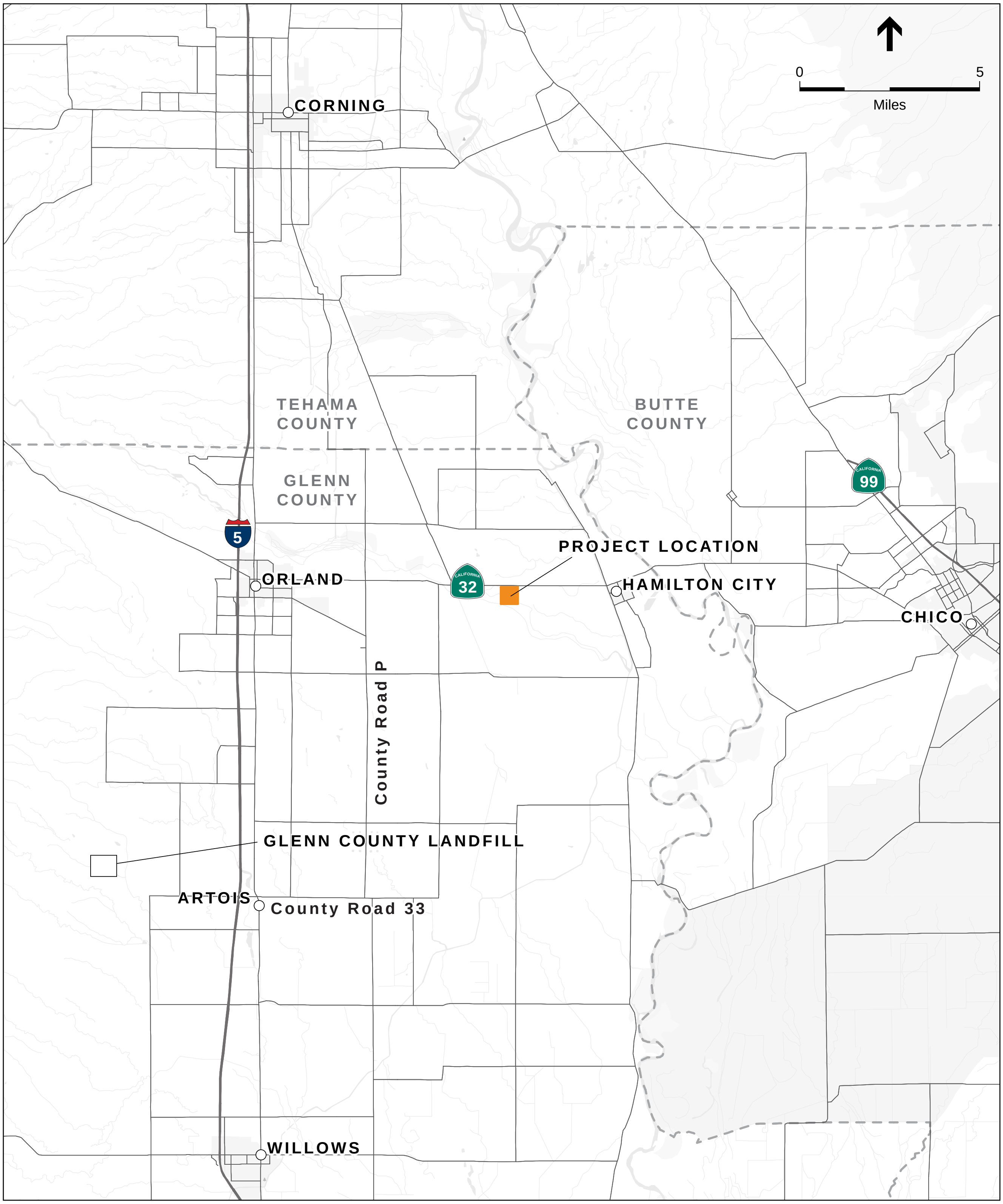
The comment period for this Notice of Preparation (NOP) is 30 days. All comments shall be written and received by February 12, 2015, to **Andy Popper, Glenn County Planning & Public Works Agency, 777 North Colusa Street, Willows, CA 95988**. Comments may also be e-mailed to **APopper@countyofglenn.net**.

**Public Scoping Meeting:** Glenn County will hold a public scoping meeting at the Glenn County Board of Supervisors' Chambers, 2nd Floor Willows Memorial Hall, 525 West Sycamore Street, Willows, California, on Wednesday, January 21, 2015, at 11:00 a.m. This meeting will allow an opportunity for the public to express views regarding the scope of the environmental issues to be addressed in the EIR. The comments will be considered by Glenn County during the preparation of the EIR. No decision will be made at the meeting, which is only intended to gather information on the potential environmental effects of the project.

*Andy Popper, Associate Planner, Planning & Public Works Agency, January 9, 2015*
Signature, Name, Glenn County Position, and Date

---

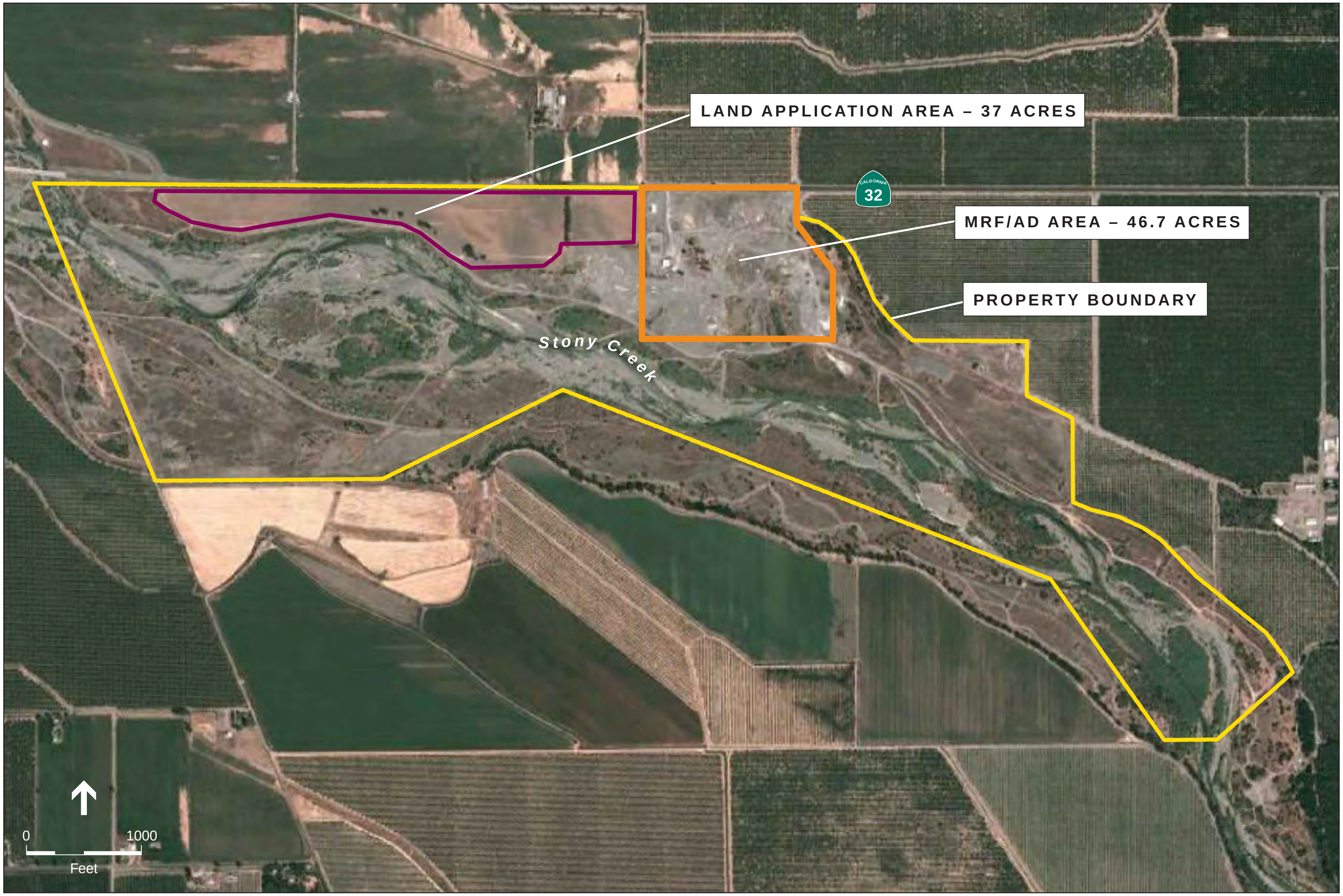
[1] A RMDZ program combines recycling with economic development to fuel new businesses, expand existing ones, create jobs, and divert waste from landfills. The RMDZ program provides attractive loans, technical assistance, and free product marketing to businesses in a RMDZ that use materials from the waste stream to manufacture their products. Each RMDZ differs in target materials to be diverted from the waste stream and incentives for using materials from the waste stream.




SOURCE: DeLorme Street Atlas USA, 2000; ESA, 2014

Glenn County Solid Waste Conversion Facility EIR . 130954

**Figure 1**
Regional Location




SOURCE: GCWCF Project Description, 2014

Glenn County Solid Waste Conversion Facility EIR . 130954

**Figure 2**
Project Site

# Appendix B
## List of Potentially Affected Species

# APPENDIX B
# List of Potentially Affected Species

The "Potential for Occurrence" category is defined as follows:

- **Unlikely:** The Project site and/or surrounding area do not support suitable habitat for a particular species, or the Project site is outside of the species known range.
- **Low Potential:** The Project site and/or immediate area only provide limited amounts and low quality habitat for a particular species. In addition, the known range for a particular species may be outside of the Project site.
- **Medium Potential:** The Project site and/or immediate area provide suitable habitat for a particular species.
- **High Potential:** The Project site and/or immediate area provide ideal habitat conditions for a particular species and/or known populations occur in immediate area and/or within the Project site.

Conclusions regarding habitat suitability and species occurrence are based on reconnaissance surveys described previously, as well as the analysis of existing literature and databases described in Section 3.2.

**TABLE B-1**
**LIST OF POTENTIALLY AFFECTED SPECIES**

| Species | Status Federal/ State/ CNPS | Suitable Habitat | Potential for Project to Effect |
|---|---|---|---|
| Plants | | | |
| *Astragalus pauperculus* Depauperate milk-vetch | --/--/4.3 | Found in seasonally wet areas within volcanic soils within chaparral, woodland, and grassland habitats. Blooms March–June. Found at elevations between 100 and 4,500 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Astragalus tener* var. *ferrisiae* Ferris' milk-vetch | --/--/1B.1 | Found in meadows and seeps in grassland habitats. Blooms April–May. Found at elevations between 0 and 300 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Atriplex depressa* Brittlescale | --/--/1B.2 | Found in alkaline, clay soils within chenopod scrub, meadow and seep, playa, grassland, and vernal pool habitats. Blooms April–October. Found at elevations between 0 and 1,100 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Azolla microphylla* Mexican mosquito fern | --/--/4.2 | Found in marshes and swamps, including ponds and slow moving water. Blooms in August. Found at elevations between 100 and 350 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Brasenia schreberi* Watershield | --/--/2B.3 | Found in marshes and swamps. Blooms June–September. Found at elevations 100 and 7,500 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *California macrophylla* Round-leaved filaree | --/--/1B.1 | Found in clay soils within woodland, and grassland habitat. Blooms March–May. Found at elevations 0 to 4,000 meters | **Low.** Habitat is limited, and of low quality within the Project site. |
| *Castilleja rubicundula* var. *rubicundula* Pink creamsacs | --/--/1B.2 | Found in serpentine soils within chaparral, woodland, meadow and seep, and grassland habitats. Blooms April–June. Found at elevations 0 to 3,000 feet. | **Low.** Habitat is limited, and of low quality within the Project site. |
| *Centromadia parryi* ssp. *rudis* Parry's rough tarplant | --/--/4.2 | Found in alkaline, seasonally wet areas within seeps, grasslands, vernal pools, and along roadsides. Blooms May–October. Found at elevations 0 to 400 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Euphorbia hooveri* Hoover's spurge | --/--/1B.2 | Found in vernal pools. Blooms July–October. Found at elevations 0 to 900 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Euphorbia ocellata* ssp. *rattanii* Stony Creek spurge | --/--/1B.2 | Found in chaparral habitats, and in grassland habitats with sandy or rocky soils. Blooms May–October. Found at elevations 200 to 2,700 feet. | **Low.** Habitat is limited, and of low quality within the Project site. |
| *Extriplex joaquinana* San Joaquin spearscale | --/--/1B.2 | Found in alkaline soils in chenopod scrub, meadow and seep, playa, and grassland habitats. Blooms April–October. Found at elevations 0 to 2,800 feet. | **Low.** Habitat is limited, and of low quality within the Project site. |
| *Fritillaria pluriflora* Adobe-lily | --/--/1B.2 | Found in adobe soils within chaparral, woodland, and grassland habitats. Blooms February–April. Found at elevations 100 to 2,400 feet. | **Low.** Habitat is limited, and of low quality within the Project site. |
| *Hesperevax caulescens* Hogwallow starfish | --/--/4.2 | Found in vernal pool, and grassland habitats with wet, clay soils. Blooms March–June. Found at elevations 0 to 1,700 feet. | **Unlikely**. No suitable habitat present within Project site. |

**TABLE B-1 (Continued)**
**LIST OF POTENTIALLY AFFECTED SPECIES**

| Species | Status Federal/ State/CNPS | Suitable Habitat | Potential for Project to Effect |
|---|---|---|---|
| Plants (cont.) | | | |
| *Hibiscus lasiocarpos var. occidentalis* Wooly rose-mallow | --/--/1B.2 | Found in marshes and swamps, and often in riprap on the sides of levees. Blooms June–September. Found at elevations 0 to 400 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Limnanthes floccosa* ssp. *californica* Butte County meadowfoam | --/--/1B.1 | Found in vernal pools, and in seasonally wet grassland habitats. Blooms March–May. Found at elevations 100 to 3,100 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Limnanthes floccosa* ssp. *floccosa* Wooly meadowfoam | --/--/4.2 | Found in seasonally wet chaparral, woodland, grassland, and vernal pool habitats. Blooms March–June. Found at elevations 150 to 4,400 feet. | **Low.** Habitat is limited, and of low quality within the Project site. |
| *Mimulus glaucescens* Shielded-bracted monkeyflower | --/--/4.3 | Found in serpentinite seeps and stream banks in chaparral, woodland, lower coniferous forest, and grassland habitats. Blooms February–September. Found at elevations 100 4,100 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Navarretia heterandra* Tehama navarretia | --/--/4.3 | Found in seasonally wet areas of grassland, and vernal pool habitats. Blooms April–June. Found at elevations 0 to 3,400 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Navarretia leucocephala* ssp. *Bakeri* Baker's navarretia | --/--1B.1 | Found in seasonally wet areas of woodland, lower coniferous forest, meadows and seeps, grassland, and vernal pool habitats. Blooms April–June. Found at elevations 0 to 5,800 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Navarretia nigelliformis ssp. nigelliformis* Adobe navarretia | --/--/4.2 | Found in clay and serpentinite soils in seasonally wet grassland, and vernal pool habitats. Blooms April–June. Found at elevations 300 to 3,300 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Paronychia ahartii* Ahart's paronychia | --/--/1B.1 | Found in woodland, grassland, and vernal pool habitats. Blooms February–June. Found at elevations 0 to 1,700 feet. | **Low.** Habitat is limited, and of low quality within the Project site. |
| *Tropidocarpum capparideum* Caper-fruited tropidocarpum | --/--/1B.1 | Found in alkaline grasslands in hilly areas. Blooms March–April. Found at 0 to 1,500 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Tuctoria greenei* Greene's tuctoria | --/--/1B.1 | Found in vernal pools. Blooms May–September. Found at 0 to 3,600 feet. | **Unlikely**. No suitable habitat present within Project site. |
| *Wolffia brasiliensis* Brazilian watermeal | --/--/2B.3 | Found in marshes and swamps. Blooms April-December. Found at elevations 0 to 400 feet. | **Unlikely**. No suitable habitat present within Project site. |
| Invertebrates | | | |
| *Branchinecta conservation* Conservancy fairy shrimp | FE/--/-- | Lifecycle restricted to vernal pools. | **Unlikely**. No suitable habitat present within Project site. |
| *Branchinecta lynchi* Vernal pool fairy shrimp | FE/--/-- | Lifecycle restricted to vernal pools. | **Unlikely**. No suitable habitat present within Project site. |
| *Lepidurus packardi* Vernal pool tadpole shrimp | FE/--/-- | Lifecycle restricted to vernal pools. | **Unlikely**. No suitable habitat present within Project site. |

**TABLE B-1 (Continued)**
**LIST OF POTENTIALLY AFFECTED SPECIES**

| Species | Status Federal/ State/CNPS | Suitable Habitat | Potential for Project to Effect |
|---|---|---|---|
| Invertebrates (cont.) | | | |
| *Desmocerus californicus dimorphus* Valley elderberry longhorn beetle | FE/--/-- | Found only in the Central Valley of California, in association with blue elderberry (*Sambucus nigra* ssp. *caerulea*). Prefers to lay eggs in elderberries, 2-8 inches in diameter, some preference shown for "stressed" elderberries. | **Low**. Suitable habitat is present within Project site. This species was not observed within the project site during reconnaissance surveys. |
| Reptiles | | | |
| *Emys marmorata* Western pond turtle | --/SSC/-- | Found in permanent or nearly permanent water in a wide variety of habitat types, including permanent ponds, lakes, streams, irrigation ditches, or permanent pools along intermittent streams. Species requires basking sites such as partially submerged logs, rocks, mats of floating vegetation, or open mud banks. | **Unlikely**. No suitable habitat present within Project site. |
| *Spea hammondii* Western spadefoot | --/SSC/-- | Found seasonally in grasslands, prairies, chaparral, and woodlands, in and around wet sites. Breeds in shallow, temporary pools formed by winter rains. Takes refuge in burrows. | **Unlikely**. No suitable habitat present within Project site. |
| *Thamnophis gigas* Giant garter snake | FE/SE/-- | Found in marshes, sloughs, and irrigation canals/ditches, less with slow-moving creeks, and absent from larger rivers. Species is extremely aquatic and is rarely found away from water, and forages in water for food. Young are born in secluded sites, such as loose bark of rotting logs, dense vegetation, or crevices of rocky shorelines. Species basks on emergent vegetation such as cattails or tules. Takes refuge in mammal burrows, or piles of vegetation. | **Unlikely**. No suitable habitat present within Project site. |
| *Rana draytonii* California red-legged frog | FT/??/-- | Found in permanent or nearly permanent pools adjacent to streams, marshes, and ponds. Species is highly aquatic and prefers shorelines with extensive vegetation. Eggs are deposited in permanent pools attached to emergent vegetation. Takes refuge in water 3 feet deep or more, at the bottom of pools. | **Unlikely**. No suitable habitat present within Project site. |
| Fish | | | |
| *Hypomesus transpacificus* Delta smelt | FT/ST/-- | Found in open surface waters in the Sacramento/San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Found in Delta estuaries with dense aquatic vegetation and low occurrence of predators. | **Unlikely**. No suitable habitat present within Project site. |
| *Oncorhynjchus mykiss irideus* Steelhead – Central Valley DPS | FT/--/-- | This ESU enters the Sacramento and San Joaquin Rivers and their tributaries from July to May; spawning from December to April. Young move to rearing areas in and through the Sacramento and San Joaquin Rivers, Delta, and San Pablo and San Francisco Bays. | **Unlikely**. No suitable habitat present within Project site. |

**TABLE B-1 (Continued)**
**LIST OF POTENTIALLY AFFECTED SPECIES**

| Species | Status Federal/ State/CNPS | Suitable Habitat | Potential for Project to Effect |
|---|---|---|---|
| Mammals | | | |
| *Eumops perotis californicus* Western mastiff bat | --/SSC/-- | Primarily a cliff dwelling species, roosts in crevices in exfoliating rock slabs, in boulder crevices, and buildings that are high above the ground, forages within open grassland, forested, or wooded habitats, including agricultural areas. | **Unlikely**. No suitable habitat present within Project site. |
| *Lasiurus blossevilli* Western red bat | --/SSC/-- | Roosts in mixed conifer forests, prefers habitat edges and mosaics with trees that are protected from above and open below, forages within grasslands, shrublands, open woodlands and forests, and croplands. | **Unlikely**. Suitable roosting habitat is not present within or adjacent to the project site. |
| *Taxidea taxus* American badger | --/SSC/-- | Most abundant in drier open stage of most shrub, forest, and herbaceous habitats, with friable soils. Use dense vegetation and rocky areas for cover and den sites. Prefer forest interspersed with meadows or alpine fell-fields. | **Medium**. Suitable habitat is present within and adjacent to the Project site. |
| Birds | | | |
| *Agelaius tricolor* Tricolored blackbird | --/SSC/-- | Nests near freshwater, preferably in emergent wetland with tall, dense cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herb; forages in grassland and cropland habitats. | **Medium**. Suitable nesting habitat is presented adjacent to Project site and suitable foraging habitat is within Project site. |
| *Asio flammeus* Short-eared owl | --/SSC/-- | Roosts, nests, and forages in open areas, grasslands, prairies, dunes, and meadows, irrigated pasture, and wetlands. | **Medium**. Suitable nesting and foraging habitat is present within and adjacent to the Project site. This species was not observed during reconnaissance surveys. |
| *Athene cunicularia* Burrowing owl | --/SSC/-- | Forages in open plains, grasslands, and prairies; typically nests in abandoned small mammal burrows. | **Medium.** Suitable nesting and foraging habitat present in Project site within the annual grassland and fallow agricultural habitats onsite. This species was not observed during reconnaissance surveys. |
| *Buteo swainsoni* Swainson's hawk | --/ST/-- | Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations. | **High.** Suitable nesting and foraging habitat present within the Project site. This species was observed within the Project site during 2013 field surveys. |
| *Charadrius montanus* Mountain plover | --/SSC/-- | Short grasslands, plowed fields, and sagebrush areas, avoids high and dense cover. Forages on the ground. Feeds on large insects, especially grasshoppers. Does not nest in California. | **Medium**. Suitable foraging habitat is present within the Project site. |
| *Cocyzus americanus occidentalis* Western yellow-billed cuckoo | FT/SE/-- | Densely foliaged, valley foothill, desert, deciduous riparian thickets or forest habitats with dense, low-level or understory foliage which abut on slow-moving watercourses, backwaters, or seeps. | **Low**. Suitable habitat is not present within or adjacent to the Project site, This species was not observed during reconnaissance surveys. |

**TABLE B-1 (Continued)**
**LIST OF POTENTIALLY AFFECTED SPECIES**

| Species | Status Federal/ State/CNPS | Suitable Habitat | Potential for Project to Effect |
|---|---|---|---|
| Birds (cont.) | | | |
| *Elanus leucurus* White-tailed kite | --/FP/-- | Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching. | **High**. Suitable nesting habitat occurs within the Project site. Additionally, species occurrence is recorded in the CNDDB in the vicinity of the project site. This species was not observed during reconnaissance surveys. |
| *Falco peregrinus* Peregrine falcon | --/FP/-- | Riparian areas and wetlands; typically nests near wetlands, lakes, rivers, or other water on high cliffs, banks, dunes, and mounds. | **Unlikely**. No suitable nesting or foraging habitat present within, or adjacent to the Project site. This species was not observed during reconnaissance surveys. |
| *Haliaeetus leucocephalus* Bald eagle | --/SE; FP/-- | Large bodies of water, or free flowing rivers with abundant fish, and nests in old-growth, or dominant live tree with open branch work, snags or other perches. | **Unlikely**. No suitable nesting or foraging habitat present within, or adjacent to the Project site. This species was not observed during reconnaissance surveys. |
| *Lanius ludovicianus* Loggerhead shrike | --/SSC/-- | Open habitats in lowlands, and foothills with scattered shrubs, trees, or other perches; nests in densely-foliaged shrubs and trees. | **High**. Suitable nesting and foraging habitat within Project site. This species was not observed during reconnaissance surveys. |
| *Laterallus jamaicensis* Black rail | --/ST; FP/-- | Saline, brackish, and freshwater emergent wetland in the San Francisco Bay area, Sacramento-San Joaquin Delta; nests in dense vegetation, | **Unlikely**. Project site is outside the typical range of this species, and does not support suitable habitat. This species was not observed during reconnaissance surveys. |
| *Riparia riparia* Bank swallow | --/ST/-- | Colonial nester; nest primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole. | **Low**. No suitable habitat occurs as the Project site. However, the species is known to nest along the Sacramento River approximately 4 miles away from the Project site. |
| Natural Communities | | | |
| Coastal and Valley Freshwater Marsh | Natural Community | | **No effect**. This natural community is not present within project site. |
| Great Valley Cottonwood Riparian Forest | Natural Community | | **No effect**. This natural community is not present within project site. |
| Great Valley Mixed Riparian Forest | Natural Community | | **No effect**. This natural community is not present within project site. |
| Great Valley Willow Scrub | Natural Community | | **No effect**. This natural community is not present within project site. |
| Northern Hardpan Vernal Pool | Natural Community | | **No effect**. This natural community is not present within project site. |

**STATUS CODES:**

**Federal**
FE = Endangered
FT = Threatened
FC = Candidate
BEPA = Bald Eagle Protection Act
BCC = USFWS Bird of Conservation Concern

**State**
CE = Endangered
CT = Threatened
FP = Fully Protected
SSC = (CA) Department of Fish and Wildlife Species of Special Concern

**California Native Plant Society**
List 1B = Plants rare, threatened, or endangered in California and elsewhere
List 2 = Plants rare, threatened, or endangered in California, but more common elsewhere
List 3 = Plants about which we need more information--a review list
List 4 = Plants of limited distribution--a watch list

0.1 = Seriously endangered in California
0.2 = Fairly endangered in California
0.3 = Not very endangered in California

SOURCE: CDFW, 2015; USFWS, 2015; CNPS, 2015

# Appendix C
## Cultural Resources Report

ESA

# Cultural Resources Report
## for the
# Municipal Waste Conversion Facility
## Glenn County, California

*Prepared for*:

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**August 2013**

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# Table of Figures



# Attachments

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# SUMMARY OF FINDINGS

An intensive cultural resource survey was performed on property proposed for a municipal waste conversion facility in Glenn County, California. The main site is approximately 42.4 acres in size with an additional 2 acres proposed for a green waste disposal area. No evidence of surface prehistoric cultural resources was located on the project site during the June 21 and July 17, 2013 survey. The Stony Creek Ready Mix operations building with attached office is located on the property. This facility was constructed in the early to mid-1960s, and required recordation and evaluation for inclusion into the California or National Registers of Historic Places. The facility did not satisfy the criteria, and is therefore ineligible for inclusion. The buildings were recorded on standard Department of Parks and Recreation forms which are included in Appendix D, and will also be submitted for archiving to the Northeast Information Center, California State University, Chico. No other historic cultural resources were located on the property.

Two required mitigations have been determined as a result of this cultural resource survey, and are standard mitigations addressing the potential of subsurface cultural resources. Compliance with these mitigations should reduce any cultural resources potential impact to less than significant. These mitigations are as follows:

### Required Mitigation 1:

During any excavation or other substantial subsurface disturbance activities any individuals conducting the work should be given a cultural awareness training session and advised to watch for cultural resource materials. If any evidence of prehistoric cultural resources be observed (freshwater shells, beads, bone tool remnants or an assortment of bones, soil changes including subsurface ash lens or soil darker in color than surrounding soil, lithic materials such as flakes, tools or grinding rocks, etc.), or historic cultural resources (adobe foundations or walls, structures and remains with square nails, refuse deposits or bottle dumps, often associated with wells or old privies), all work must immediately cease, and a qualified archaeologist must be consulted to assess the significance of the cultural materials.

### Required Mitigation 2:

If human remains are discovered, all work must immediately cease, and the local coroner must be contacted. Should the remains prove to be of cultural significance, the Native American Heritage Commission in Sacramento, California, must be contacted, with notification of most likely descendants.

# INTRODUCTION

## Project Description

Golden Hills Consulting was retained to perform a Section 106 (National Historic Preservation Act) compliant cultural resources survey on property owned by KVB, Inc. The work summarized in this report was conducted by archaeologist Mary Bailey of Golden Hills Consulting.

KVB, Inc. proposes to construct a municipal waste conversion facility to service Glenn County. The site is approximately 42.4 acres in size, which includes a portion of parcel APN# 037-260-004-9 and a portion of parcel APN# 037-260-007-9. An additional 2 acres adjacent to the property to the southeast is proposed as a green waste disposal facility.

The proposed project site is located approximately 3 miles west of Hamilton City and 5.5 miles east of Orland, on the south side of State Route 32, Glenn County, California (Figures 1 and 2). The proposed project site is located on the Hamilton City 7.5' U.S. Geological Survey Quadrangle, in the unsectioned Capay Land Grant, Township 22 north, Range 2 west (Figure 1). The project property is in a predominantly agricultural area with orchards, a dairy and pastures. A small light industrial area is located adjacent to the project site to the west.

## Regulatory Framework

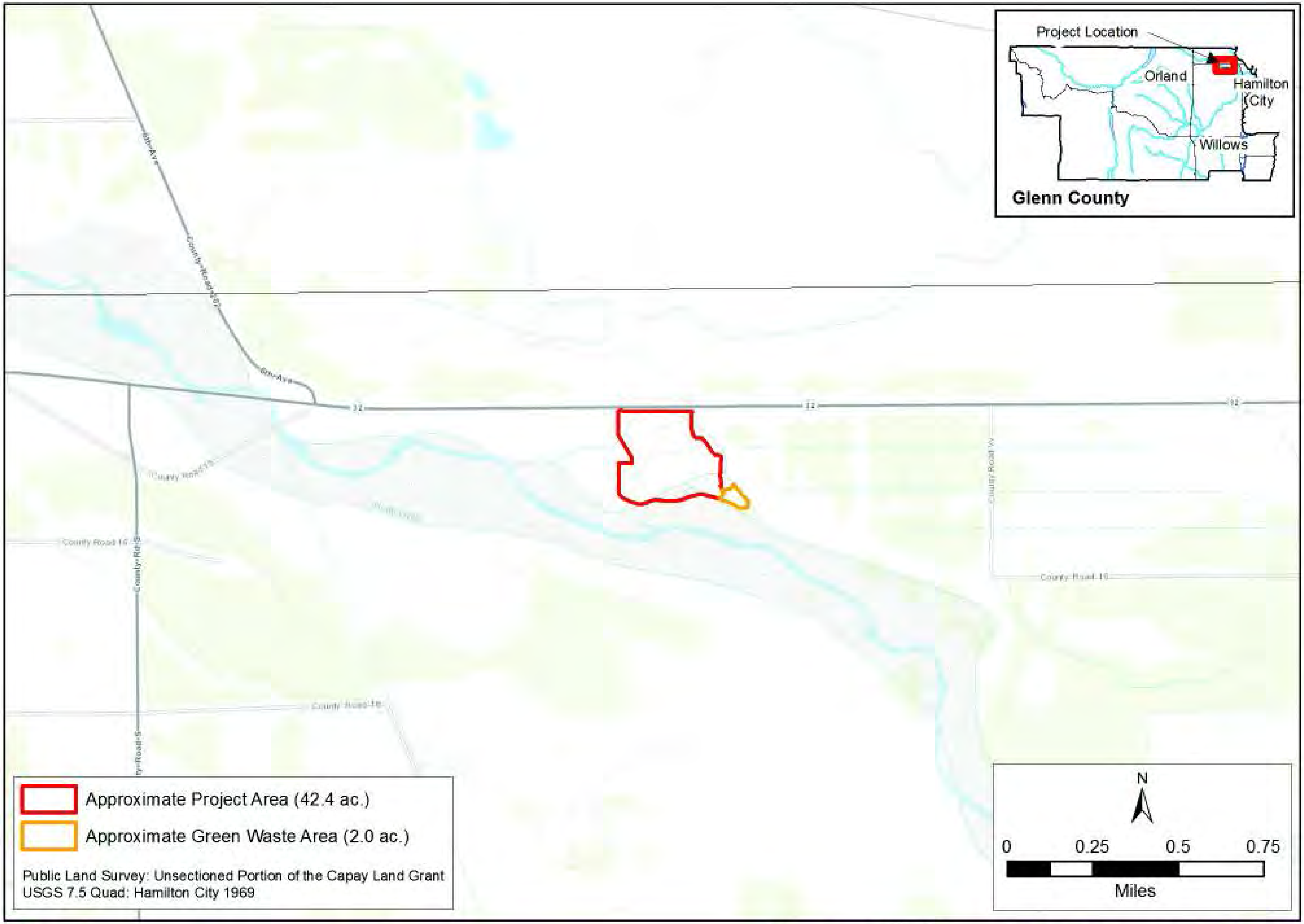
In order to satisfy federal and state cultural resource preservation laws and regulations, an archaeological survey of areas which may be impacted by a project is required. These laws and regulations include, but are not limited to:

- California Environmental Quality Act of 1970 (CEQA), § PRC Section 2100 et seq, CEQA Guidelines 14CCR 15000 et seq;

In general, cultural resource survey and inventory must include:

- A record search completed by the regional cultural records center. For the project site, the Northeast Center of the California Resources Information System, at California State University, Chico, is the relevant center. This record search will include a check of the records of Prehistoric Resources, Historic Resources, any previous archaeological investigations, and a literature search;
- A field survey accomplished by walking and observing features of the project's area as dictated by the Record Search and the project's sensitivity for cultural resources;

- Preparation of a professional report detailing the findings and recommendations of the record search and field survey.




NORTHERN CALIFORNIA
REGIONAL LAND TRUST

*Glenn County Waste Conversion Facility, Glenn County, California*

Service Layer Credits: Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, and the GIS User Community

**Figure 1. Project Location and Vicinity Map**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NORTHERN CALIFORNIA REGIONAL LAND TRUST

*Glenn County Waste Conversion Facility, Glenn County, California*

**Figure 2. Project Aerial**

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

# ENVIRONMENTAL SETTING

## *Natural Environment*

The project site occurs largely within a staging area for gravel mining. As such, the majority of the study area consists of relatively level, compacted gravels that are sparsely vegetated with weedy, non-native depauperate species. Several large scattered gravel, asphalt, and concrete piles are found in the southeastern portion of the study area. The project site is generally bound by State Highway 32 to the north, a small levee along Stony Creek to the south, a small stand of mixed ruderal and riparian vegetation to the east, and a small light industrial area to the west.

Remnants of the gravel staging and cement mixing are evident by the presence of long-term scraping of the surface during loading and dumping of gravel piles resulting in a scabby surface appearance especially along the northern portion of the site. Periodic grading and ground clearing occurs within a majority of the site. A Quonset hut metal building with an add-on wood frame office is located in the southeast portion of the site, and was once the Stony Creek Ready-Mix facility. A scale house is located near the northeast entrance to the site. A number of gravel loading concrete slabs are located approximately in mid-site. A small wooden building near the western edge of the property houses a power supply switching and maintenance panel.

Stony Creek, a perennial waterway, is approximately 600 feet south of the property's southern boundary.

The project site has been leveled in the past, and except for gravel piles, is flat. Elevation is approximately 182 feet above sea level throughout the majority of the site.

## *Cultural Environment*

### ***Prehistory*** *(after Moratto et al 1978 and Moratto 1984)*

Habitation of the Central Valley possibly arose about 12,000 years before present (BP). Evidence of this early habitation is sparse at best, as over the years, alluvial sediment has deeply covered much of this evidence. Few archaeological sites have been identified that predate 5,000 years ago probably due the Holocene deposits. Groups of Paleo-Indians possibly relied heavily upon the mega-fauna such as mastodon and mammoth, as well as upon plant and other faunal resources available. Organization was in small, mobile groups of individuals. As the glaciers receded from the Sierra Nevada and the Central Valley, the climate became warmer and drier, with grasslands and oak forests replacing the pine and riparian forests. Population increased to where eventually, the Native American population density of the Central Valley exceeded many other areas of North America.

### ***Ethnography*** *(excerpted from Riddell 1978 and Kowta 1988)*

The entire project area lies within the area once occupied by the Konkow Maidu, who spoke the Maiduan family of languages, classified as California Penutian. The Hill Nomlaki occupied territory nearby to the west of the project site, with their eastern border in the vicinity of the Black Butte Reservoir area. The Maidu people occupied an area that today would roughly approximate from Eagle Lake north of Susanville, eastward to Honey Lake near the California/Nevada border, southwestward to the Sutter Buttes, and northward to Black Butte Reservoir.

These people were probably not the earliest inhabitants of this area. They are believed to have entered California from the north, sometime around 500 A.D. Prior to that time, the area may have been occupied by Hokan speaking peoples.

In prehistoric times, the Konkow Maidu were people who subsisted by hunting and gathering. Many of the plants and animals utilized by the Konkow Maidu had multiple uses. Roots, stems, leaves, and seeds of plants were used as food, basketry, and medicine. Acorns, and occasionally buckeye, were the primary plant staples. Many small animals were hunted and trapped. Fish were taken with nets, weirs, harpoons, hooks or poisons. Insects such as grasshoppers, crickets, and ants were also used as food.

The sole agricultural pursuit of the Maidu involved the cultivation of tobacco, the leaves of which were smoked for both ceremonial and social occasions. Pipes were made of stone or wood.

Groups were organized politically into tribelets, or small "village-communities" containing several small adjacent villages. Villages generally consisted of perhaps five houses, with up to five inhabitants per house. Village-communities could contain a population of perhaps up to 200 individuals. Each tribelet was independent from the others. Usually, there would be a central, or more influential, village where the headman would reside in the largest dwelling which was often used as a dance house. The headman was not an ultimate ruler, but rather, he acted as an advisor and spokesman with no control over the tribelet. The headman position was not hereditary; he was chosen with the aid of the shaman.

Warfare was not uncommon and usually involved feuds between villages or village-communities. The Konkow also fought with their neighbors, the Yana, the Achumawi and the Washoe. Battles were generally fought between small groups rather than in a formal military type of organization.

With the arrival of the Euro-Americans, much of the Maidu population succumbed to diseases for which they had little to no immunity. In 1850, Congress authorized the creation of Indian treaties, ultimately aimed at relocating native populations to reservations. By 1855, many of the Konkow Maidu had been moved to the Nom Lackee reservation in Tehama County. Conflicts erupted between the various Indian groups assembled there, and in 1863, soldiers marched 461 indians to the Round Valley Reservation in Mendocino County. During the two-week long march, 32 of the Indians died along the way. Before arrival of Euro-Americans, the population of all Maidu groups has been estimated at roughly 9,000 individuals. By the latter half of the twentieth century, only 600 persons claimed Maidu ancestry.

In summary, the examination of ethnographic and archaeological information in the project area indicates the possibility of encountering one or more of the following types of prehistoric cultural resources:

- Occupation sites, most likely with housepits. Firepits and middens may also be present;
- Surface finds of basalt, chert or obsidian in the form of flakes or artifacts;
- Food processing stations, which would include bedrock mortars and single cups in boulders, or mobile grinding stones.

*Historical Period, ca. 1850 to the present*

During the historical period exploration, fur trapping and early settlement in the north valley occurred. The immediate impact of these early contacts was the decimation of the native population through the introduction of diseases.

The earliest documented exploration of the foothill areas was by Captain Luis Arguello in 1820. For the next two decades, trappers from the Hudson Bay Company and the American Fur Company were trapped and hunted the hills.

During the period of Mexican rule in California, several persons obtained land grants in what is now Butte County. These grants included the Farwell Grant and the Arroyo del Chico Grant, later becoming General Bidwell's Rancho Chico. Sam Neal obtained the Esquon Grant. For the most part, these large land grants were used to raise cattle. Sam Neal is reported to be the first to raise cattle in the area.

After the discovery of gold in 1848, the influx of people into California changed the subsequent history of the region. The decades following the Gold Rush are marked by Indian removal, gold mining, agriculture, and commerce. Rail lines were established to transport people and goods more efficiently.

*Glenn County History*

Glenn County was organized in 1891 and named after a local physician, Dr. Hugh James Glenn. Dr. Glenn owned a 45,000 acre ranch which had yielded him a million bushels of wheat, making him the biggest wheat producer in the world at that time. He was known as the "Wheat King."

For a few years after 1850, Glenn County was part of Colusi County which included either in part or in whole, Glenn, Colusa, and Tehama Counties. William B. Ide, president of the Bear Republic (Bear Flag Revolt, 1846) lived in Red Bluff and Monroeville, a town on the Sacramento River about 5 miles south of Hamilton City. Colusi County was named after two Mexican Land Grants, the Coluses (1844) and the Colus (1845). The name of the county was often written as Coluse to reflect the name of a local Native Indian tribe. When the county seat was moved from Monroeville in 1854 to Colusa, the name of the county changed to Colusa. In 1856, a portion of Colusa County, along with bits of Butte and Shasta Counties, became Tehama County.

During the gold rush years, the Glenn County area offered little to aspiring miners. However, when the gold claims withered, prospectors turned to the rich farm land of Glenn County and the expansive grazing lands along the Coast Range. Cattle and sheep ranches gave rise to wheat and barley fields. Supplies were freighted up the Sacramento River. In 1875, the railroad was extended north of Woodland. By 1881, it had reached Red Bluff. Along the way, the towns of Willows, Corning and Orland sprang up. The railroad brought in Civil War veterans, immigrants, and people from the Mid-West or Eastern United States. Different crops were started such as almonds in Arbuckle, prunes in Colusa, olives in Corning or oranges in Orland.

Granville P. Swift, one of the first non-native settlers in the region, built his adobe home on the banks of Hambright Creek near its confluence with Stony Creek in 1849. Swift established Murdock Ranch in the area, and raised cattle. He is credited with being the first one to grow barley in the Central Valley.

Orland was established in 1870 as a grain shipping railroad station. The town name was drawn at random from a hat, the name referring to a town in England. A post office was established in 1876. The town was incorporated in 1909, and is now the largest town in Glenn County.

The Southern Pacific Railroad was created in 1884. In 1901, the Union Pacific Railroad bought 38% of Southern Pacific stock and assumed control of the company. However, seven years later, the Supreme Court ordered Union Pacific to sell their 46% of Southern Pacific stock. Southern Pacific operated as an independent entity until 1996 when it formally merged with Union Pacific, creating the largest railroad company in the United States.

The town of Hamilton City arose in 1905 when a large sugar beet processing facility was proposed. The "Holly Sugar Plant" was built in 1906 by James Hamilton and the Alta California Sugar Beet Company. In 1908, the company name was changed to the Sacramento Valley Sugar Company which was purchased by Spreckels Sugar Company. The Hamilton City post office was opened in 1906. The Holly Sugar Plant shut down operations in 1996.

Historic period cultural resources which may potentially be encountered on the project site include structural remnants or artifacts associated with agricultural and/or homesteading activities.

# METHODS

The survey consisted of four components which included office and archival research, a records search, written contact with Native American groups and related agencies, and a pedestrian field survey.

### *Office and Archival Methods*

Topographic and aerial maps of the property and vicinity were reviewed to discover landforms and nearby natural water sources. The aerial map of the property was examined to determine the presence or absence of surface anomalies. Online resources were searched for vicinity and regional history.

### *Record Search*

The Northeast Information Center (NEIC) of the California Historical Resources Information System located at California State University, Chico, was contacted, and provided the results of a record search dated July 18, 2013.

The literature search conducted by the Northeast Information Center includes:

- OHP Historic Property Directory & Determinations of Eligibility (August 2012);

- National/California Register of Historic Places (2012);
- California State Historical Landmarks (2012);
- California State Points of Interest;
- California Inventory of Historic Resources;
- Directory of Properties in the Historic Property Data Files for Glenn County (2012);
- Handbook of North American Indians, Vol. 8, California (1970); and
- Historic spots in California (2002).

State and federal inventories have no list of any historic properties within or adjacent to the Project.

The NEIC has 3 archived reports within a half-mile radius of the project site. The property has previously been surveyed within the Caltrans right-of-way in 2008, as part of a Caltrans District 3 cultural resources inventory of rural highways in eleven northern California counties. These reports are:

- IC report 259- Johnson, Keith J. (Department of Anthropology, California State University, Chico). 1975 *Archaeological Survey of the Stony Creek Bank Protection Project, Tehama and Glenn Counties, California*;
- IC Report 5665- Offermann, Janis (Caltrans) 1999. *Negative Archaeological Survey Report for the Replacement of Stony Creek Bridge (#11-0029) on State Highway 32, Glenn County, California*; and
- IC Report 9539- Leach-Palm, Laura, Pat Mikkelsen, Paul Brandy, Jay Kind and Lindsay Hartman (Far Western Anthropological Research Group) 2008. *Cultural Resources Inventory of Caltrans District 3 Rural Conventional Highways in Butte, Colusa, El Dorado, Glenn, Nevada, Placer, Sacramento, Sierra, Sutter, Yolo and Yuba Counties.*

Areas that were surveyed in the above reports can be found in Confidential Appendix A.

There are no recorded prehistoric or historic cultural resources within a half-mile radius of the property.

Copies of the Northeast Information Center record search results are included as Confidential Appendix A.

### *Native American Contact*

The Native American Heritage Commission (NAHC) reported that no Sacred Land was within or adjacent to the Project. Individuals on the Glenn County list of Native American contacts were sent written requests for comments or concerns in regards to the Project. The Native American contacts included the Grindstone Rancheria of Wintun-

Wailaki in Elk Creek, the Paskenta Band of Nomlaki Indians in Orland, and the Enterprise Rancheria of Maidu Indians in Oroville. No response was received from any of these contacts, indicating that no comments or concerns would be forthcoming. Communication with the NAHC and Native American contacts is contained in Appendix B.

### *Field Procedures*

Per guidelines set by the Secretary of the Interior, survey activities should be designed to gather information required to achieve preservation goals. Survey methods should be compatible with the past and present environmental characteristics of an area, and with respect to those cultural resources which may reasonably be present.

The Project was visited on June 21 and July 17, 2013. The property was surveyed by Mary Bailey, of Golden Hills Consulting, Oroville, California. Ms. Bailey has been involved in northern California archaeology since 1988. Ms. Bailey has a Master of Arts degree in Archaeology.

The survey design consisted of basically east-west transects spaced at 20- to 30-meter intervals in those areas subject to routine grading and surface maintenance, while those areas with lesser routine disturbance, such as an area with scattered arundo grass and tamarisk, were surveyed at 10- to 20 meter intervals. Ground visualization was excellent over most of the site due to routine ground maintenance. The general topography of the site was scanned for surface abnormalities such as depressions that were neither vernal pools, naturally occurring, nor results of the former gravel and ready mix facility.

## RESULTS

No surface prehistoric cultural resources were located on the property.

Existing buildings include a small electrical power maintenance shed, a scale house, and an operations structure with attached office for the Stony Creek Ready Mix Company which no longer is in routine operation. A group of gravel loading concrete pads are located approximately mid-site. Figure 3 shows the location of the existing buildings.

Per the property manager, Kara Baker, both the scale house and the small electrical shed were constructed circa 1985, as were the loading pads. The Stony Creek Ready Mix facility operation structure and attached office were constructed circa the early 1960s. As this places the operation structure at approximately 50 years in age, it must be evaluated as an historic property and eligibility for inclusion to either the California and State Registers of Historic Places must be determined.

Figure 3 Building Locations

## Determination of Eligibility

In considering the significance of an historic property, its eligibility for inclusion into either the California State Register of Historic Places, or the National Register of Historic Places must be considered. These eligibility criteria are developed from the Code of Federal Regulations (CFR), Title 36, Part 60 of the National Historic Preservation Act of 1966.

**Criteria for Evaluation**
The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

(a) that are associated with events that have made a significant contribution to the broad patterns of our history; or

(b) that are associated with the lives of persons significant in our past; or

(c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

(d) have yielded, or may be likely to yield, information important in prehistory or history.

**Criteria Considerations**
Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the last 50 years shall not be considered eligible for the National Register. However, such properties *will qualify* if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

(a) a religious property deriving primary significance from architectural or artistic distinction or historical importance; or

(b) a building or structure removed from its original location but which is significant primarily for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

(c) a birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life; or

(d) a cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events; or

(e) a reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

(f) a property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

(g) a property achieving significance within the past 50 years if it is of exceptional importance.

Using the above criteria, the potentially significant historic resource located on the property was evaluated.

The Stony Creek Ready Mix operation facility and office do not satisfy any of the criteria to qualify them as historic properties eligible for either the state or national registers. The facility has not been involved in any events or situations important to the development of the area. It is not associated with any individuals important to the history of the area. It contains no significant architectural style. It is unlikely that any further information as to the history of the area or the people important to the history of the area would be obtained from the building. It possesses no unique architectural or structural styles which may distinguish some particular period in history.

Recordation of the Stony Creek Ready Mix building with archiving at the NEIC will provide sufficient documentation and mitigation.

## IMPACTS

No impact to prehistoric or historic cultural resources is anticipated, however there is a moderate to high potential for the presence of subsurface prehistoric resources because of the property's proximity to a perennial water body.

## MITIGATIONS

With standard mitigation efforts, the potential impact to cultural resources can be reduced to less than significant.

### Required Mitigation 1:

During any excavation or other substantial subsurface disturbance activities any individuals conducting the work should be given a cultural awareness training session and advised to watch for cultural resource materials. If any evidence of prehistoric cultural resources be observed (freshwater shells, beads, bone tool remnants or an assortment of bones, soil changes including subsurface ash lens or soil darker in color than surrounding soil, lithic materials such as flakes, tools or grinding rocks, etc.), or historic cultural resources (adobe foundations or walls, structures and remains with square nails, refuse deposits or bottle dumps, often associated with wells or old privies), all work must immediately cease, and a qualified archaeologist must be consulted to assess the significance of the cultural materials.

### Required Mitigation 2:

If human remains are discovered, all work must immediately cease, and the local coroner must be contacted. Should the remains prove to be of cultural significance, the Native American Heritage Commission in Sacramento, California, must be contacted, with notification of most likely descendants.

# References

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Moratto, M.J. 1984 "California Archaeology" Academic Press, Ontario

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Free Library 1996. *Holly Sugar to Cease Beet Sugar Production at Hamilton City.* http://www.thefreelibrary.com/HOLLY+SUGAR+TO+CEASE+BEET+SUGAR+PRODUCTION+AT+HAMILTON+CITY-a018212486

## Appendix A: Northeast Information Center Record Search Results

**CONFIDENTIAL**

# Appendix B: Native American Heritage Commission Response

# Native American Contact Letters

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

**NATIVE AMERICAN HERITAGE COMMISSION**
1550 Harbor, Suite 100
WEST SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

July 30, 2013

Mary L. Bailey
3807 West Branch Lane
Oroville, CA 95965

Sent by Fax: 530-891-4103

Number of Pages: 2

Re: KVB Solid Waste Treatment Facility, Hamilton City USGS Quadrangle, Glenn County

Dear Ms.ailey:

A search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the presence of Native American traditional cultural places or sites in the APE. Enclosed is a list of Native American individuals/organizations who may have knowledge of traditional cultural places in your project area. This list should provide a starting place in locating any areas of potential adverse impact.

The NAHC makes no recommendation or preference of any single individual, or group over another. All of those on the list should be contacted, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: rw_nahc@pacbell.net

Sincerely,

Robert Wood
Associate Government Program Analyst

**Native American Contact List**
Glenn County
July 30, 2013

Grindstone Rancheria of Wintun-Wailaki
Ronald Kirk, Chairperson
P.O. Box 63
Elk Creek , CA 95939
(530) 968-5365
(530) 968-5366 FAX

Nomlaki
Wintun (Patwin)
Wailaki
Muimok

Paskenta Band of Nomlaki Indians
Andrew Freeman, Chairperson
PO Box 398
Orland , CA 95963
office@paskenta.org
(530) 865-2010
(530) 865-1870 Fax

Nomlaki
Wintun

Enterprise Rancheria of Maidu Indians
Art Angle, Vice Chairperson
2133 Monta Vista Avenue
Oroville , CA 95966
info@enterpriserancheria.com
(530) 532-9214
(530) 532-1768 FAX

Maidu

Enterprise Rancheria of Maidu Indians
Glenda Nelson, Chairperson
2133 Monta Vista Ave
Oroville , CA 95966
info@enterpriserancheria.com
(530) 532-9214
(530) 532-1768 FAX

Maidu

Grindstone Rancheria of Wintun-Wailaki
Regina Dock
P.O. Box 63
Elk Creek , CA 95939
(530) 968-5365
(530) 968-5366 FAX

Nomlaki
Wintun (Patwin)
Wailaki
Muimok

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list s only applicable for contacting local Native Americans with regard to cultural resources for the proposed KVB Solid waste treatment facility, Hamilton City USGS Quadrangle, Glenn County

Golden Hills Consulting
3807 West Branch Lane
Oroville, CA 95965
(530) 891-4103
Goldenhlls@aol.com

Grindstone Rancheria of Wintun-Wailaki
Ronald Kirk, Chairperson
P.O. Box 63
Elk Creek, CA 95939

August 2, 2013

RE: Proposed Municipal Waste Conversion Facility, Glenn County, California.

Dear Mr. Kirk;

Golden Hills Consulting has been retained to pursue a cultural resources record search and pedestrian site survey on a proposed project site in Glenn County. The Project is located on the south side of Highway 32 just east of the highway's crossing of Stony Creek, approximately 3 miles west of Hamilton City and 5.5 miles east of Orland (see included location figure). The Project is located on the Hamilton City U.S. Geological Survey (USGS) 7.5-minute quadrangle map within the Mt. Diablo Meridian Township 22 North, Range 2 West, in the unsectioned Capay area. The proposed project involves development of the property for construction of a municipal waste conversion and recycling facility and is approximately 42 acres. The project site had previously been used for gravel extraction and a Ready-Mix plant.

We have completed a record search through the Northeast Information Center and have contacted the Native American Heritage Commission in Sacramento from whom your contact information was received.

If you have any knowledge of, concerns or comments in regards to the presence of cultural resources past or present, located within the project area, I would greatly appreciate your input so that I could include these in the subsequent report.

Thank you,

Mary L. Bailey

Mary L. Bailey

Golden Hills Consulting

Golden Hills Consulting
3807 West Branch Lane
Oroville, CA 95965
(530) 891-4103
Goldenhlls@aol.com

Grindstone Rancheria of Wintun-Wailaki
Regina Dock
P.O. Box 63
Elk Creek, CA 95939

August 2, 2013

RE: Proposed Municipal Waste Conversion Facility, Glenn County, California.

Dear Ms. Dock;

Golden Hills Consulting has been retained to pursue a cultural resources record search and pedestrian site survey on a proposed project site in Glenn County. The Project is located on the south side of Highway 32 just east of the highway's crossing of Stony Creek, approximately 3 miles west of Hamilton City and 5.5 miles east of Orland (see included location figure). The Project is located on the Hamilton City U.S. Geological Survey (USGS) 7.5-minute quadrangle map within the Mt. Diablo Meridian Township 22 North, Range 2 West, in the unsectioned Capay area. The proposed project involves development of the property for construction of a municipal waste conversion and recycling facility and is approximately 42 acres. The project site had previously been used for gravel extraction and a Ready-Mix plant.

We have completed a record search through the Northeast Information Center and have contacted the Native American Heritage Commission in Sacramento from whom your contact information was received.

If you have any knowledge of, concerns or comments in regards to the presence of cultural resources past or present, located within the project area, I would greatly appreciate your input so that I could include these in the subsequent report.

Thank you,

Mary L. Bailey

Mary L. Bailey

Golden Hills Consulting

Golden Hills Consulting
3807 West Branch Lane
Oroville, CA 95965
(530) 891-4103
Goldenhlls@aol.com

Enterprise Rancheria of Maidu Indians
Art Angle, Vice Chairperson
2133 Monte Vista Avenue
Oroville, CA 95966

August 2, 2013

RE: Proposed Municipal Waste Conversion Facility, Glenn County, California.

Dear Mr. Angle;

Golden Hills Consulting has been retained to pursue a cultural resources record search and pedestrian site survey on a proposed project site in Glenn County. The Project is located on the south side of Highway 32 just east of the highway's crossing of Stony Creek, approximately 3 miles west of Hamilton City and 5.5 miles east of Orland (see included location figure). The Project is located on the Hamilton City U.S. Geological Survey (USGS) 7.5-minute quadrangle map within the Mt. Diablo Meridian Township 22 North, Range 2 West, in the unsectioned Capay area. The proposed project involves development of the property for construction of a municipal waste conversion and recycling facility and is approximately 42 acres. The project site had previously been used for gravel extraction and a Ready-Mix plant.

We have completed a record search through the Northeast Information Center and have contacted the Native American Heritage Commission in Sacramento from whom your contact information was received.

If you have any knowledge of, concerns or comments in regards to the presence of cultural resources past or present, located within the project area, I would greatly appreciate your input so that I could include these in the subsequent report.

Thank you,

Mary L. Bailey

Mary L. Bailey

Golden Hills Consulting

Golden Hills Consulting
3807 West Branch Lane
Oroville, CA 95965
(530) 891-4103
Goldenhlls@aol.com

Enterprise Rancheria of Maidu Indians
Glenda Nelson, Chairperson
2133 Monte Vista Avenue
Oroville, CA 95966

August 2, 2013

RE: Proposed Municipal Waste Conversion Facility, Glenn County, California.

Dear Ms. Nelson;

Golden Hills Consulting has been retained to pursue a cultural resources record search and pedestrian site survey on a proposed project site in Glenn County. The Project is located on the south side of Highway 32 just east of the highway's crossing of Stony Creek, approximately 3 miles west of Hamilton City and 5.5 miles east of Orland (see included location figure). The Project is located on the Hamilton City U.S. Geological Survey (USGS) 7.5-minute quadrangle map within the Mt. Diablo Meridian Township 22 North, Range 2 West, in the unsectioned Capay area. The proposed project involves development of the property for construction of a municipal waste conversion and recycling facility and is approximately 42 acres. The project site had previously been used for gravel extraction and a Ready-Mix plant.

We have completed a record search through the Northeast Information Center and have contacted the Native American Heritage Commission in Sacramento from whom your contact information was received.

If you have any knowledge of, concerns or comments in regards to the presence of cultural resources past or present, located within the project area, I would greatly appreciate your input so that I could include these in the subsequent report.

Thank you,

Mary L. Bailey

Mary L. Bailey

Golden Hills Consulting

Golden Hills Consulting
3807 West Branch Lane
Oroville, CA 95965
(530) 891-4103
Goldenhlls@aol.com

Paskenta Band of Nomlaki Indians
Andrew Freeman, Chairperson
P.O.Box 398
Orland, CA 95963

August 2, 2013

RE: Proposed Municipal Waste Conversion Facility, Glenn County, California.

Dear Mr. Freeman;

Golden Hills Consulting has been retained to pursue a cultural resources record search and pedestrian site survey on a proposed project site in Glenn County. The Project is located on the south side of Highway 32 just east of the highway's crossing of Stony Creek, approximately 3 miles west of Hamilton City and 5.5 miles east of Orland (see included location figure). The Project is located on the Hamilton City U.S. Geological Survey (USGS) 7.5-minute quadrangle map within the Mt. Diablo Meridian Township 22 North, Range 2 West, in the unsectioned Capay area. The proposed project involves development of the property for construction of a municipal waste conversion and recycling facility and is approximately 42 acres. The project site had previously been used for gravel extraction and a Ready-Mix plant.

We have completed a record search through the Northeast Information Center and have contacted the Native American Heritage Commission in Sacramento from whom your contact information was received.

If you have any knowledge of, concerns or comments in regards to the presence of cultural resources past or present, located within the project area, I would greatly appreciate your input so that I could include these in the subsequent report.

Thank you,

Mary L. Bailey

Mary L. Bailey

Golden Hills Consulting

UNITED STATES POSTAL SERVICE

Certificate Of Mailing

From: Golden Hills Consulting
3807 West Branch lane
Oroville, CA 95965

To: Paskenta Band of Nomlaki
Andrew Freeman, Chairperson
P.O. Box 398
Orland, CA 95963

PS Form 3817, April 2007 PSN 7530-02-000-9065

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00061218-06

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3807 West Branch lane
Oroville, CA 95965

To: Grindstone Rancheria of Wintun Wailaki
Regina Doch
P.O. Box 63
Elk Creek, CA 95939

PS Form 3817, April 2007 PSN 7530-02-000-9065

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U.S. POSTAGE PAID PARADISE, CA 95969 AUG 02, 13 AMOUNT

$1.20

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Oroville, CA 95965

To: Enterprise Rancheria/Maidu
Glenda Nelson, Chairperson
2133 Monte Vista Ave
Oroville, CA 95966

PS Form 3817, April 2007 PSN 7530-02-000-9065

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To: Grindstone Rancheria of Wintun Wailaki
Ronald Kirk, Chairperson
P.O. Box 63
Elk Creek, CA 95939

PS Form 3817, April 2007 PSN 7530-02-000-9065

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3807 West Branch lane
Oroville, CA 95965

To: Enterprise Rancheria/Maidu
Art Angle, Vice Chairperson
2133 Monte Vista Ave
Oroville, CA 95966

PS Form 3817, April 2007 PSN 7530-02-000-9065

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$1.20

00061218-06

# Appendix C: Representative Photographs

# Representative Photographs

| | |
|---|---|
|  | Property frontage along Hwy 32, northwest corner looking east |
|  | Mid-site, northern edge of property, looking south |

| | |
|---|---|
|  | Green waste disposal area, view to southeast |
|  | Gravel piles onsite, view to east |
|  | Concrete gravel loading pads approximately mid-site, view to the south |

| | |
|---|---|
|  | Stony Creek Ready Mix office and operations buildings, view to the east |
|  | Stony Creek Ready Mix – View to the north |
|  | Stony Creek Ready Mix, view to the southeast |

| | |
|---|---|
|  | Scale house near northeast entrance to the property |
|  | Electrical building near western edge of property, view to southeast |

# Appendix D: Stony Creek Ready Mix Buildings, Recordation Forms

State of California X The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
**PRIMARY RECORD**

Primary #
HRI #
Trinomial
**NRHP Status Code**

Other Listings
Review Code  Reviewer  Date



***Resource Name or #:** Stony Creek Ready Mix Facility

**P1. Other Identifier:** None
**P2. Location: Unrestricted**
***a. County** Glenn **and** Attach a Location Map as necessary.)
***b. USGS 7.5' Quad** Hamilton City **Date** 1969 **T** 22N; **R** 2W Unsectioned Capay Land Grant; **M.D.B.M.**
c. Address Highway 32 City Hamilton City Zip
d. UTM: Zone 10 05 79 427 mE/ 43 99 669 mN

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The facility is the office and operations building for Stony Creek Ready Mix which is no longer in operation. It is composed of two connected structures. A small wood frame addition with plywood siding and deteriorating composition roof is the office for the facility and is attached to a metal Quonset hut-type building which was the operations area for the business. The Quonset hut is approximately 32 feet wide by 60 feet long. The attached office is approximately 10 feet wide by 22 feet long. Both structures are built on concrete slabs. A concrete apron extends 3 feet beyond the perimeter of the Quonset hut and the front of the office. The buildings were constructed in the early to mid 1960s. The metal building appears in fair condition, however the wood office addition is deteriorating.

***P3b. Resource Attributes:** 1-3 story commercial building, HP6

***P4. Resources Present:** Building

**P5**. Stony Creek Ready Mix buildings, view to the southeast

***P6. Date Constructed/Age and Source:** Historic. Construction in the early to mid 1960's.

***P7. Owner and Address:**
KVB, Inc.
19985 Roser Road
Orland, CA 95913

***P8. Recorded by:** Mary Bailey, Golden Hills Consulting. 3807 West Branch Lane, Oroville, CA 95965

***P9. Date Recorded:** August 2013

***P10. Survey Type:** Intensive pedestrian survey and report

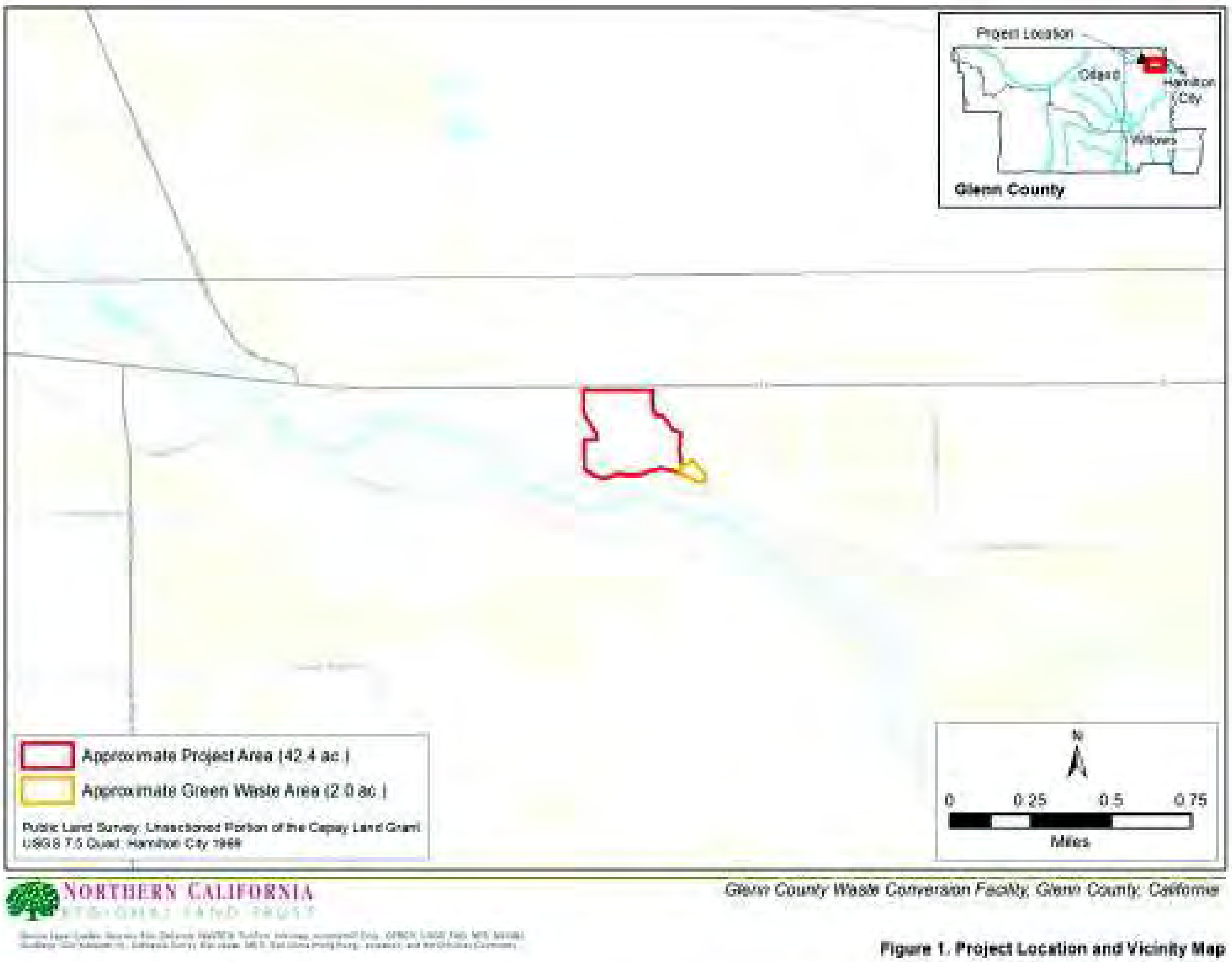
***P11. Report Citation**: *Cultural Resource Report for the Municipal Waste Conversion Facility, Glenn County, California*

***Attachments:** Location Map

| State of California X The Resources Agency<br>DEPARTMENT OF PARKS AND RECREATION | Primary # |
|---|---|
| **CONTINUATION SHEET** | HRI #<br>Trinomial |

**Page** 2 **of** 3 ***Resource Name)** Stony Creek Ready Mix

***Recorded by:** Golden Hills Consulting ***Date** August 2013 9 Continuation 9 Update




*Glenn County Waste Conversion Facility, Glenn County, California*

**Figure 1. Project Location and Vicinity Map**

State of California X The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
# CONTINUATION SHEET

Primary #
HRI #
Trinomial

Page 3 of 3 *Resource Name or #: Stony Creek Ready Mix
*Recorded by: Golden Hllls Consulting *Date August 2013

# Appendix D
CEQA Air Quality Technical Report

# CEQA AIR QAULITY TECHNICAL REPORT GLENN COUNTY MUNICIPAL SOLID WASTE CONVERSION FACILITY

Air Quality Technical Report

Prepared for
Glenn County
Planning & Public Works Agency

August 2015

ESA

# CEQA AIR QAULITY TECHNICAL REPORT GLENN COUNTY MUNICIPAL SOLID WASTE CONVERSION FACILITY

Air Quality Technical Report

Prepared for
Glenn County
Planning & Public Works Agency

August 2015

2600 Capitol Avenue
Sacramento, California 95816
916-231-1266

www.esassoc.com
Oakland
Orlando
Palm Springs
Petaluma
Portland
Sacramento
San Diego
Santa Cruz
San Francisco
Seattle
Tampa
Woodland Hills

# Table of Contents

## Figures and Tables

# 1.0 Introduction

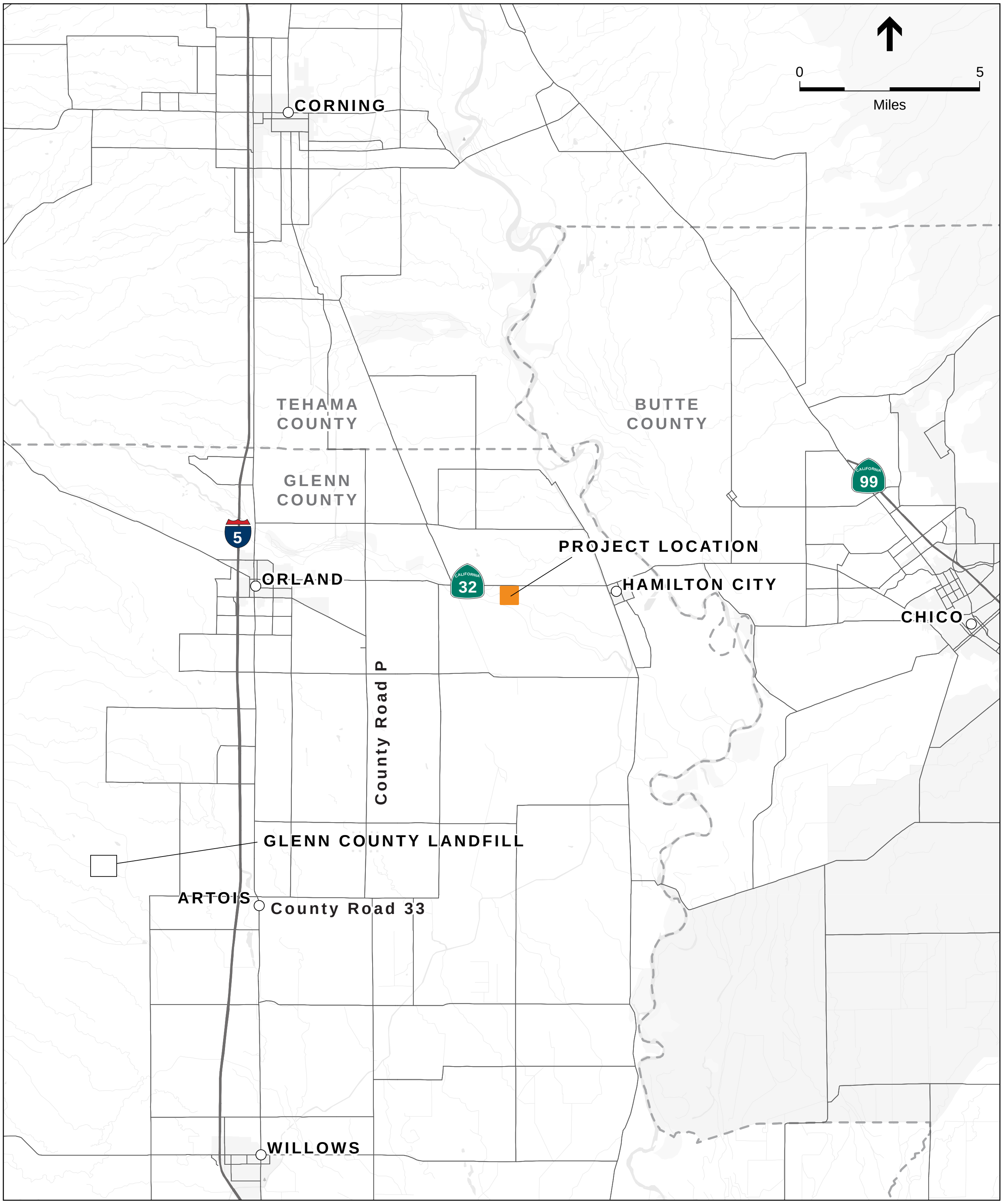
KVB, Inc. (KBV) is planning to develop a Municipal Solid Waste (MSW) Conversion Facility (Facility) along Highway 32 between Orland and Hamilton City. The Facility would include a municipal solid waste (MSW) materials recovery facility (MRF), transfer station (TS) and anaerobic digestion (AD) facility. These facilities, equipment, and operations would be used to manage future MSW from Glenn County and the City of Chico. On January 9, 2015, the Glenn County Board of Supervisors approved the Notice to Preparation (NOP) of Draft Environmental Impact Report with KVB in support of the proposed Facility to replace the County's existing landfill, which is scheduled to close in late 2016. KVB has prepared a Land Use Permit application to Glenn County Planning and Public Works Agency (County) to initiate the California Environmental Quality Act (CEQA) process for the project. This CEQA Air Quality Technical Report is a component of that submittal and addresses air quality impacts in the context of the CEQA process.

The Facility is expected to reduce the landfill-bound solid waste component from Glenn County's MSW stream by more than 70% and would recycle or convert, for beneficial use, the majority of the MSW stream.

The existing Glenn County Landfill is permitted to receive up to 200 tons per day (tpd) of MSW and may receive up to 200 waste hauling vehicles per day. Incoming MSW at the Glenn County Landfill has averaged approximately 20,000 tons per year (tpy) in recent years, an average of approximately 65 tpd. In addition to wastes from Glenn County, the Facility may also receive and process MSW from other jurisdictions, including the City of Chico. The City of Chico is approximately 13 miles east of the project site. The combined waste streams from Glenn County and Chico would average up to approximately 400 tpd of incoming materials (based on 5 days per week) and peak incoming materials could reach 500 tpd. Yard waste collected in Chico would continue to be processed in Chico and would not be hauled to the Project site.

The Facility would recover recyclable materials and will convert the organic portion of the MSW steam into digestate and biogas. The Facility will generate heat and electrical power on-site using the biogas as the fuel supply. The Facility will sell recyclables, and digestate. The main facilities (the MRF/AD Area) would be constructed on approximately 46.7-acres of land along Highway 32 between Orland and Hamilton City in Glenn County, California, as illustrated in Figures 1 and 2. An additional 37-acres of land, designated as the Land Application Area (LAA), would be used to store digestate. Site plans identifying the locations of project components are provided in Figures 3 through 4.

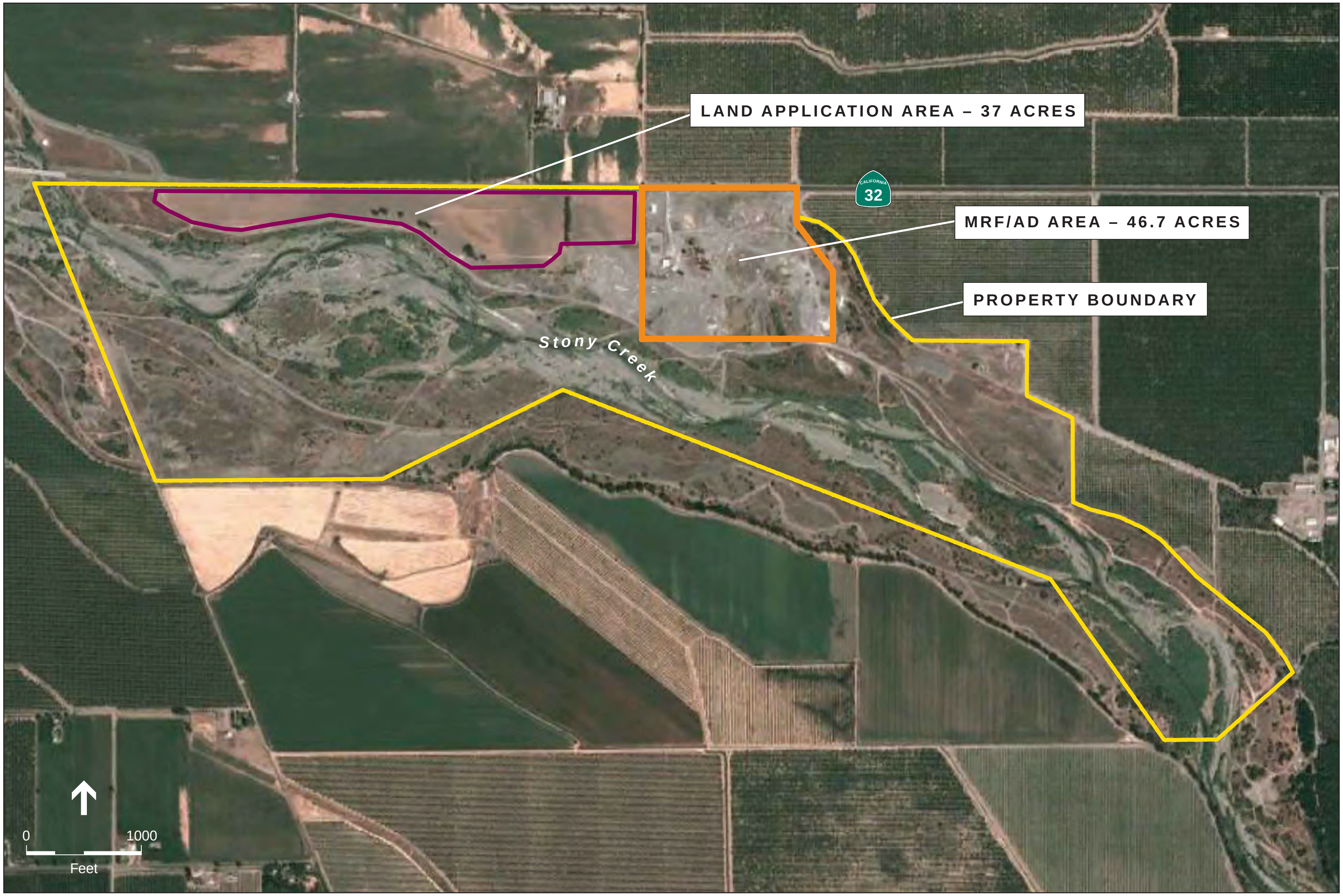
The Phase I Separation Building (see Figures 3 through 5) would include a dirty MRF that accepts a mixed waste steam and separates out organic materials and recyclable materials through a combination of manual and mechanical sorting. Incoming materials would be received from waste hauling trucks and private vehicles. The Facility is not designed to have separate recycling trucks, but to co-mingle the entire waste stream (a single-stream system) and use mechanical and human sorting at the MRF to recover recyclables. The Facility would eliminate the need for separate recycling trucks.




SOURCE: DeLorme Street Atlas USA, 2000; ESA, 2014

Glenn County Solid Waste Conversion Facility EIR . 130954

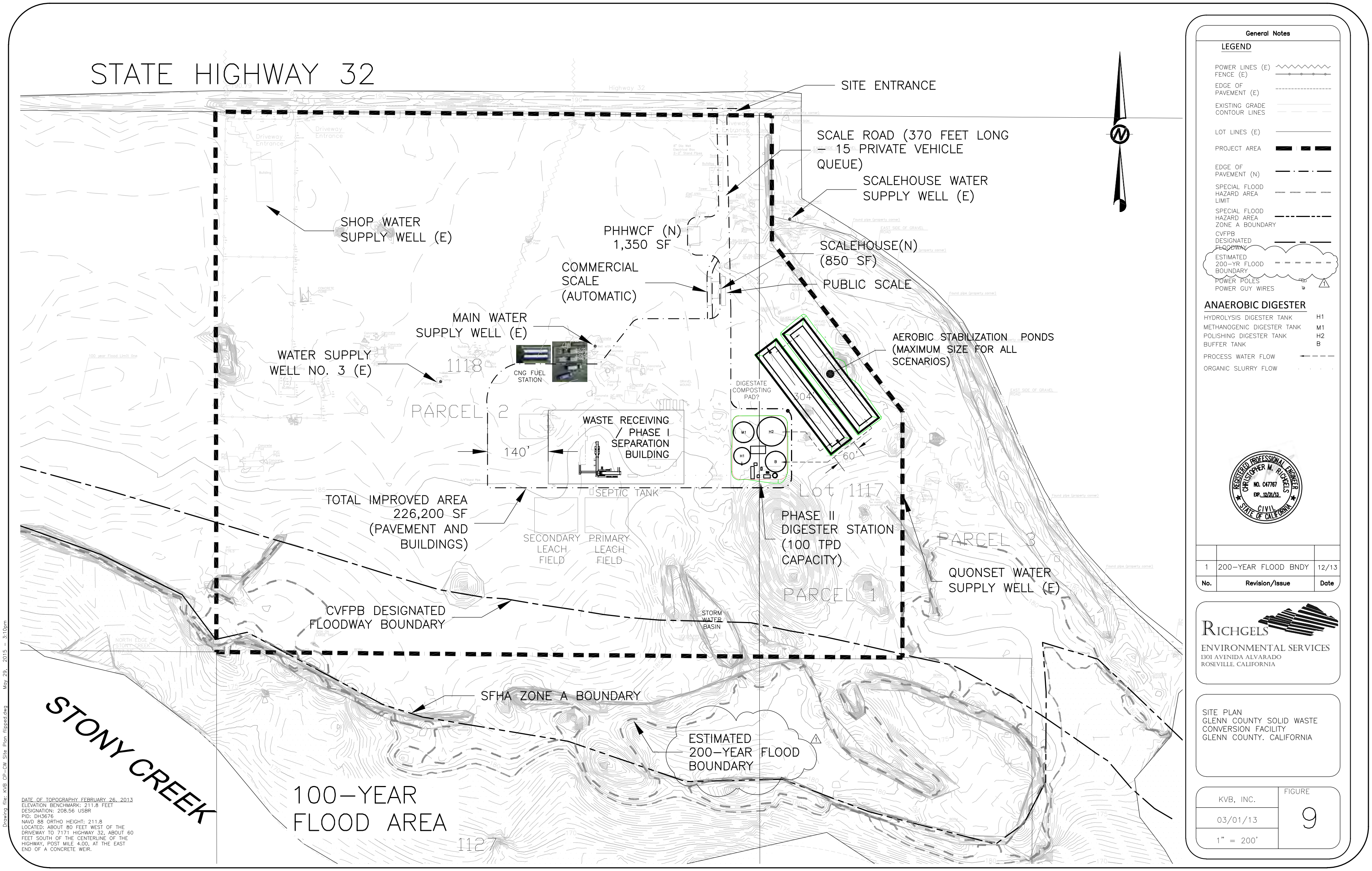
**Figure 1**
Regional Location




SOURCE: GCWCF Project Description, 2014

Glenn County Solid Waste Conversion Facility EIR . 130954

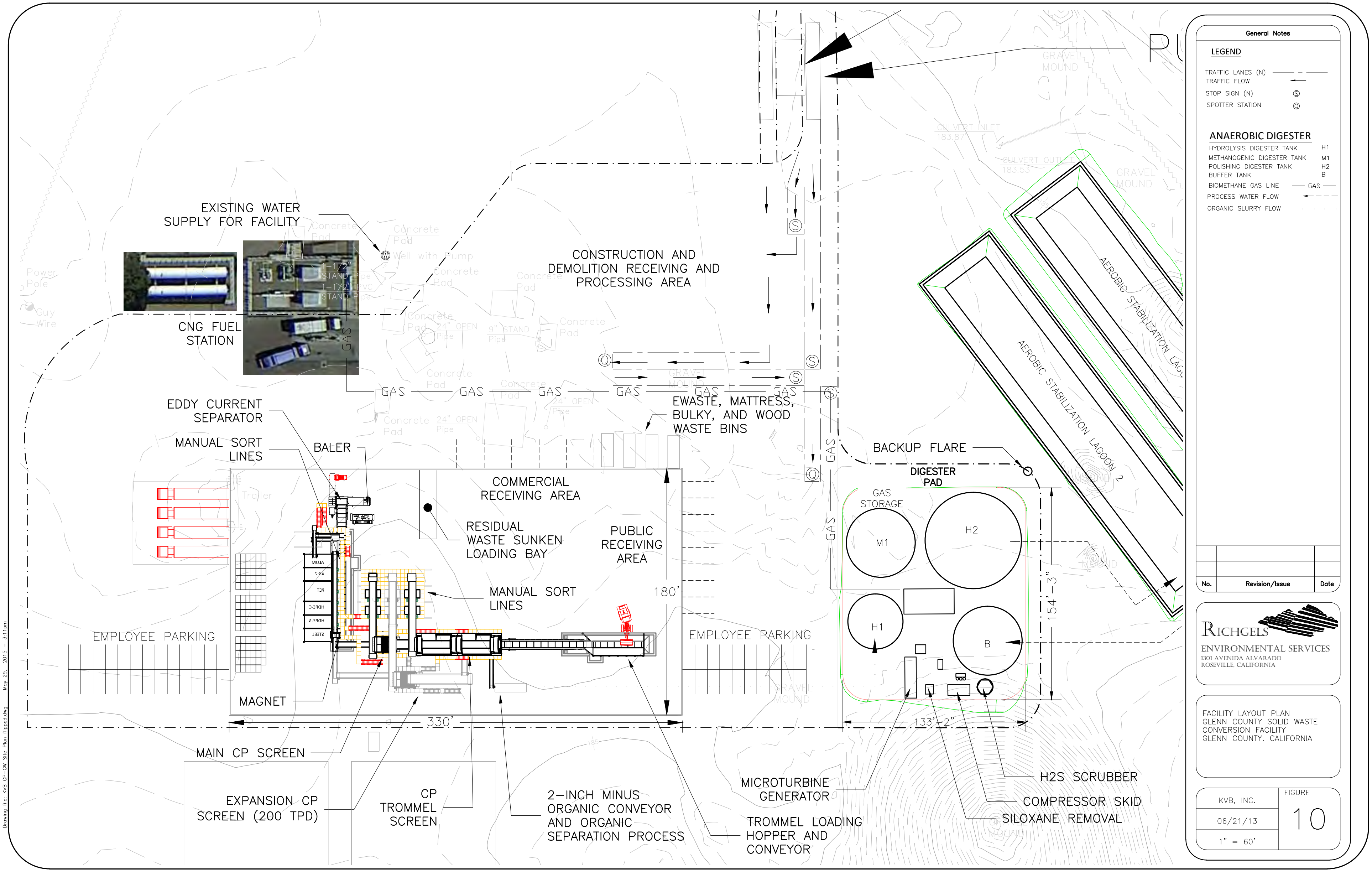
**Figure 2**
Project Site




SOURCE: Richgels Environmental Services; RCH Group, 2015

Glenn County Solid Waste Conversion Facility EIR . 130954

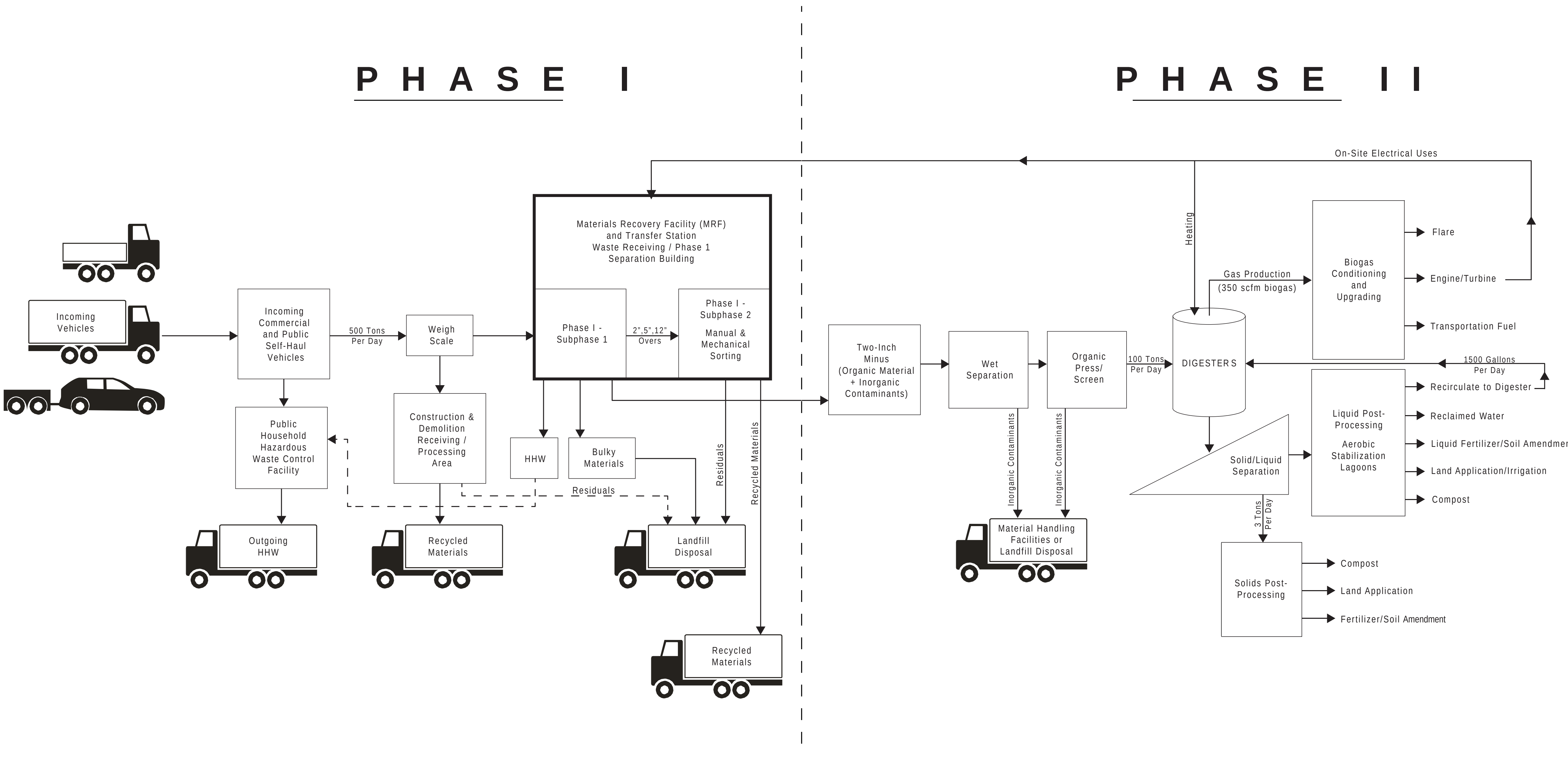
**Figure 3**
Site Plan




SOURCE: Richgels Environmental Services; RCH Group, 2015



**Figure 4**
Facility Layout




SOURCE: RCH Group, 2015

Glenn County Solid Waste Conversion Facility EIR . 130954

**Figure 5**
Material Processing Diagram

# 2.0 Environmental Setting

## 2.1 Geography and Topography

The Facility will be located on approximately 46.7-acres south of Highway 32 between Orland and Hamilton City, just east of the intersection of Highway 32 with Stony Creek, as illustrated above in Figure 1. The UTM coordinates (NAD 83) of the Facility site are approximately 579,286 meters Easting and 4,399,650 meters Northing. The nominal site elevation is approximately 185 feet above mean sea level. The area immediately surrounding the proposed Facility site can be characterized as rural with a mix of land uses, consisting primarily of agricultural land but also including industrial property. Residential areas in the Cities of Orland and Hamilton City are located approximately 3.25 miles west and 3 miles east of the proposed Facility, respectively. There are no prominent terrain features in the immediate vicinity as the project site is located in the center of the Sacramento Valley.

## 2.2 Climate and Meteorology

The climate of the Sacramento Valley is characterized by hot summers, mild winters, and small amounts of precipitation. The major climatic controls in the Sacramento Valley are the mountains on three sides—the Coastal Ranges to the west, the Sierra Nevada mountain range to the east, and the Cascade Range to the north—and the semi-permanent Pacific High pressure system over the eastern Pacific Ocean. This high is centered between the 140°W and 150°W meridians, and oscillates in a north-south direction seasonally. The position of the Pacific High governs California's weather. In the summer, the high moves to its northernmost position and dominates the regional climate, producing persistent temperature inversions and a predominantly southeasterly wind field. Clear skies, high temperatures, and low humidity characterize this season. Very little precipitation occurs during summer months because migrating storm systems are blocked by the Pacific High. Occasionally, tropical air moves into the area and thunderstorms may occur over the adjacent mountains.

In the fall, the Pacific High weakens and shifts southwestward toward Hawaii, and its dominance is diminished in the Sacramento Valley. Primarily in the winter, the Great Basin High pressure system to the east also affects the Sacramento Valley. During the transition period, the storm belt and zone of strong westerly winds also moves southward into California. The prevailing weather patterns during this time of year include storm periods with rain and gusty winds, clear weather that can occur after a storm or because of the Great Basin High pressure area, or persistent fog caused by temperature inversion.

The winds in the Orland area are light (7% calm conditions) and predominantly from the southeastern and northwestern quadrants. On an annual basis, approximately 42% of the winds come from the southeast quadrant between southeast and south, inclusive, while 21% of the winds are between north and northwest, inclusive. The wind direction and wind speed frequency distribution ("wind rose") recorded at the Red Bluff meteorological station during calendar years 1984-1985 are illustrated in Figure 6 (CARB, 2003).

A marine climate can influence mixing heights. Often, the base of the inversion is found at the top of a layer of marine air because of the cooler nature of the marine environment. However, inland areas such as Glenn County, where the marine influence is absent, often experience strong ground-based inversions that inhibit mixing and can result in high pollutant concentrations. Low mixing heights are observed during the winter in the Sacramento Valley. No terrain or other steering mechanisms that would have an effect on the meteorology exist near the Facility. The surface roughness, height, and length of large-scale terrain features are consistent throughout the area, and play a large role in the effect on the horizontal and vertical wind patterns. There is no slope or topographical aspect in the vicinity (i.e., < 10 km) of the Facility that would reasonably affect meteorological conditions.

## 2.3 Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. The reasons for greater than average sensitivity include health problems, proximity to emission sources, or duration of exposure to air pollutants. Sensitive receptors are typically defined as locations where human populations, especially children, seniors, or sick persons, are found, and there is reasonable expectation of continuous human exposure.  Examples of land uses considered to be sensitive receptors are residences, hospitals, day cares, and schools.

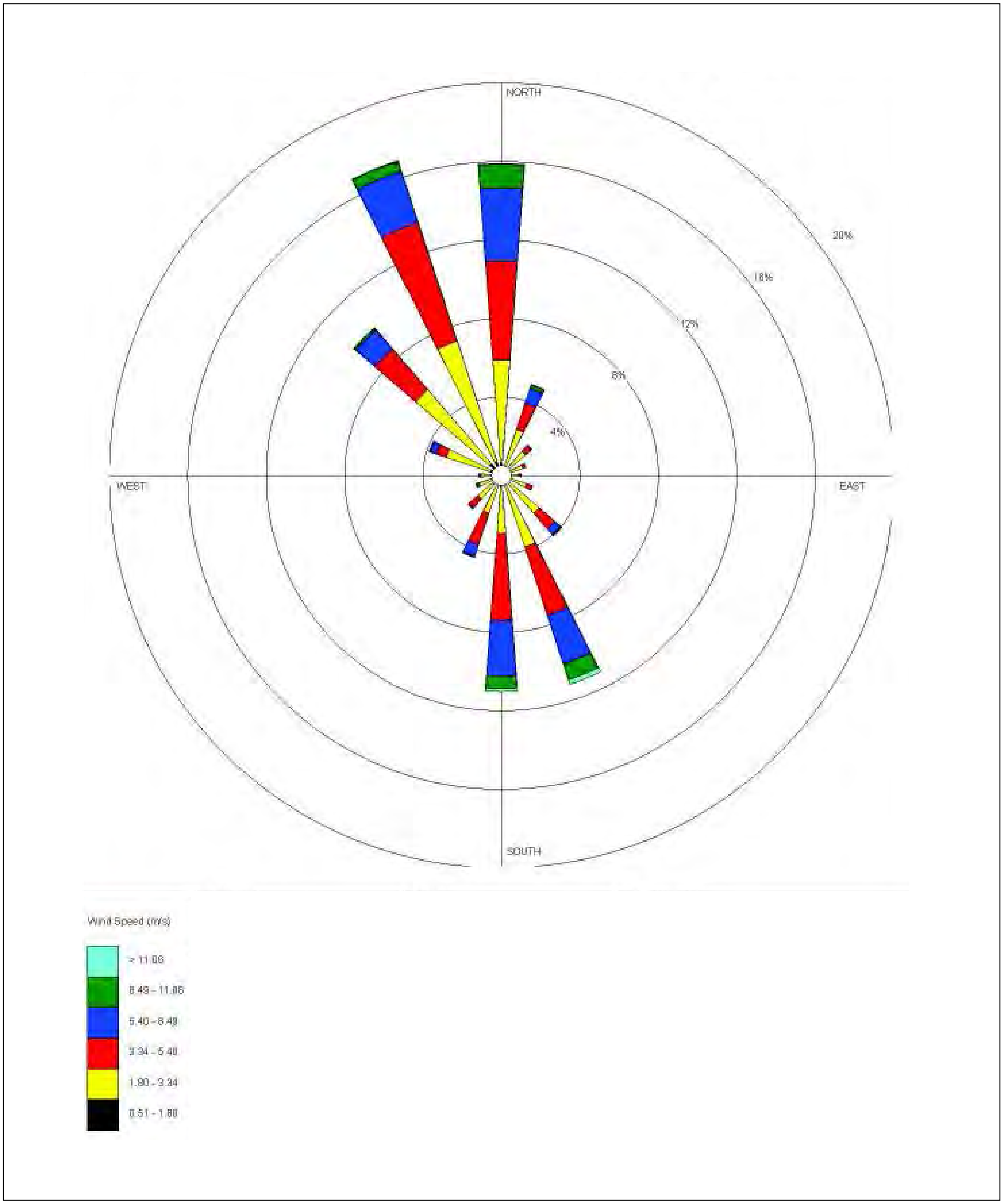
The nearest sensitive receptor to the Project outer boundary is a single-family residence located approximately one-quarter mile to the northwest of the Project site. The areas surrounding the Project site are zoned Agricultural or Industrial with scattered single-family residences.

## 2.3 Air Quality

## 2.3.1 Ambient Air Quality Standards

Ambient air quality standards ("AAQS") consist of two parts: an allowable concentration of a pollutant, and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of the pollutants on human health, crops and vegetation, and, in some cases, damage to paint and other materials. The averaging times are based on whether the damage caused by the pollutant is more likely to occur during exposures to a high concentration for a short time (one hour, for instance), or to a relatively lower average concentration over a longer period (8 hours, 24 hours, or 1 month). For some pollutants there is more than one AAQS, reflecting both short-term and long-term effects.

The United States Environmental Protection Agency (USEPA) has established national ambient air quality standards (NAAQS) for ozone, nitrogen dioxide ($NO_2$), carbon monoxide (CO), sulfur dioxide ($SO_2$), particulate matter with aerodynamic diameter less than or equal to 10 microns (PM10), PM with aerodynamic diameter less than or equal to 2.5 microns (PM2.5), and airborne lead. In addition, the California Air Resources Board (CARB) has established standards for




SOURCE: Data for the ISCST3 air quality model. T Servin (7/8/03)
Planning & Technical Support Division California Air Resources Board



**Figure 6**
Wind Rose - Red Bluff Meteorological Station
(1984-1985)

ozone, CO, $NO_2$, $SO_2$, sulfates, PM10, PM2.5, airborne lead, hydrogen sulfide, and vinyl chloride at levels designed to protect the most sensitive members of the population, particularly children, the elderly, and people who suffer from lung or heart diseases.

Areas with ambient air quality levels above these AAQS can be considered "nonattainment areas" subject to planning and pollution control requirements that are more stringent than standard requirements. Table 1 presents the NAAQS and California AAQS for criteria pollutants relevant to the Facility and the attainment status of Glenn County with respect to these AAQS (USEPA, 2015; CARB, 2014).

**Table 1**
**Ambient Air Quality Standards and Attainment Designations**

| Pollutant | Averaging Period | National | | State | |
|---|---|---|---|---|---|
| | | AAQS[1] | Attainment status[2] | AAQS[3] | Attainment Status[2] |
| CO | 1-hour | 35 ppm | Attainment | 20 ppm | Unclassified |
| | 8-hour | 9 ppm | Attainment | 9 ppm | Unclassified |
| $NO_2$ | 1-hour | 0.100 ppm | Attainment | 0.18 ppm | Attainment |
| | Annual | 0.053 ppm | Attainment | 0.03 ppm | Attainment |
| Ozone | 1-hour | N/A | N/A | 0.09 ppm | Attainment |
| | 8-hour | 0.075 ppm | Attainment | 0.07 ppm | Attainment |
| PM10 | 24-hour | 150 $\mu g/m^3$ | Attainment | 50 $\mu g/m^3$ | Nonattainment |
| | Annual | N/A | N/A | 20 $\mu g/m^3$ | Nonattainment |
| PM2.5 | 24-hour | 35 $\mu g/m^3$ | Attainment | N/A | N/A |
| | Annual | 12 $\mu g/m^3$ | Attainment | 12 $\mu g/m^3$ | Attainment |
| $SO_2$ | 1-hour | 0.075 ppm | Attainment | 0.25 ppm | Attainment |
| | 3-hour | 0.5 ppm | Attainment | N/A | N/A |
| | 24-hour | 0.14 ppm | Attainment | 0.04 ppm | Attainment |
| | Annual | 0.03 ppm | Attainment | N/A | N/A |

Source: Source: California Air Resources Board, 2014; Environmental Protection Agency, 2015

## 2.3.2 Greenhouse Gases and Climate Change

Global climate change results from greenhouse gas (GHG) emissions, which are caused by several activities, including combustion of fossil fuels, deforestation, and land use change.

GHGs play a critical role in the Earth's radiation budget by trapping infrared radiation emitted from the Earth's surface, which could have otherwise escaped to space. Prominent GHGs contributing to this process include carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), and certain refrigerants that include chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and hydrofluorocarbons (HFCs). This phenomenon, known as the "greenhouse effect", keeps the Earth's atmosphere near the surface warmer than it would be otherwise and allows for successful habitation by humans and other forms of life.

Global warming potential (GWP) is a measure of how much a given mass of GHG is estimated to contribute to global warming. It is a relative scale that compares the gas in question to that of the same mass of carbon dioxide (whose GWP is by definition 1). In this analysis, $CH_4$ is assumed to have a GWP of 21 and $N_2O$ has a GWP of 310. Refrigerants have GWP's that range from 76 up to 12,240. Consequently, using each pollutant's GWP, emissions of $CO_2$, $CH_4$, $N_2O$, CFCs, HCFCs, and HFCs can be converted into $CO_2$ equivalence, also denoted as $CO_2e$ (California Climate Action Registry, 2009).

Fossil fuel combustion removes carbon stored underground and releases it into the active carbon cycle, thus increasing concentrations of GHGs in the atmosphere. Emissions of GHGs in excess of natural ambient concentrations are theorized to be responsible for the enhancement of the greenhouse effect and contribute to what is termed "global warming", a trend of unnatural warming of the Earth's natural climate. Increases in these gases lead to more absorption of radiation and warm the lower atmosphere further, thereby increasing evaporation rates and temperatures near the surface. Climate change is a global problem, and GHGs are global pollutants, unlike criteria pollutants (such as ozone, carbon monoxide, and particulate matter) and toxic air contaminants (TACs), which are pollutants of regional and local concern.

The Intergovernmental Panel on Climate Change (IPCC) was established by the World Meteorological Organization and United Nations Environment Program. IPCC's mission is to assess scientific, technical, and socioeconomic information relevant to the understanding of climate change, including the potential impacts and options for adaptation and mitigation. IPCC predicts substantial increases in global temperatures of between 1.1 to 6.4 degrees Celsius, depending on the scenario (Intergovernmental Panel on Climate Change, 2013).

Climate change could affect California's natural environment in the following ways:

- Rising sea levels along the California coastline, particularly in San Francisco and the Sacramento-San Joaquin River Delta due to ocean expansion;
- Extreme heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent;
- An increase in heat-related human deaths and infectious diseases and a higher risk of respiratory problems caused by deteriorating air quality;
- Reduced snow pack and stream flow in the Sierra Nevada mountains, affecting winter recreation and water supplies;
- Potential increase in the severity of winter storms, affecting peak stream flows and flooding;
- Changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield; and
- Changes in distribution of plant and wildlife species due to changes in temperature, competition of colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

These changes in California's climate and ecosystems could occur at a time when California's population is expected to increase from 34 million to 59 million by the year 2040 (California Energy Commission 2012).

# 2.4 Regulatory Setting

## 2.4.1 Federal

The USEPA has responsibility for enforcing, on a national basis, the requirements of many of the country's air quality laws. USEPA's Region 9 is responsible for the administration of the agency's programs for California. USEPA's activities relative to the California air pollution control program focus principally on reviewing California's submittals for the State Implementation Plan ("SIP"). The SIP is required by the federal Clean Air Act to demonstrate how all areas of the state will meet the national ambient air quality standards within the federally specified deadlines (42 USC §7409, 7411). USEPA also administers national programs related to mobile source emissions, and federal regulatory programs for which local agencies have not been delegated authority, including portions of Title 40 of the Code of Federal Regulations, Parts 60 (Standards of Performance for New Stationary Sources) and 63 (National Emissions Standards for Hazardous Air Pollutants, or NESHAPs).

## 2.4.2 State

CARB has primary responsibilities for adopting and updating the state's ambient air quality standards; reviewing the operations of the local air pollution control districts (APCDs); and reviewing and coordinating preparation of the SIP for achievement of the federal ambient air quality standards (California Health & Safety Code, or "H&SC", §39500 et seq.).

CARB's website does not identify any recent air quality plans submitted by Glenn County. However, the Northern Sacramento Valley Planning Area (NSVPA) member air districts, which include Glenn County APCD, jointly prepared and adopted a uniform air quality attainment plan for the purposes of achieving and maintaining healthful air quality throughout the air basin. CARB has submitted, to USEPA on behalf of Glenn County APCD, several relevant District regulations, listed below, that comprise the SIP for Glenn County. Lastly, CARB has adopted the AB 32 Scoping Plan to indicate how GHG emission reductions will be achieved through regulations, market-based compliance mechanisms, and other actions, including a recommendation of a de minimis threshold for GHG emissions below which sources would be exempt from reduction requirements.

### 2.4.2.1 2012 Triennial Air Quality Attainment Plan

The 2012 Triennial Air Quality Attainment Plan addresses the progress made in implementing the 2012 Triennial Air Quality Attainment Plan and proposes modifications to the strategies necessary to attain the California ambient air quality standard for the 1-hour ozone standard at the earliest practicable date (NSVPA, 2012). The 2012 Plan identifies those portions of the NSVPA designated as "nonattainment" for the State ambient air quality standards and discusses the health effects related to the various air pollutants. The Plan identifies the air pollution problems that are to be cooperatively addressed on as many fronts as possible in order to make the region a healthier place to live, now and in the future. The 2012 Plan focuses on the adoption and implementation of control measures for stationary sources, area wide sources, and indirect sources, and addresses public education and information programs. The 2012 Plan identifies 18 control measures to reduce ozone emissions in the NSVPA. None of the nine control measures that Glenn County has adopted are applicable to the MSW Conversion Facility. Furthermore, of the nine remaining control measures, Glenn County APCD plans to adopt only two—Architectural Coatings and Internal Combustion Engines—that are applicable to the MSW Conversion Facility. KVB will use architectural coatings that meet any applicable limits on ROG content. The generator engine will satisfy BACT and thus should comply with any future prohibitory rule governing internal combustion engines.

## 4.4.2.2 SIP Rules

CARB has submitted, to USEPA on behalf of Glenn County APCD, several relevant District regulations, listed below, that comprise the SIP for Glenn County.

- Section 51: New Source Review (NSR)
- Section 85: Particulate Matter Concentration
- Section 86: Dust and Fumes Total Emissions

The compliance of the Project with these relevant requirements is discussed below. Section 51: New Source Review – The District adopted Section 51 to establish preconstruction review requirements for new stationary sources of air pollution for use of BACT, analysis of air quality impacts to ensure that the operation of such sources does not interfere with the attainment or maintenance of ambient air quality standards, and no net increase in emissions from new stationary sources that have the potential to emit 25 tpy or more of any nonattainment pollutant (or their precursors). Section 51 applies to all new stationary sources that are subject to the requirements of Section 50, although not all elements of Section 51 may apply to a particular project. Section 51 contains the following elements:

- BACT;
- Emission offsets;
- Air quality impact analysis (AQIA);
- Compliance by other owned sources; and
- Public notice.

## 4.4.2.3 CARB Climate Change Scoping Plan

In 2006, the California State Legislature adopted AB 32, The California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG emissions from mobile and stationary sources in California. AB 32 requires that CARB adopt rules and regulations that, by 2020, would reduce greenhouse gas emissions equivalent to the statewide levels existing in 1990. The law further requires that such measures achieve the maximum technologically feasible and cost effective reductions in GHGs from sources or categories of sources to achieve the 2020 statewide greenhouse gas emissions limit. Pursuant to AB 32, the ARB adopted a Climate Change Scoping Plan in December 2008 (CARB 2008) outlining measures to meet the 2020 GHG reduction goal. In order to meet this goal, California must reduce its GHG emissions by 30% below projected 2020 business-as-usual emissions levels. The 2008 Scoping Plan recommends measures that California may implement such as new fuel regulations, to reduce statewide GHG emissions. It estimates that a reduction of 174 million metric tons (MMT) of $CO_{2e}$ from the transportation, energy, agriculture, forestry, and other sources could be achieved if California implements all of the measures. An update to the Scoping Plan, published in 2014, lays out a set of new actions, including specific recommended actions with lead agency assignments and anticipated due dates. Some of the actions are near-term, while others are focused on longer-term efforts. Listed below are the regulations, plans, and potentially regulated industrial sectors identified in the Scoping Plan.

- California Cap-and-Trade Program
- California Light Duty Vehicle Greenhouse Gas Standards
- Renewables Portfolio Standard
- Low Carbon Fuels Standard
- Regional Transportation-Based Greenhouse Gas Targets
- Million Solar Roofs Program
- Medium/Heavy-Duty Vehicles
- Industrial Emissions
- High Speed Rail
- Green Building Strategy
- High Global Warming Potential Gases
- Recycling and Waste
- Sustainable Forests
- Water
- Agriculture

## 2.4.3 Local

When California's air pollution statutes were reorganized in the mid-1960s, local APCDs were required to be established in each county of the state (H&SC §4000 et seq.). The Glenn County APCD (District) encompasses all of Glenn County. The Glenn County APCD has principal responsibility for developing plans for meeting the state and federal ambient air quality standard; developing control measures for non-vehicular sources of air pollution necessary to achieve and maintain both state and federal air quality standards; implementing permit programs established for the construction, modification, and operation of sources of air pollution; and enforcing air pollution statutes and regulations governing non-vehicular sources. USEPA has not delegated authority, to the District, for Parts 60 or 63.

Each level of government has adopted specific regulations that limit emissions from stationary sources, several of which are applicable to this project. Air quality regulatory requirements applicable to the Facility are listed below:

- District Rules, Section 51: New Source Review (NSR)
- District Rules, Section 50: Authorization to Construct
- District Rules, Article VIII: Title V Permits
- District Rules, Section 76: Visible Emissions
- District Rules, Section 78: Nuisance
- District Rules, Section 85: Particulate Matter Concentration
- District Rules, Section 86: Dust and Fumes Total Emissions
- District Rules, Section 89: Sulfur Oxides
- District Rules, Section 90: Reduced Sulfur Emission Standards
- Federal NSR for PM2.5
- 40 CFR Part 60: New Source Performance Standards (NSPS)
- 40 CFR Part 63: National Emissions Standards for Hazardous Air Pollutants (NESHAPs)
- California Global Warming Solutions Act of 2006 ("AB 32")

# 3.0 Air Quality Impacts

The Project's air quality impacts are both direct and indirect in nature, and affect air quality both in the immediate vicinity of the Facility and throughout the Sacramento Valley Air Basin. Direct impacts are those resulting on-site from activities and emission sources under control of the Project, and generally within the project boundaries. Examples of direct emission sources include the generator engine and on-site construction activities. Indirect impacts are those resulting from mobile sources that are either attracted to the Project's location, or whose pattern of activity and emissions is altered by the implementation of the project. Examples of indirect emission sources include MSW packer trucks (i.e., garbage trucks), heavy-duty trucks, light-duty trucks, and employee vehicles.

Both direct and indirect sources of emissions will occur at the Project location and in the immediately surrounding areas. These emissions have the potential to increase local concentrations of specific pollutants above levels that are significant. The local impacts analysis must also consider the incremental impact of the Project on the local environment when added to other closely related past, present, and reasonably foreseeable probable future projects.

Regional air quality impacts are almost entirely cumulative in nature—that is, for most air quality impacts, the Project's emissions alone do not have the potential to create a significant air quality impact. However, when the project's emissions are combined with all other stationary and mobile sources, its emissions may become cumulatively considerable.

## 3.1 Construction Emissions

Construction activities are generally analyzed separately from operational impacts because they tend to be temporary and limited to localized impacts. However, ongoing or long-range construction activities that occur over a wide geographic area have the potential to create regional air quality impacts in much the same way as operational sources. Specifically, ozone precursor (nitrogen oxides, or NOx, and reactive organic gases, or ROG) emissions as well as particulate matter (PM10 and PM2.5) emissions have the potential to affect regional air quality if emitted in large enough quantities. Therefore, construction activities must be analyzed for both localized and regional impacts.

The following Phase 1 construction activities is planned to occur in 2016:

- Construction and demolition receiving and process area;
- Grading on the Project site, assuming that there would be no surplus soil hauled off-site or supplemental fill soil hauled on-site;
- Trenching and utilities installation for the Project site;
- Construction of plant fencing around the Project site;

- Construction of a scale house;
- Construction of the Permanent Household Hazardous Waste Collection Facility (PHHWCF) totaling approximately 1,350 square feet (sf);
- Construction of the Waste Receiving/Phase 1 Separation Building (the MRF/TS Building) totaling approximately 59,400 sf;
- Construction of four water supply wells; and
- Site paving.

The following Phase 2 construction activities will occur during 2017:

- Construction of an Anaerobic Digester Station;
- Construction of two aerobic stabilization ponds totaling approximately 19,456 sf;
- Construction of the Compressed Natural Gas (CNG) production facility; and
- Construction of a Vehicle Fueling Station.

The total developed area (buildings and pavement) for the Project would total approximately 240,000 sf.

Project construction will encompass a wide variety of activities that emit air pollutants. These activities may be grouped as either creating fugitive emissions or engine exhaust emissions. Fugitive dust emissions include PM10/PM2.5 components. Asphalt off-gassing, architectural coatings, adhesives, sealants, and solvents produce fugitive ROG emissions. Engine exhaust emissions include all criteria pollutants, and may be directly emitted at the project location, or indirectly emitted by vehicles in route to the project, such as construction worker and vendor vehicle trips.

Sources of fugitive emissions during the construction of the project are listed below.

- Dust entrained during site preparation and grading/excavation;
- Dust entrained during trenching and paving activities;
- Wind erosion of areas disturbed during construction activities;
- ROG emissions from asphalt off-gassing during paving activities; and
- ROG emissions from the application and use of architectural coatings, adhesives, sealants, and solvents.

Engine exhaust emissions during construction of the project will result from the following:

- Equipment used for site preparation, grading, excavation, trenching;
- Equipment used for erecting structures (cranes, forklifts, compressors, generators, etc.);
- Equipment used for paving;

- Water trucks used to control fugitive dust emissions;
- Pickup trucks and maintenance trucks used to transport workers and materials around the construction site;
- Vendor vehicles delivering materials, concrete, fuel, and other supplies to the construction site; and
- Vehicles used by workers to commute to the construction site.

Construction emissions were quantified using the CalEEMod software package, Version CalEEMod.2013.2.2 using the "general light industry" land use sub-type. CalEEMod quantifies emissions of CO, NOx, PM10, PM2.5, ROG, sulfur oxides (SOx), $CO_2$, $CH_4$, and $N_2O$ from construction activities using emission factors derived from CARB's EMFAC2011 and OFFROAD2011 modeling software, for on-road and off-road construction vehicles, respectively. CalEEMod calculates off-road and on-road vehicle emissions based on the fleet average emission rate of vehicles operating in Glenn County for the year in which each construction activity occurs. Emission factors for fugitive dust emissions and fugitive ROG emissions from asphalt and architectural coatings application are also included in CalEEMod. Based on project input parameters (e.g., land use, acreage, building square feet), CalEEMod calculates construction emissions in units of maximum pounds per day and total tons per year. Default CalEEMod construction phases were used whereby construction was assumed construction of Phase 1 would commence in January 2016 and be completed in July 2016. Construction of Phase 2 would begin shortly after Phase 1 has become operational. For this analysis construction of Phase 2 would commence in January 2016 and be completed in July 2017.

CalEEMod also has the capability to incorporate certain construction mitigation measures if they are selected as input options. No engine exhaust mitigation measures were assumed for construction vehicles. The following mitigating project features were incorporated into the CalEEMod calculations to reflect fugitive dust control mitigation measures:

- Replace ground cover;
- Watering unpaved roads and exposed areas;
- Cleaning paved roads; and
- Reducing vehicle speeds on unpaved roads.

Estimates of Project construction emissions for Phases 1 and 2 are presented in Table 2, respectively. This table shows the daily emissions that would occur as a result of each construction activity. Likewise, the maximum annual emission rate represents the maximum construction emissions that occur during any calendar year. The CalEEMod output files are included in Appendix A.

**Table 2**
**Maximum Construction Emissions**

| Pollutant | Maximum Phase 1 Construction Emissions, year 2016 | | Maximum Phase 2 Construction Emissions, year 2017 | |
|---|---|---|---|---|
| | Daily (lbs/day) | Annual (tpy) | Daily (lbs/day) | Annual (tpy) |
| CO | 23 | 2 | 41 | 2 |
| NOx | 26 | 2 | 52 | 2 |
| PM10 | 7 | < 1 | 21 | < 1 |
| PM2.5 | 4 | < 1 | 13 | < 1 |
| ROG | 34 | 1 | 60 | 2 |
| SOx | < 1 | < 1 | < 1 | < 1 |
| $CO_2e$ | 3,201 | 182 | 4,509 | 258 |

Notes: $CO_2e$ emissions are in metric tons per year.

Source: ESA, 2015

# 3.2 Operational Emissions – Stationary Sources

The Facility will emit a number of criteria pollutants, including CO, NOx, PM10, PM2.5, ROG, and SOx. The plant will also emit toxic air contaminants (TACs) and GHGs, although TAC emissions from the biogas-fired sources will be negligible. Emission sources at the Facility will include one biogas generator engine, one mobile front end loader and one emergency biogas flare.

## 3.2.1 Biogas CHP Generator

The Facility would produce enough biogas to power a 1,059 kW combined heating and power (CHP) generator to supply all onsite equipment during peak demand time. The CHP generator would generate electricity for onsite operations during the daytime hours. For this analysis, the CHP generator is assumed to operate 24 hours per day. Maximum emissions from the biogas generator are summarized in Table 3. Maximum hourly emission rates of CO, NOx, ROG and SOx were provided by the manufacture at an engine work output of 1,059 kW. Maximum hourly emissions of PM10 and PM2.5 were calculated from emission factors found in AP-42, Section 3.2 for a heat input rate of 9.26 MMBtu/hr. The three-way catalyst will control CO/NOx/ROG emissions at levels commensurate with Best Available Control Technology (BACT). The $FeCl_2$ injection system will remove aqueous sulfides from the anaerobic reactors, thus reducing $H_2S$ levels in the biogas. Maximum daily emissions reflect 24 hours of full load operation. Maximum annual emissions reflect the maximum daily emissions at 365 days per year. A spreadsheet containing detailed emission calculations is presented in Appendix B.

**Table 3**
**Maximum Emissions from the onsite CHP Generator**

| Pollutant | Emission Factor | Emission Rates | |
|---|---|---|---|
| | | lb/day | tpy |
| CO | 2.5 g/BHP-hr[1] | 10 | 2 |
| NOx | 1.1 g/BHP-hr[1] | 4 | 1 |
| PM10 | 0.04 lb/MMBtu[2] | 9 | 2 |
| PM2.5 | 0.04 lb/MMBtu[2] | 9 | 2 |
| ROG | 0.2 g-BHP-hr[1] | 1 | < 1 |
| SOx | 0.6 g-BHP-hr[1] | 2 | < 1 |

Notes:

1. Provided by the manufacturer.
2. PM 10 and PM2.5 emission factors were obtained from Table 3.2-1 of AP-42 (July 2000) for natural gas-fired reciprocating engines.

Source: ESA, 2015

## 3.2.2 Biogas Flare

The biogas flare would be used to burn off excess biogas in instances when the generator is not in operation or is shut down for maintenance and biogas is not routed to the CNG production facility. For this analysis, it was assumed that the biogas flare would be used for 200 hours a year with a peak daily use of 24 hours per day. Maximum emissions from the emergency biogas flare are summarized in Table 4. Maximum hourly emissions were calculated to subsequently determine the maximum daily and annual emissions. Maximum hourly emissions were calculated from emission rates (in lb/MMBtu) and the heat input rate of 8.5 MMBtu/hr. Maximum daily emissions reflect 200 hours per year and peak day of 24 hours of operation. Maximum annual emissions reflect 365 hours per year of operation. Detailed emission calculations are presented in Appendix B.

**Table 4**
**Maximum Emissions from the Biogas Flare**

| Pollutant | Emission Factor (lbs/MMBtu)[1, 2, 3] | Emission Rate | |
|---|---|---|---|
| | | lb/day[4] | Tpy[5] |
| CO | 0.05 | 9 | < 1 |
| NOx | 0.04 | 8 | < 1 |
| PM10 | 0.01 | 3 | < 1 |
| PM2.5 | 0.01 | 3 | < 1 |
| ROG | 0.0001147 | < 1 | < 1 |
| SOx | 0.01 | 1 | < 1 |

Notes:

1. CO, NOx, PM10 and PM2.5 emission factors were obtained from Table 2.4-4 of AP-42 (Draft, October 2008) for landfill flares.
2. ROG emission factors were calculated from the biogas non-methane hydrocarbon (NMHC) concentration (5 ppmv), the maximum HHV of 1,012 Btu/scf, and a biogas destruction efficiency of 98%.
3. Sox emission factor was calculated from the inlet $H_2S$ concentration of 90 ppmv and maximum HHV of 1,012 Btu/scf.
4. Calculated from the maximum peak daily use of 24 hours.
5. Calculated from the maximum annual emission at 200 hours per year.

Source: ESA, 2015

## 3.2.4 Stationary Source - Totals

Maximum daily and annual emissions from the biogas generator and flare are summarized in Table 5. Detailed emission calculations are presented in Appendix B.

**Table 5**
**Maximum Emissions from Stationary Sources**

| Pollutant | Maximum Potential Emissions | |
|---|---|---|
| | Total Pounds per Day | Total Tons per Year |
| CO | 19 | 2 |
| NOx | 12 | 1 |
| PM10 | 12 | 2 |
| PM2.5 | 12 | 2 |
| ROG | 1 | < 1 |
| SOx | 4 | < 1 |
| $CO_2$ | 140 | 26 |
| N2O | < 1 | < 1 |
| CH4 | 2 | < 1 |
| Total $CO_{2e}$ | 268 | 49 |
| Source: ESA, 2015 | | |

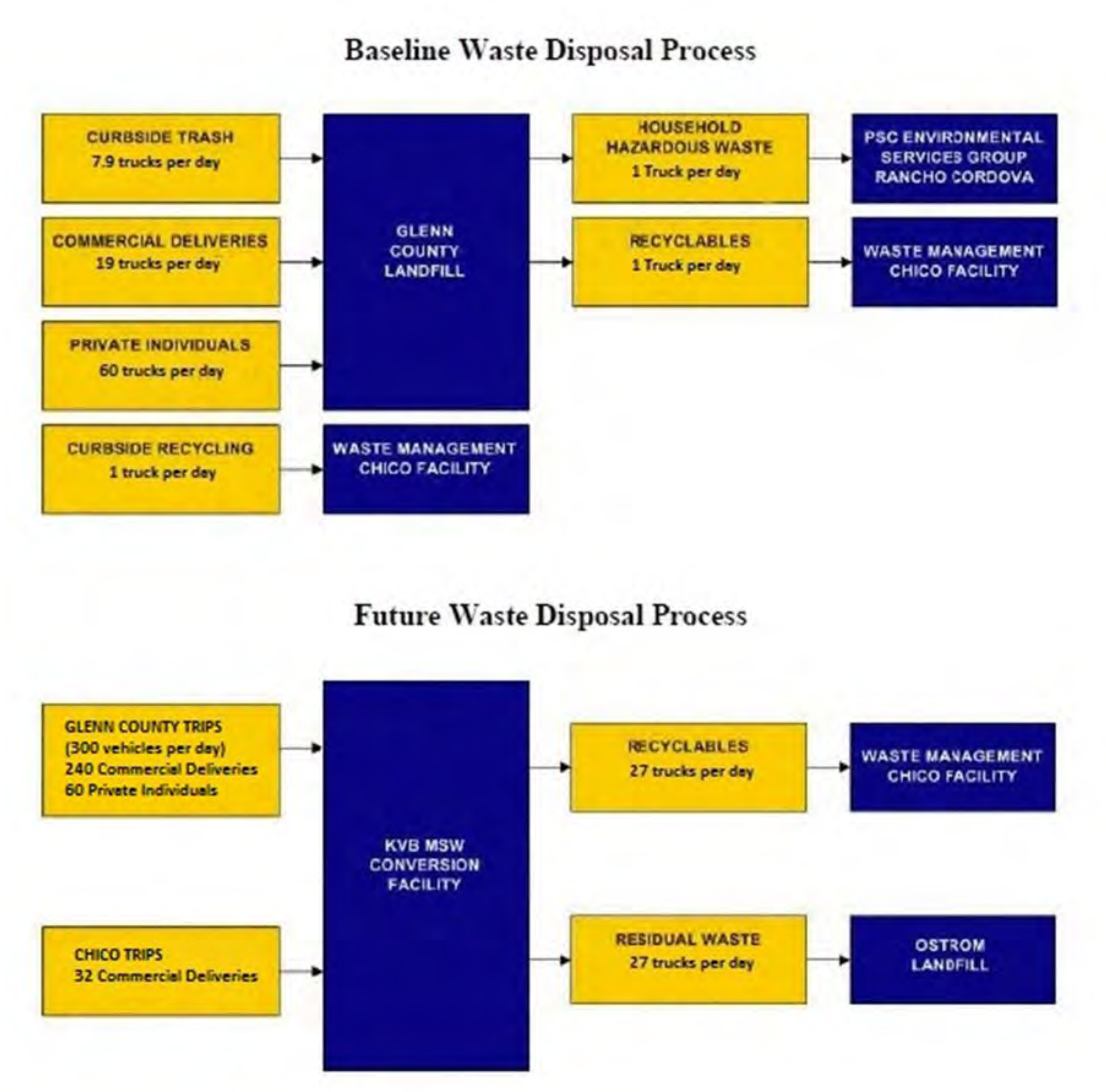
## 3.3 Operational Emission – Mobile Sources

Trucks carrying MSW/recyclables/HHW to and from the Facility will emit air pollutants. Accordingly, the emissions increase of mobile source emissions associated with Project operation were calculated.

The emission increase is calculated as the future maximum emissions less baseline emissions. Baseline emissions from stationary sources are zero because those sources are new. However, there are baseline emissions from vehicles associated with the disposal of MSW/recyclables/HHW in Glenn County. Figure 7 illustrates baseline and future MSW/recycling/HHW disposal processes. Emissions are generated by three classes of trucks: MSW packer trucks, heavy duty trucks, and light duty trucks. Emissions were calculated from emission truck factors (in grams per mile) and truck mileage.

Maximum daily vehicle trips to the Glenn County landfill in FY2013 occurred on a Saturday (March 2, 2013) when there was no MSW packer truck traffic at the landfill. Therefore, inbound curbside trash truck traffic to the landfill (and outbound curbside recyclables truck traffic to the Waste Management Facility in Chico) was assumed to be zero for the baseline in the maximum daily emissions scenario.

**Figure 7**
**MSW/Recycling/HHW Disposal Process Flow Diagram**



### 3.3.1 Inbound and Outbound Vehicle Trips and Miles Traveled

The daily trip rates and vehicle miles traveled for inbound and outbound traffic for the Facility are summarized in Tables 6 and 7. The following assumptions were used to calculate the number of inbound and outbound vehicle trips and miles traveled:

- Baseline truck trips to the Glenn County landfill were calculated from FY2013 landfill data provided by Glenn County. Annual MSW packer truck trips were calculated from daily truck count data provided by Glenn County. Maximum daily heavy duty and light-duty truck trips were allocated by truck type, from the remaining truck counts, proportional to the average estimated composition determined from a weekly sample drawn from each quarter of FY2013. FY 2013 landfill data includes 117 heavy-duty truck deliveries, from Orland, of baled tires to be used in the closure of the landfill. Baseline truck trips to the Waste Management Facility in Chico, with curbside recycling, were estimated by KVB based upon data provided by Glenn County.

- Baseline truck trips to the Waste Management Facility in Chico, with recyclable material from the Landfill, reflect an assumption of one trip per week based upon data provided by Glenn County.

- Baseline trips from the Glenn County Landfill, with HHW, to PSC Environmental Services in Rancho Cordova were obtained from Glenn County. Future trips from the MSW Conversion Facility were assumed to be identical.

- Future vehicle trips to and from the Facility were provided by the traffic consultant (Abrams Associates Traffic Engineering, Inc. 2015). The Facility would have a maximum processing capacity of 500 tons per day (tpd) of MSW to accommodate up to 200 tpd of MSW from the City of Chico which is estimated to generate approximately 32 trips from municipal packer trucks per day. Given that the existing Glenn County Landfill is permitted to receive 200 tpd with approximately 200 vehicles per day it was proportionally estimated that this project could potentially receive up to 300 vehicles per day based on the remaining 300 tpd of processing capacity (minus the 200 tpd coming from the City of Chico).

  Based on the projected 70% recovery rate, an additional 54 trucks per day would be associated with the off-haul of recovered material and other resulting products (assuming an average of 6.5 tons per vehicle). For this analysis, it is assumed that half of these truck trips would go to recycling center in Chico and the other half would to the Ostrom Landfill. Up to 20 employees would be associated with the waste receiving operations. An additional 10 employee vehicles associated with the recovery operations and also up to 9 delivery vehicles per day.

**Table 6**
**Baseline Scenario Maximum Daily Trips and Miles Traveled Summary**

| Category | Vehicle Type | Max Daily Trips | Miles Traveled (Round Trip) |
|---|---|---|---|
| **Inbound** | | | |
| To Glenn Co. Land Fill | | | |
| Curbsite Trucks | Packer Trucks | 7.9 | 30 |
| Commercial Deliveries | Light Duty Trucks | 19 | 30 |
| Private Individuals | Auto | 60 | 30 |
| To Waste Management Chico Facility | | | |
| Curbsite trucks | Packer Trucks | 1 | 52 |
| **Outbound** | | | |
| From Glenn Co. Land Fill to PSC Env. Service Group Rancho Cordova | | | |
| Household Hazardous Waste | Heavy Truck | 1 | 220 |
| From Glenn Co. Land Fill to Waste Mgt. Chico Facility | | | |
| Recyclables | Heavy Truck | 1 | 258 |
| Source: Glenn County, 2013. | | | |

**Table 7**
**Future Scenario Maximum Daily Trips and Miles Traveled Summary**

| Category | Vehicle Type | Max Daily Trips | Miles Traveled (Round Trips)d |
|---|---|---|---|
| **Inbound** | | | |
| From Glenn Co. to MSW Conversion Facility | | | |
| Curbsite Trucks | Packer Trucks | 240 | 30 |
| Private Trucks | Light Duty Trucks | 60 | 30 |
| From City of Chico to MSW Conversion Facility | | | |
| Curbsite trucks | Packer Trucks | 32 | 28 |
| **Outbound** | | | |
| From MSW Conversion Facility to Ostrom Landfill/Recyclable Facility | | | |
| Ostrom Landfill | Heavy Truck | 27 | 120 |
| Recyclable Facility | Heavy Truck | 27 | 28 |
| **Other Trips** | | | |
| Recovery Operations Employees | Auto | 10 | 20 |
| Transfer Station Employees | Auto | 20 | 20 |
| Contractors and Deliveries | Light Duty trucks | 9 | 20 |
| Source: TIA SWCF Glenn County, June 30, 2015. | | | |

## 3.3.2 Vehicle Emissions

Baseline annual emissions were calculated using emission factors for 2013 (found in Appendix C) and the annual truck mileage are summarized in Table 8. Future annual emissions, as calculated from 2016 emission factors shown in Appendix C and the annual truck mileage are summarized in Table 9. The net changes in annual truck emissions are summarized in Table 10. Increases in GHG emissions are primarily attributable to the increase in heavy-duty truck mileage associated with disposal of the residual landfill waste at the Recology Landfill south of Marysville (Ostrom Road Landfill).

**Table 8**
**Annual Baseline Vehicle Emissions**

| Pollutant | Annual Truck Emissions (Tons/Year) | | | |
|---|---|---|---|---|
| | MSW Packer Trucks (Heavy Duty Trucks) | Light Duty Trucks | Light Duty Auto | Total |
| CO | 1 | 1 | 1 | 2 |
| NOx | 2 | < 1 | < 1 | 2 |
| PM10 | < 1 | < 1 | < 1 | < 1 |
| PM2.5 | < 1 | < 1 | < 1 | < 1 |
| ROG | < 1 | < 1 | < 1 | < 1 |
| SOx | < 1 | < 1 | < 1 | < 1 |
| CO2e | 371 | 62 | 206 | 638 |
| Source: ESA, 2015 | | | | |

**Table 9**
**Annual Future Vehicle Emissions**

| Pollutant | Annual Truck Emissions (Tons/Year) | | | |
|---|---|---|---|---|
| | MSW Packer Trucks (Heavy Duty Trucks) | Light Duty Trucks | Light Duty Auto | Total |
| CO | 3 | 4 | < 1 | 7 |
| NOx | 18 | 1 | < 1 | 19 |
| PM10 | 1 | < 1 | < 1 | 1 |
| PM2.5 | < 1 | < 1 | < 1 | 1 |
| ROG | 1 | < 1 | < 1 | 1 |
| SOx | < 1 | < 1 | < 1 | < 1 |
| CO2e | 5,627 | 862 | 53 | 6,542 |
| Source: ESA, 2015 | | | | |

**Table 10**
**Net Change in Annual Vehicle Emissions**

| Pollutant | Net Change in Annual Vehicle Trips (Tons/year) | | |
|---|---|---|---|
| | Baseline (A) | Future (B) | Trip Net Change (B - A) |
| CO | 2 | 7 | 5 |
| NOx | 2 | 19 | 17 |
| PM10 | < 1 | 1 | < 1 |
| PM2.5 | < 1 | 1 | < 1 |
| ROG | < 1 | 1 | < 1 |
| SOx | < 1 | < 1 | < 1 |
| CO2e | 638 | 6,542 | 5,904 |
| Source: ESA, 2015 | | | |

Baseline maximum daily emissions are summarized in Table 11. Future maximum daily emissions are summarized in Table 12. The net changes in maximum daily truck emissions are summarized in Table 13. Decreases in criteria pollutant emissions are attributed to lower fleet average emission factors in 2016 (versus 2013) for the higher emitting heavy-duty trucks.

**Table 11**
**Maximum Daily Baseline Vehicle Emissions**

| Pollutant | Maximum Daily Vehicle Emissions (lbs/day) | | | |
|---|---|---|---|---|
| | MSW Packer Trucks (Heavy Duty Trucks) | Light Duty Trucks | Light Duty Auto | Total |
| CO | 4 | 6 | 8 | 17 |
| NOx | 14 | 1 | 1 | 16 |
| PM10 | 1 | < 1 | < 1 | 1 |
| PM2.5 | 1 | < 1 | < 1 | 1 |
| ROG | 1 | < 1 | < 1 | 1 |
| Sox | < 1 | < 1 | < 1 | < 1 |
| Source: ESA, 2015 | | | | |

**Table 12**
**Maximum Daily Future Vehicle Emissions**

| Pollutant | Maximum Daily Vehicle Emissions (lbs/day) | | | |
|---|---|---|---|---|
| | MSW Packer Trucks (Heavy Duty Trucks) | Light Duty Trucks | Light Duty Auto | Total |
| CO | 22 | 28 | 1 | 52 |
| NOx | 129 | 4 | < 1 | 133 |
| PM10 | 5 | 1 | < 1 | 6 |
| PM2.5 | 3 | < 1 | < 1 | 4 |
| ROG | 4 | 1 | < 1 | 5 |
| Sox | < 1 | < 1 | < 1 | < 1 |
| Source: ESA, 2015 | | | | |

**Table 13**
**Net Change in Daily Vehicle Emissions**

| Pollutant | Net Change in Daily Vehicle Trips (lbs/day) | | |
|---|---|---|---|
| | Baseline (A) | Future (B) | Trip Net Change (B - A) |
| CO | 17 | 52 | 35 |
| NOx | 16 | 133 | 117 |
| PM10 | 1 | 6 | 5 |
| PM2.5 | 1 | 4 | 3 |
| ROG | 1 | 5 | 4 |
| SOx | < 1 | < 1 | < 1 |
| Source: ESA, 2015 | | | |

# 3.4 Operational Emissions – Area Sources

Area source impacts are those that result from small-scale daily activities at the Facility that, in aggregate, can have potentially significant impacts alone or considered as component of the broader Project emissions. With the exception of emissions resulting from use of consumer products and architectural coatings, area source emissions result from combustion and produce CO, NOx, ROG, PM10, PM2.5, and SOx. Consumer products and architectural coatings primarily emit ROG. Area source emissions from Project operation will occur at the Project location from the following sources:

- Use of architectural coatings for onsite buildings/facilities (Scale House, PHHWCF, MRF/TS, AD Station, CNG production facility and Vehicle Fueling station) totaling approximately 206,000 sf;
- Use of consumer products;
- Landscaping emissions for the 6-acre site; and
- Front end loaders loading/moving/unloading material within the Facility.

Area source emissions were quantified using the CalEEMod software package for a "general light industry" land use sub-type. CalEEMod quantifies emissions of CO, NOx, PM10, PM2.5, ROG, sulfur oxides (SOx), $CO_2$, CH4, and $N_2O$ from area source activities. CalEEMod calculates off-road and on-road vehicle emissions based on the fleet average emission rate of vehicles operating in Glenn County. Emission factors for fugitive ROG emissions from architectural coatings application, consumer products usage, and landscaping are also included in CalEEMod. CalEEMod used fleet-average emission factors for front-end loader emissions calculation; KVB will use new front-end loaders equipped with Tier 4F (final) Diesel engines as a mitigating project feature. Based on project input parameters (e.g., land use, acreage, building square feet), CalEEMod calculates area source emissions in units of maximum pounds per day and total tons per year. Maximum daily and annual area source emissions for each area source, as presented in Tables 14 and 15, were calculated for the Project's first year of operation (2018). Detailed emission calculations are presented in Appendix D.

**Table 14**
**Maximum Daily Area Source Emissions from the Project**

| Pollutant | Maximum Daily Area Source Emissions (lbs/day) | | | | |
|---|---|---|---|---|---|
| | Architectural Coatings | Consumer Products | Landscaping Equipment | Front End Loader | Total |
| CO | N/A | N/A | < 1 | 2 | 2 |
| NOx | N/A | N/A | < 1 | 3 | 3 |
| PM10 | N/A | N/A | < 1 | < 1 | < 1 |
| PM2.5 | N/A | N/A | < 1 | 0.17 | < 1 |
| ROG | 2 | 5 | < 1 | < 1 | 7 |
| SOx | N/A | N/A | < 1 | < 1 | < 1 |
| CO2e | N/A | N/A | < 1 | 315 | 315 |
| Source: ESA, 2015 | | | | | |

**Table 15**
**Maximum Annual Area Source Emissions from the Project**

| Pollutant | Maximum Annual Area Source Emissions (Tons/year) | | | | |
|---|---|---|---|---|---|
| | Architectural Coatings | Consumer Products | Landscaping Equipment | Front End Loader | Total |
| CO | N/A | N/A | < 1 | < 1 | < 1 |
| NOx | N/A | N/A | < 1 | < 1 | < 1 |
| PM10 | N/A | N/A | < 1 | < 1 | < 1 |
| PM2.5 | N/A | N/A | < 1 | < 1 | < 1 |
| ROG | < 1 | 1 | < 1 | < 1 | 1 |
| SOx | N/A | N/A | < 1 | < 1 | < 0.01 |
| CO2e | N/A | N/A | < 1 | 44.7 | 44.7 |
| Source: ESA, 2015 | | | | | |

# 3.4 Total Operational Emissions

The net changes in maximum daily and annual operational emissions from stationary sources, mobile sources, and area sources are summarized in Tables 16 and 17.

**Table 16**
**Maximum Daily Operational Emissions (lb/day)**

| Pollutant | Net change in Maximum Daily Area Source Emissions (lbs/day) | | | |
|---|---|---|---|---|
| | Stationary Sources[1] | Mobile Sources[2] | Area Sources[3] | Totals |
| CO | 10 | 35 | 2 | 47 |
| NOx | 8 | 117 | 3 | 127 |
| PM10 | 9 | 5 | < 1 | 14 |
| PM2.5 | 9 | 3 | < 1 | 12 |
| ROG | 1 | 4 | 7 | 12 |
| SOx | 2 | < 1 | < 1 | 2 |

Notes:

1. Reflects the maximum value from either Table 3 or 4.
2. Presented previously in Table 13 for the net change in mobile source emissions.
3. Presented previously in Table 14.

Source: ESA, 2015

**Table 17**
**Maximum Annual Operational Emissions (tpy)**

| Pollutant | Net change in Maximum Annual Area Source Emissions (tpy) | | | |
|---|---|---|---|---|
| | Stationary Sources[1] | Mobile Sources[2] | Area Sources[3] | Totals |
| CO | 2 | 5 | 0 | 7 |
| NOx | 1 | 17 | 0 | 18 |
| PM10 | 2 | < 1 | < 1 | 2 |
| PM2.5 | 2 | < 1 | < 1 | 2 |
| ROG | 0 | < 1 | 1 | 1 |
| SOx | 0 | < 1 | < 1 | 0 |
| $CO_2e$ | 49 | 5,904 | 45 | 5,998 |

Notes:

1. Presented previously in Table 5..

2 Presented previously in Table 10 for the net change in mobile source emissions.

3. Presented previously in Table 15.

Source: ESA, 2015

# 4.0 Assessment of Significance

## 4.1 Significance Criteria

Significance thresholds are used to determine whether impacts associated with a project are significant. Appendix G of the State CEQA Guidelines (14 CCR 15000) lists the following criteria for determining significance of air quality impacts from a Project:

- Conflicts with or obstructs implementation of the applicable air quality plan;
- Violates any air quality standard or contributes substantially to an existing or projected air quality violation;
- Results in a cumulatively considerable net increase of any criteria pollutant for which the project is nonattainment under applicable federal or state ambient air quality standards (including releasing emissions that exceed quantitative thresholds for ozone precursors);
- Exposes sensitive receptors to substantial pollutant concentrations; or
- Creates objectionable odors affecting a substantial number of people.

The District has not established its own set of CEQA air quality significance thresholds, but based on an email correspondence with District staff, the District uses the Shasta County Air Quality Management District's (Shasta AQMD) significance thresholds to evaluate air quality impacts of projects in Glenn County (Ledbetter pers. comm.). The Shasta AQMD adopted a "Protocol for Review" (CEQA Protocol) that details the procedures it uses to implement CEQA (Shasta AQMD, 2003). Thresholds of significance, as obtained from the Shasta AQMD CEQA Protocol and applied herein, are summarized in Table 18.

**Table 18**
**Thresholds of Significance Applicable to the Project**

| Impact | Signficance Threshold | Description |
|---|---|---|
| Construction Emissions | Mitigation of Fugitive PM10 Construction Emissions | Shasta AQMD CEQA Protocol – Implementation of effective and comprehensive construction PM10 control measures that can be reasonably implemented to significantly reduce PM10 emissions from construction. |
| Operational Emissions | 137 lb//day NOx<br>137 lb//day PM10<br>137 lb//day ROG | Shasta AQMD CEQA Protocol – Level B threshold of significance |
| GHG Emissions | Project Conforms with AB 32 Scoping Plan | Electricity Measure E3 – 33% electricity used in California generated from renewable resources.<br><br>Recycling/Waste Measure RW-3 – Reduce GHG emissions from landfills and manufacturing process. |
| Toxic Air Contaiminant Health Impacts | Cancer Risk > 10 in a million<br>Non-Cancer HI > 1.0 | Shasta AQMD CEQA Protocol |
| Odors | Any project with the potential to frequently expose members of the public to objectionable odors will be deemed to have a significant impact. | Shasta AQMD CEQA Protocol – Projects that would potentially generate odorous emissions proposed to locate near existing sensitive receptors or other land uses where people may congregate should be evaluated. |

# 4.2 Consistency with Air Quality Plan Requirements

## 4.2.1 Consistency with SIP Rules

The Project would comply with the following District regulations:

*Best Available Control Technology* – Section 50.E.1 requires an applicant to apply BACT to any new source resulting in an increase in emissions, on a pollutant-specific basis, exceeding the District's BACT thresholds. The maximum daily emissions from the new generator engine and emergency biogas flare, presented previously in Tables 4 and 5, are compared with the District's BACT thresholds in Table 19. The District has not yet adopted a BACT threshold for PM2.5. The maximum daily emissions of all affected pollutants from the proposed generator engine and emergency biogas flare will not exceed the District's BACT thresholds. Therefore, BACT will not be required for the generator engine or emergency biogas flare. Nonetheless, the engine generator will be equipped with a three-way catalyst that meets BACT.

**Table 19**
**BACT Applicability**

| Pollutant | Maximum Daily Emissions (lbs/day | | BACT Threshold (lbs/day) | BACT Required? | |
|---|---|---|---|---|---|
| | Engine Generator[1] | Biogas Flare[2] | | Engine Generator | Biogas Flare |
| CO | 10 | 9 | 500 | No | No |
| NOx | 4 | 8 | 25 | No | No |
| PM10 | 9 | 3 | 80 | No | No |
| PM2.5 | 9 | 3 | N/A | N/A | N/A |
| ROG | 1 | < 1 | 25 | No | No |
| SOx | 2 | 1 | 80 | No | No |

Notes:
1. Presented previously in Table 4
2. Presented previously in Table 5
Source: ESA, 2015

*Offsets* – Section 50.E.2 requires an applicant to offset the calendar quarter emission increases from a new facility, on a pollutant-specific basis, for those nonattainment pollutants whose facility emissions equal or exceed the District's 25 tpy offset threshold. Section 51.D.17 defines a "nonattainment pollutant" as any pollutant (including its precursors) that has been designated nonattainment by the USEPA or CARB. Glenn County has two relevant nonattainment designations, as outlined below.

- CARB has classified Glenn County as a nonattainment area for the California PM10 AAQS. As such, PM10 is a nonattainment pollutant.

The maximum emissions from the Facility, presented previously in Table 18, are compared with the District's offset thresholds in Table 20. Offsets will not be required for CO and PM2.5, which are not nonattainment pollutants. Maximum facility emissions of all nonattainment pollutants will not exceed the District's 25 tpy offset threshold. Therefore, KVB will not need to provide emission offsets for the proposed Facility.

**Table 20**
**Offset Applicability**

| Pollutant | Maximum Stationary Source Emissions (tpy) | Facility Offset Threshold (tpy) | Offsets Required? |
|---|---|---|---|
| CO | 2 | N/A[1] | N/A[1] |
| NOx | 1 | N/A[1] | N/A[1] |
| PM10 | 2 | 25 | No |
| PM2.5 | 2 | N/A[1] | N/A[1] |
| ROG | < 1 | N/A[1] | N/A[1] |
| SOx | < 1 | N/A[1] | N/A[1] |

Notes:
1. Not a nonattainment pollutant (or a precursor for a nonattainment pollutant).
Source: ESA, 2015

*Air Quality Impact Analysis* – Air quality impacts are discussed separately in Section 3.3.

*Compliance by Other Owned Sources* – Section 51.E.7 specifies that the owner of a new source shall certify to the District that all sources owned by the applicant and having a potential to emit exceeding 25 tpy are in compliance with all applicable emission limitations and standards. KVB does not own any other major stationary sources in California.

*Public Notification* – Section 51.H.5 specifies that the District shall provide public notice of the District's preliminary decision for a permit application subject to the emission offset requirements of Section 51.E.2. As discussed previously, KVB will not be subject to the emission offset requirements because the maximum potential emissions from the new Facility will not exceed the District's offset thresholds. Therefore, the preliminary decision for the ATC for the Facility will not require public notice.

*Section 85: Particulate Matter Concentration* – Section 85 prohibits PM emissions exceeding 0.3 gr/dscf @ 12% CO2 for combustion sources. The exhaust PM concentration from the proposed generator engine (0.013 gr/dscf @ 12% CO2) and emergency biogas flare (0.010 gr/dscf) will comply with the PM emission limit.

*Section 86: Dust and Fumes Total Emissions* – Section 86 limits emissions of PM on the basis of production rates. Table 21 compares PM emission rates from the generator engine and emergency biogas flare with the Section 86 PM emission limits. Emissions from the generator engine and emergency biogas flare will be well below the PM emission limits.

**Table 21**
**Section 86 PM Emission Limits**

| Source | PM emission Rate (lb/hr) | Biogas Consumption Rate (lb/hr) | PM Emission Limit (lb/hr)[1] |
|---|---|---|---|
| Generator Engine | 0.36 | 216 | 0.877 |
| Emergency Biogas Flare | 0.13 | 236 | 0.877 |

1. Emission limit corresponding to a process throughput rate of 200 lb/hr.
Source: ESA, 2015

## 4.2.3 Consistency with the CARB Climate Change Scoping Plan

The Project would comply with the following CARB Climate Change Scoping Plan measures:

*Electricity Measure E-3 of the Scoping Plan* – Measure E-3 addresses opportunities to reduce GHG emissions from fossil fuel combustion for electricity generation. The Scoping Plan established a target of 33% of electricity used in California being generated from renewable resources by 2020. Landfill gas is a renewable fuel. As such, the biogas that will be generated by the MSW Conversion Facility will constitute a renewable fuel. As discussed previously, the MSW Conversion Facility will satisfy most of its electrical energy demands with electricity generated on-site by the proposed generator engine. Therefore, though the electrical generating capacity of the MSW Conversion Facility is small (less than 200 kW), the MSW Conversion

Facility nonetheless will contribute towards the 2020 goal of 33% electricity generation from renewable resources.

*Recycling/Waste Measure RW-3 of the Scoping Plan* – Measure RW-3 addresses opportunities to reduce GHG emissions from landfills, manufacturing processes (raw material extraction, pre-processing, and manufacturing), and agriculture through reduced demand for water and fertilizer.

Although landfill operators have implemented landfill gas recovery systems designed to capture and burn landfill gas, these collection systems are not 100% effective. $CH_4$, which constitutes approximately 65% of landfill gas, is a GHG with a global warming potential 21 times that of $CO_2$. GHG emissions resulting from fugitive $CH_4$ emissions not captured by a landfill gas recovery system can be substantial. Thus, the Scoping Plan has identified increased recycling and waste recovery as a GHG control measure. California already exceeds the mandated waste diversion rate of 50%. The MSW Conversion Facility plans to more efficiently recover recyclable material from the MSW stream generated in Glenn County. KVB estimates that more than 70% of the MSW steam will be recovered for beneficial use in the form of recycled metals/glass/plastic/ paper, compostable material, and biogas. Therefore, the MSW Conversion Facility will contribute towards the goal of higher recycling and waste recovery to reduce landfill waste that will generate fugitive $CH_4$ emissions.

More thorough recycling of MSW components will yield recycled materials whose manufacturing is less energy intensive – and, thus, lower GHG emitting – than manufacturing from raw materials. The Arrow Feasibility Study estimated that as much as 40% of the MSW stream contains recyclable components, not including compostable materials (Arrow, 2012). The MSW Conversion Facility will more efficiently recover, from the Glenn County MSW stream, recyclable material that can be manufactured into useful products that would displace products manufactured from raw materials, with the inherently higher GHG emissions associated with raw material extraction and pre-processing.

## 4.2 Air Quality Impact Analysis

Section 50.G of the District regulations specifies that emissions from a new emissions unit shall not cause or worsen a violation of an AAQS. The District may require an applicant to use an air quality model to estimate the effects of a new emissions unit. The Shasta AQMD CEQA Protocol further notes that a dispersion modeling analysis is not necessary to demonstrate that a Project's impacts will not cause or worsen a violation of an AAQS. A comparison of a Project's daily or annual emissions to emission levels considered significant under state law, such as emission offset thresholds, can serve to determine significance with respect to ambient air quality impacts.

As discussed previously, neither the generator engine—the primary emission source at the Facility—nor the emergency biogas flare will have maximum daily emissions that exceed the District's BACT thresholds. Nonetheless, the engine generator will be equipped with a three-way catalyst, which constitutes BACT, to control NOx/CO emissions even though BACT is not required. Furthermore, the anaerobic reactors will be equipped with a $FeCl_2$ storage/injection system to add $FeCl_2$ to the anaerobic reactors; the $FeCl_2$ will react with H2S to form insoluble

FeS, which will essentially control SOx emissions from the generator engine. As also discussed previously, the Project will not trigger offsets under NSR. As such, air quality impacts from the small (i.e. 250 bhp) gas fired generator engine (and emergency biogas flare) are expected to be negligible and will not cause or worsen a violation of any AAQS.

## 4.3 Net Emissions Increases

As discussed previously in Section 3, air quality impacts can be caused by direct emissions from stationary sources or by indirect emissions associated with motor vehicles and/or area wide emission sources. Pursuant to the Shasta AQMD CEQA Protocol, the significance of direct emissions and that of indirect emissions were evaluated separately.

### 4.3.1 Construction Emissions

The Shasta AQMD CEQA Protocol does not contain significance thresholds for construction emissions but, rather, emphasizes the minimization of fugitive construction PM10 impacts to levels that can be considered less-than-significant. The Shasta AQMD requires "the implementation of effective and comprehensive [fugitive construction PM10] control measures" that can be reasonably implemented to significantly reduce PM10 emissions from construction. The Shasta AQMD provides planning jurisdictions with suggested mitigation measures to reduce fugitive construction PM10 impacts to a level considered less-than-significant. As discussed previously in Section 3.1, mitigating project features include replacing ground cover, watering unpaved roads and exposed areas, cleaning paved roads, and reducing vehicle speeds on unpaved roads. These mitigating project features would reduce fugitive construction PM10 by 56%. The implementation of these mitigating project features should reduce construction PM10 impacts to less than significant levels.

### 4.3.2 Operational Emissions

Operational emissions include direct stationary sources, indirect mobile source (e.g., truck traffic) and area sources (e.g., landscaping equipment). Though the Shasta AQMD CEQA Protocol addresses each separately, direct and indirect mobile/ area source emissions are addressed together herein. The Shasta AQMD CEQA Protocol requires mitigation measures for operational, indirect emissions. The Shasta AQMD CEQA Protocol establishes a two-tier threshold that dictates the level of mitigation required.

At a minimum, a project must implement feasible standard mitigation measures (SMM). If the indirect emissions exceed the Level A thresholds, a project must also implement appropriate best available mitigation measures (BAMM) as determined by the Lead Agency. If the indirect emissions exceed the Level B thresholds after applying all feasible mitigation, a project is considered to have a significant air quality impact. The maximum operational emissions from the Project are compared against the significance thresholds in Table 22. Operational emissions were presented previously in Table 16.

**Table 22**
**Net Emissions Increase of Operational Emissions from the Project**

| Pollutant | Maximum Daily Operational Emissions (lb/day)[1] | Significance Threshold | | Significant? |
|---|---|---|---|---|
| | | Level A[2] | Level B[2] | |
| NOx | 127 | 25 | 137 | No |
| PM10 | 14 | 80 | 137 | No |
| ROG | 12 | 25 | 137 | No |

Notes:
1. Presented previously in Table 16
2. Shasta AQMD CEQA Protocol
Source: ESA, 2015

Operational emissions from the proposed MSW Conversion Facility would exceed the Level A significance threshold for NOx and would be below all other pollutant emissions shown under the Level A and B significance thresholds. Since the Project would exceed the Level A significance threshold for NOx, the Project would include the following BAMMs during operation:

- The generator engine will be equipped with a three-way catalyst that will control NOx and ROG emissions to levels commensurate with BACT.
- A $FeCl_2$ injection system will remove aqueous sulfide from the anaerobic reactors, thus controlling $H_2S$ levels in the biogas.
- The front end loaders used in the Facility to move MSW will be new vehicles equipped with Tier 4F Diesel engines.

# 4.4 Sensitive Receptors/Risk Management

Section 78 of the District regulations prohibits the discharge of air contaminants that cause injury, detriment, nuisance, or annoyance to the public or endanger the comfort, repose, health, or safety of the public. Section 78 gives the District the authority to require an applicant to perform a health risk assessment to demonstrate that the air toxics emissions from a project will not result in unacceptable risks to the public. The Shasta AQMD CEQA Protocol further identifies risk thresholds for sensitive receptors of 10 in a million for excess cancer risk and 1 for hazard indices associated with either chronic or acute non-cancer effects.

Given the remote location of the project—at least three miles from either Orland or Hamilton City— and the fact that there are no sensitive receptors located within one-quarter of a mile (i.e., residences schools, hospitals, day care centers) of the Project, no significant health risk impacts are anticipated. According to CARB's *Air Quality and Land Use Handbook* (CARB, 2005), the health risk screening distance for a distribution center is 500 feet. A distribution center would have similar operational features as the Project (e.g., idling trucks, off-road vehicles). The nearest sensitive receptor to the Project site is located beyond 500 feet away. Furthermore, the proposed generator engine will be equipped with a three way catalyst to control ROG emissions, including air toxics such as formaldehyde and benzene that are byproducts of the combustion of gaseous fuels. The three-way catalyst is a mitigating project feature that constitutes BACT for toxics, or

T-BACT. Additionally, the emergency biogas flare will provide a 98% destruction efficiency for any toxics present in the biogas, which also constitutes T-BACT. The Project will generate small amounts of biogas that, once burned, will generate negligible quantities of air toxics. Accordingly, health risks to sensitive receptors associated with air toxics emissions from the Facility should be less than significant.

## 4.5 Odors

Factors that affect odor impacts include the proposed MRF and AD facility design, sensitive receptor proximity, and exposure duration. Anaerobic digestion is the biological decomposition of organic matter in the absence of molecular oxygen. As a result, odorous compounds, such as ammonia and $H_2S$, are generated and could be released into the environment. The anaerobic digestion process occurs naturally in marshes, wetlands and is the principal decomposition process in landfills. However, in the operation of AD facilities, the digestion process occurs in a closed system. VOCs are broken down through the anaerobic digestion process, and exhaust is generally processed in a more controlled environment. During Project operation, there is the potential for odors to be produced in several areas of the MRF and AD facilities, these areas include:

- The tipping floor where incoming MSW is received and deposited;
- The MRF processing and conveying equipment that comes in contact with organics in the waste stream;
- Temporary storage area for residual organics and contaminated inorganics that do not pass through the final 2-inch screen;
- The Royal Flush wet organics separation process tank;
- The AD system tanks and interconnecting piping system;
- The $H_2S$ removal system vessel and piping;
- The combustion microturbine and combustion flare;
- The screw press that dewaters the digestate generated from the AD system tanks;
- The dewatered solids from the screw press that are temporarily stored on-site, loaded into roll-off boxes and hauled off-site; and,
- The aerobic stabilization ponds.

Section 78 of the District regulations prohibits the discharge of air contaminants that cause injury, detriment, nuisance, or annoyance to the public or endanger the comfort, repose, health, or safety of the public. The SCAQMD CEQA Protocol states the following:

> *Any project with the potential to frequently expose members of the public to objectionable odors will be deemed to have a significant impact. Odor impacts on residential areas and other sensitive receptors, such as hospitals, day-care centers, schools, etc., warrant the closest scrutiny, but consideration should also be given to other land uses where people may congregate, such as recreational facilities, work sites, and commercial areas.*

The Protocol further recommends that an analysis of potential odor impacts be conducted for projects that would potentially generate odorous emissions and are proposed to be located near existing sensitive receptors or other land uses where people may congregate. The collection transport, storage, and pre-processing activities of the potentially odiferous organic substrates for digestion and the resultant digestate could produce nuisance odors at AD facilities. In addition, the siting of these digester facilities could lead to objectionable odors at the nearest sensitive receptor located within one-quarter of a mile northwest of the Project site. Depending on the wind patterns, these receptors may be subjected to offensive odors during Project operations Accordingly, odor impacts to sensitive receptors could be significant.

# 4.6 Cumulative Impacts

CEQA defines cumulative impacts as two or more individual affects that, when considered together, are considerable or compound/increase other environmental impacts. Cumulative impacts can result from individually minor but collectively significant projects. Therefore, the Project must be evaluated over time and in conjunction with other related past, present, and reasonably foreseeable future projects whose impacts might compound or interrelate with those of the project being assessed. Cumulative impacts may be either regional or local in nature.

As discussed previously in Sections 4.3, 4.5, and 4.6, local air quality impacts (i.e., ambient air quality standards, health risks to sensitive receptors, and odors) associated with the Project will be negligible. Therefore, the Project would contribute negligibly to any broader cumulative impacts associated with multiple projects. Regional impacts associated with direct stationary source emissions, indirect construction emissions, and indirect operational emissions (mobile sources and area sources) were evaluated previously in Section 4.4 and compared against regional significance thresholds. While these thresholds are applied to the Project's emissions alone, they may also be regarded as thresholds for cumulative impacts. Emissions from these activities would not contribute significantly to regional air quality impacts.

# 5.0 Mitigation and Residual Impacts

Mitigation is not required for operational emissions from the MSW Conversion Facility. As discussed previously, the Project will incorporate the mitigating project features summarized below.

- Fugitive construction dust control measures will include replacing ground cover, watering unpaved roads and exposed areas, cleaning paved roads, and reducing vehicle speeds on unpaved roads.
- The anaerobic reactors will be equipped with a $FeCl_2$ storage/injection system to add $FeCl_2$ to the reactors; the FeCl2 will react with $H_2S$ to form insoluble FeS, which will essentially control odorous $H_2S$ levels in the biogas. The combustion of biogas in the generator engine (or emergency biogas flare) will convert any remaining odorous $H_2S$ to SOx.
- The engine generator will be equipped with a three-way catalyst, commensurate with BACT, to control NOx/CO/ROG emissions, even though BACT is not required. The three-way catalyst will also control toxic hydrocarbon emissions that are byproducts of the combustion of gaseous fuels.
- The emergency biogas flare will provide a 98% destruction efficiency for any toxics present in the biogas.
- The front-end loaders will be new vehicles equipped with Tier 4F Diesel engines.
- Prior to the operation of the MRF and/or AD facilities, the applicant shall develop and implement an Odor Management Plan (OMP) that incorporates equivalent odor reduction controls for digester operations. Odor control strategies that can be incorporated into these plans include, but are not limited to, the following:
    - A list of potential odor sources;
    - Identification and description of the most likely sources of odor;
    - Identification of potential, intensity, and frequency of odor from likely sources;
    - A list of odor control technologies and management practices that could be implemented to minimize odor releases. These management practices shall include the establishment of the following criteria:
        - Require substrate haulage to the AD facility within sealed containers.
        - Establish time limit for on-site retention of undigested substrates (i.e., substrates must be put into the digester within 24 hours of receipt).
        - Provide enclosed, negative pressure buildings for indoor receiving and preprocessing. Treat collected foul air in a biofilter or air scrubbing system.
        - Establish contingency plans for operating downtime (e.g., equipment malfunction, power outage).

- Manage delivery schedule to facilitate prompt handling of odorous substrates.
- Handle digestate within enclosed building and/or directly pump to sealed containers for transportation.
- Protocol for monitoring and recording odor events.
- Protocol for reporting and responding to odor events.

The Project, with these mitigating project features, will not result in any significant air quality impacts. No additional mitigation measures will be required. There are no residual impacts to be considered further.

# 6.0 References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# Appendix A

# CalEEMod Output for Construction Emissions

# Glenn County SWCF - Phase 1

**Glenn County, Summer**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 72.63 | 1000sqft | 1.67 | 72,625.00 | 0 |
| Other Asphalt Surfaces | 10.89 | 1000sqft | 0.25 | 10,890.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Rural | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 3 | | | **Operational Year** | 2016 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Square footage based on PD

Construction Phase - Assumed Phase 1 constructino would take 6 months to complete starting in early 2016.

Grading -

Architectural Coating -

Operational Off-Road Equipment - Assuming 1 front end loader would be used during operations

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|

| | | | |
|---|---|---|---|
| tblConstructionPhase | NumDays | 10.00 | 66.00 |
| tblConstructionPhase | NumDays | 200.00 | 130.00 |
| tblConstructionPhase | NumDays | 4.00 | 3.00 |
| tblConstructionPhase | NumDays | 10.00 | 5.00 |
| tblConstructionPhase | PhaseEndDate | 10/10/2016 | 7/8/2016 |
| tblConstructionPhase | PhaseEndDate | 1/8/2016 | 1/9/2016 |
| tblConstructionPhase | PhaseEndDate | 7/15/2016 | 7/17/2016 |
| tblConstructionPhase | PhaseStartDate | 7/9/2016 | 4/8/2016 |
| tblLandUse | LandUseSquareFeet | 72,630.00 | 72,625.00 |
| tblOperationalOffRoadEquipment | OperOffRoadEquipmentNumber | 0.00 | 1.00 |
| tblProjectCharacteristics | OperationalYear | 2014 | 2016 |
| tblProjectCharacteristics | UrbanizationLevel | Urban | Rural |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2016 | 33.4875 | 25.8310 | 22.6043 | 0.0349 | 5.9018 | 1.5848 | 7.3010 | 2.9808 | 1.5348 | 4.2681 | 0.0000 | 3,189.6557 | 3,189.6557 | 0.5429 | 0.0000 | 3,201.0560 |
| **Total** | **33.4875** | **25.8310** | **22.6043** | **0.0349** | **5.9018** | **1.5848** | **7.3010** | **2.9808** | **1.5348** | **4.2681** | **0.0000** | **3,189.6557** | **3,189.6557** | **0.5429** | **0.0000** | **3,201.0560** |

## Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2016 | 33.4875 | 25.8310 | 22.6043 | 0.0349 | 5.9018 | 1.5848 | 7.3010 | 2.9808 | 1.5348 | 4.2681 | 0.0000 | 3,189.6557 | 3,189.6557 | 0.5429 | 0.0000 | 3,201.0560 |
| **Total** | **33.4875** | **25.8310** | **22.6043** | **0.0349** | **5.9018** | **1.5848** | **7.3010** | **2.9808** | **1.5348** | **4.2681** | **0.0000** | **3,189.6557** | **3,189.6557** | **0.5429** | **0.0000** | **3,201.0560** |

| | **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** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.3183 | 8.0000e-005 | 8.7500e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | | 0.0183 | 0.0183 | 5.0000e-005 | | 0.0194 |
| Energy | 0.0467 | 0.4245 | 0.3566 | 2.5500e-003 | | 0.0323 | 0.0323 | | 0.0323 | 0.0323 | | 509.3699 | 509.3699 | 9.7600e-003 | 9.3400e-003 | 512.4698 |
| Mobile | 4.4646 | 16.5426 | 47.6293 | 0.0821 | 4.2244 | 0.2359 | 4.4603 | 1.1348 | 0.2166 | 1.3514 | | 7,473.5818 | 7,473.5818 | 0.2554 | | 7,478.9457 |
| Offroad | 0.3406 | 3.2551 | 2.4126 | 3.1100e-003 | | 0.2506 | 0.2506 | | 0.2306 | 0.2306 | | 323.6773 | 323.6773 | 0.0976 | | 325.7276 |
| **Total** | **7.1702** | **20.2222** | **50.4072** | **0.0878** | **4.2244** | **0.5188** | **4.7432** | **1.1348** | **0.4794** | **1.6142** | | **8,306.6473** | **8,306.6473** | **0.3629** | **9.3400e-003** | **8,317.1624** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 2.3183 | 8.0000e-005 | 8.7500e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | | 0.0183 | 0.0183 | 5.0000e-005 | | 0.0194 |
| Energy | 0.0467 | 0.4245 | 0.3566 | 2.5500e-003 | | 0.0323 | 0.0323 | | 0.0323 | 0.0323 | | 509.3699 | 509.3699 | 9.7600e-003 | 9.3400e-003 | 512.4698 |
| Mobile | 4.4646 | 16.5426 | 47.6293 | 0.0821 | 4.2244 | 0.2359 | 4.4603 | 1.1348 | 0.2166 | 1.3514 | | 7,473.5818 | 7,473.5818 | 0.2554 | | 7,478.9457 |
| Offroad | 0.3406 | 3.2551 | 2.4126 | 3.1100e-003 | | 0.2506 | 0.2506 | | 0.2306 | 0.2306 | | 323.6773 | 323.6773 | 0.0976 | | 325.7276 |
| **Total** | **7.1702** | **20.2222** | **50.4072** | **0.0878** | **4.2244** | **0.5188** | **4.7432** | **1.1348** | **0.4794** | **1.6142** | | **8,306.6473** | **8,306.6473** | **0.3629** | **9.3400e-003** | **8,317.1624** |

| | 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 | 4.75 | 16.10 | 4.79 | 3.54 | 0.00 | 48.31 | 5.28 | 0.00 | 48.09 | 14.28 | 0.00 | 3.90 | 3.90 | 26.91 | 0.00 | 3.92 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 1/4/2016 | 1/5/2016 | 5 | 2 | |
| 2 | Grading | Grading | 1/6/2016 | 1/9/2016 | 5 | 3 | |
| 3 | Building Construction | Building Construction | 1/10/2016 | 7/8/2016 | 5 | 130 | |
| 4 | Architectural Coating | Architectural Coating | 4/8/2016 | 7/8/2016 | 5 | 66 | |
| 5 | Paving | Paving | 7/9/2016 | 7/17/2016 | 5 | 5 | |

**Acres of Grading (Site Preparation Phase): 1**

**Acres of Grading (Grading Phase): 1.13**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 125,273; Non-Residential Outdoor: 41,758 (Architectural Coating – sqft)**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Site Preparation | Graders | 1 | 8.00 | 174 | 0.41 |
| Site Preparation | Rubber Tired Dozers | 1 | 7.00 | 255 | 0.40 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Site Preparation | Tractors/Loaders/Backhoes | | 1 | 8.00 | 97 | 0.37 |
| Grading | Graders | | 1 | 6.00 | 174 | 0.41 |
| Grading | Rubber Tired Dozers | | 1 | 6.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | | 1 | 7.00 | 97 | 0.37 |
| Building Construction | Cranes | | 1 | 6.00 | 226 | 0.29 |
| Building Construction | Forklifts | | 1 | 6.00 | 89 | 0.20 |
| Building Construction | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | | 1 | 6.00 | 97 | 0.37 |
| Building Construction | Welders | | 3 | 8.00 | 46 | 0.45 |
| Architectural Coating | Air Compressors | | 1 | 6.00 | 78 | 0.48 |
| Paving | Cement and Mortar Mixers | | 1 | 6.00 | 9 | 0.56 |
| Paving | Pavers | | 1 | 6.00 | 125 | 0.42 |
| Paving | Paving Equipment | | 1 | 8.00 | 130 | 0.36 |
| Paving | Rollers | | 1 | 7.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | | 1 | 8.00 | 97 | 0.37 |

## 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 | 3 | 8.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 3 | 8.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 7 | 35.00 | 14.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 7.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 5 | 13.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Site Preparation - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 5.7996 | 0.0000 | 5.7996 | 2.9537 | 0.0000 | 2.9537 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.4428 | 25.7718 | 16.5144 | 0.0171 | | 1.3985 | 1.3985 | | 1.2866 | 1.2866 | | 1,781.0872 | 1,781.0872 | 0.5372 | | 1,792.3693 |
| **Total** | **2.4428** | **25.7718** | **16.5144** | **0.0171** | **5.7996** | **1.3985** | **7.1981** | **2.9537** | **1.2866** | **4.2403** | | **1,781.0872** | **1,781.0872** | **0.5372** | | **1,792.3693** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0529 | 0.0592 | 0.7181 | 1.3300e-003 | 0.1022 | 7.7000e-004 | 0.1030 | 0.0271 | 7.1000e-004 | 0.0278 | | 106.9824 | 106.9824 | 5.6300e-003 | | 107.1007 |
| **Total** | **0.0529** | **0.0592** | **0.7181** | **1.3300e-003** | **0.1022** | **7.7000e-004** | **0.1030** | **0.0271** | **7.1000e-004** | **0.0278** | | **106.9824** | **106.9824** | **5.6300e-003** | | **107.1007** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 5.7996 | 0.0000 | 5.7996 | 2.9537 | 0.0000 | 2.9537 | | | 0.0000 | | | 0.0000 |
| Off-Road | 2.4428 | 25.7718 | 16.5144 | 0.0171 | | 1.3985 | 1.3985 | | 1.2866 | 1.2866 | 0.0000 | 1,781.0872 | 1,781.0872 | 0.5372 | | 1,792.3693 |
| **Total** | **2.4428** | **25.7718** | **16.5144** | **0.0171** | **5.7996** | **1.3985** | **7.1981** | **2.9537** | **1.2866** | **4.2403** | **0.0000** | **1,781.0872** | **1,781.0872** | **0.5372** | | **1,792.3693** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0529 | 0.0592 | 0.7181 | 1.3300e-003 | 0.1022 | 7.7000e-004 | 0.1030 | 0.0271 | 7.1000e-004 | 0.0278 | | 106.9824 | 106.9824 | 5.6300e-003 | | 107.1007 |
| **Total** | **0.0529** | **0.0592** | **0.7181** | **1.3300e-003** | **0.1022** | **7.7000e-004** | **0.1030** | **0.0271** | **7.1000e-004** | **0.0278** | | **106.9824** | **106.9824** | **5.6300e-003** | | **107.1007** |

## 3.3 Grading - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 4.9160 | 0.0000 | 4.9160 | 2.5258 | 0.0000 | 2.5258 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.9908 | 21.0361 | 13.6704 | 0.0141 | | 1.1407 | 1.1407 | | 1.0494 | 1.0494 | | 1,462.8468 | 1,462.8468 | 0.4413 | | 1,472.1130 |
| **Total** | **1.9908** | **21.0361** | **13.6704** | **0.0141** | **4.9160** | **1.1407** | **6.0567** | **2.5258** | **1.0494** | **3.5752** | | **1,462.8468** | **1,462.8468** | **0.4413** | | **1,472.1130** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0529 | 0.0592 | 0.7181 | 1.3300e-003 | 0.1022 | 7.7000e-004 | 0.1030 | 0.0271 | 7.1000e-004 | 0.0278 | | 106.9824 | 106.9824 | 5.6300e-003 | | 107.1007 |
| **Total** | **0.0529** | **0.0592** | **0.7181** | **1.3300e-003** | **0.1022** | **7.7000e-004** | **0.1030** | **0.0271** | **7.1000e-004** | **0.0278** | | **106.9824** | **106.9824** | **5.6300e-003** | | **107.1007** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 4.9160 | 0.0000 | 4.9160 | 2.5258 | 0.0000 | 2.5258 | | | 0.0000 | | | 0.0000 |
| Off-Road | 1.9908 | 21.0361 | 13.6704 | 0.0141 | | 1.1407 | 1.1407 | | 1.0494 | 1.0494 | 0.0000 | 1,462.8468 | 1,462.8468 | 0.4413 | | 1,472.1130 |
| **Total** | **1.9908** | **21.0361** | **13.6704** | **0.0141** | **4.9160** | **1.1407** | **6.0567** | **2.5258** | **1.0494** | **3.5752** | **0.0000** | **1,462.8468** | **1,462.8468** | **0.4413** | | **1,472.1130** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0529 | 0.0592 | 0.7181 | 1.3300e-003 | 0.1022 | 7.7000e-004 | 0.1030 | 0.0271 | 7.1000e-004 | 0.0278 | | 106.9824 | 106.9824 | 5.6300e-003 | | 107.1007 |
| **Total** | **0.0529** | **0.0592** | **0.7181** | **1.3300e-003** | **0.1022** | **7.7000e-004** | **0.1030** | **0.0271** | **7.1000e-004** | **0.0278** | | **106.9824** | **106.9824** | **5.6300e-003** | | **107.1007** |

## 3.4 Building Construction - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 3.2915 | 20.5459 | 14.7074 | 0.0220 | | 1.3656 | 1.3656 | | 1.3176 | 1.3176 | | 2,046.9432 | 2,046.9432 | 0.4499 | | 2,056.3913 |
| **Total** | **3.2915** | **20.5459** | **14.7074** | **0.0220** | | **1.3656** | **1.3656** | | **1.3176** | **1.3176** | | **2,046.9432** | **2,046.9432** | **0.4499** | | **2,056.3913** |

**Unmitigated Construction Off-Site**

| Category | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.2246 | 1.1188 | 2.2429 | 3.0100e-003 | 0.0829 | 0.0185 | 0.1014 | 0.0235 | 0.0170 | 0.0405 | | 299.6068 | 299.6068 | 2.3100e-003 | | 299.6554 |
| Worker | 0.2313 | 0.2590 | 3.1418 | 5.8100e-003 | 0.4471 | 3.3900e-003 | 0.4504 | 0.1186 | 3.0900e-003 | 0.1216 | | 468.0480 | 468.0480 | 0.0246 | | 468.5655 |
| **Total** | **0.4559** | **1.3778** | **5.3847** | **8.8200e-003** | **0.5300** | **0.0219** | **0.5519** | **0.1421** | **0.0200** | **0.1621** | | **767.6548** | **767.6548** | **0.0270** | | **768.2210** |

**Mitigated Construction On-Site**

| Category | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 3.2915 | 20.5459 | 14.7074 | 0.0220 | | 1.3656 | 1.3656 | | 1.3176 | 1.3176 | 0.0000 | 2,046.9432 | 2,046.9432 | 0.4499 | | 2,056.3913 |
| **Total** | **3.2915** | **20.5459** | **14.7074** | **0.0220** | | **1.3656** | **1.3656** | | **1.3176** | **1.3176** | **0.0000** | **2,046.9432** | **2,046.9432** | **0.4499** | | **2,056.3913** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.2246 | 1.1188 | 2.2429 | 3.0100e-003 | 0.0829 | 0.0185 | 0.1014 | 0.0235 | 0.0170 | 0.0405 | | 299.6068 | 299.6068 | 2.3100e-003 | | 299.6554 |
| Worker | 0.2313 | 0.2590 | 3.1418 | 5.8100e-003 | 0.4471 | 3.3900e-003 | 0.4504 | 0.1186 | 3.0900e-003 | 0.1216 | | 468.0480 | 468.0480 | 0.0246 | | 468.5655 |
| **Total** | **0.4559** | **1.3778** | **5.3847** | **8.8200e-003** | **0.5300** | **0.0219** | **0.5519** | **0.1421** | **0.0200** | **0.1621** | | **767.6548** | **767.6548** | **0.0270** | | **768.2210** |

## 3.5 Architectural Coating - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 29.3253 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3685 | 2.3722 | 1.8839 | 2.9700e-003 | | 0.1966 | 0.1966 | | 0.1966 | 0.1966 | | 281.4481 | 281.4481 | 0.0332 | | 282.1449 |
| **Total** | **29.6938** | **2.3722** | **1.8839** | **2.9700e-003** | | **0.1966** | **0.1966** | | **0.1966** | **0.1966** | | **281.4481** | **281.4481** | **0.0332** | | **282.1449** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0463 | 0.0518 | 0.6284 | 1.1600e-003 | 0.0894 | 6.8000e-004 | 0.0901 | 0.0237 | 6.2000e-004 | 0.0243 | | 93.6096 | 93.6096 | 4.9300e-003 | | 93.7131 |
| **Total** | **0.0463** | **0.0518** | **0.6284** | **1.1600e-003** | **0.0894** | **6.8000e-004** | **0.0901** | **0.0237** | **6.2000e-004** | **0.0243** | | **93.6096** | **93.6096** | **4.9300e-003** | | **93.7131** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 29.3253 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3685 | 2.3722 | 1.8839 | 2.9700e-003 | | 0.1966 | 0.1966 | | 0.1966 | 0.1966 | 0.0000 | 281.4481 | 281.4481 | 0.0332 | | 282.1449 |
| **Total** | **29.6938** | **2.3722** | **1.8839** | **2.9700e-003** | | **0.1966** | **0.1966** | | **0.1966** | **0.1966** | **0.0000** | **281.4481** | **281.4481** | **0.0332** | | **282.1449** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0463 | 0.0518 | 0.6284 | 1.1600e-003 | 0.0894 | 6.8000e-004 | 0.0901 | 0.0237 | 6.2000e-004 | 0.0243 | | 93.6096 | 93.6096 | 4.9300e-003 | | 93.7131 |
| **Total** | **0.0463** | **0.0518** | **0.6284** | **1.1600e-003** | **0.0894** | **6.8000e-004** | **0.0901** | **0.0237** | **6.2000e-004** | **0.0243** | | **93.6096** | **93.6096** | **4.9300e-003** | | **93.7131** |

## 3.6 Paving - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.2872 | 13.2076 | 9.0880 | 0.0133 | | 0.8075 | 0.8075 | | 0.7438 | 0.7438 | | 1,368.4366 | 1,368.4366 | 0.4053 | | 1,376.9473 |
| Paving | 0.1310 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.4182** | **13.2076** | **9.0880** | **0.0133** | | **0.8075** | **0.8075** | | **0.7438** | **0.7438** | | **1,368.4366** | **1,368.4366** | **0.4053** | | **1,376.9473** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0859 | 0.0962 | 1.1669 | 2.1600e-003 | 0.1661 | 1.2600e-003 | 0.1673 | 0.0440 | 1.1500e-003 | 0.0452 | | 173.8464 | 173.8464 | 9.1500e-003 | | 174.0386 |
| **Total** | **0.0859** | **0.0962** | **1.1669** | **2.1600e-003** | **0.1661** | **1.2600e-003** | **0.1673** | **0.0440** | **1.1500e-003** | **0.0452** | | **173.8464** | **173.8464** | **9.1500e-003** | | **174.0386** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.2872 | 13.2076 | 9.0880 | 0.0133 | | 0.8075 | 0.8075 | | 0.7438 | 0.7438 | 0.0000 | 1,368.4366 | 1,368.4366 | 0.4053 | | 1,376.9473 |
| Paving | 0.1310 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.4182** | **13.2076** | **9.0880** | **0.0133** | | **0.8075** | **0.8075** | | **0.7438** | **0.7438** | **0.0000** | **1,368.4366** | **1,368.4366** | **0.4053** | | **1,376.9473** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0859 | 0.0962 | 1.1669 | 2.1600e-003 | 0.1661 | 1.2600e-003 | 0.1673 | 0.0440 | 1.1500e-003 | 0.0452 | | 173.8464 | 173.8464 | 9.1500e-003 | | 174.0386 |
| **Total** | **0.0859** | **0.0962** | **1.1669** | **2.1600e-003** | **0.1661** | **1.2600e-003** | **0.1673** | **0.0440** | **1.1500e-003** | **0.0452** | | **173.8464** | **173.8464** | **9.1500e-003** | | **174.0386** |

# 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 | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 4.4646 | 16.5426 | 47.6293 | 0.0821 | 4.2244 | 0.2359 | 4.4603 | 1.1348 | 0.2166 | 1.3514 | | 7,473.5818 | 7,473.5818 | 0.2554 | | 7,478.9457 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Unmitigated | 4.4646 | 16.5426 | 47.6293 | 0.0821 | 4.2244 | 0.2359 | 4.4603 | 1.1348 | 0.2166 | 1.3514 | | 7,473.5818 | 7,473.5818 | 0.2554 | | 7,478.9457 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 506.23 | 95.87 | 49.39 | 1,477,177 | 1,477,177 |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 506.23 | 95.87 | 49.39 | 1,477,177 | 1,477,177 |

## 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 |
| General Light Industry | 14.70 | 6.60 | 6.60 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 14.70 | 6.60 | 6.60 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.353249 | 0.043506 | 0.183145 | 0.158807 | 0.085617 | 0.010356 | 0.023847 | 0.131868 | 0.000850 | 0.000819 | 0.004823 | 0.001076 | 0.002037 |

# 5.0 Energy Detail

## 4.4 Fleet Mix

Historical Energy Use: N

## 5.1 Mitigation Measures Energy

| Category | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0467 | 0.4245 | 0.3566 | 2.5500e-003 | | 0.0323 | 0.0323 | | 0.0323 | 0.0323 | | 509.3699 | 509.3699 | 9.7600e-003 | 9.3400e-003 | 512.4698 |
| NaturalGas Unmitigated | 0.0467 | 0.4245 | 0.3566 | 2.5500e-003 | | 0.0323 | 0.0323 | | 0.0323 | 0.0323 | | 509.3699 | 509.3699 | 9.7600e-003 | 9.3400e-003 | 512.4698 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| Land Use | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| General Light Industry | 4329.64 | 0.0467 | 0.4245 | 0.3566 | 2.5500e-003 | | 0.0323 | 0.0323 | | 0.0323 | 0.0323 | | 509.3699 | 509.3699 | 9.7600e-003 | 9.3400e-003 | 512.4698 |
| **Total** | | **0.0467** | **0.4245** | **0.3566** | **2.5500e-003** | | **0.0323** | **0.0323** | | **0.0323** | **0.0323** | | **509.3699** | **509.3699** | **9.7600e-003** | **9.3400e-003** | **512.4698** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 4.32964 | 0.0467 | 0.4245 | 0.3566 | 2.5500e-003 | | 0.0323 | 0.0323 | | 0.0323 | 0.0323 | | 509.3699 | 509.3699 | 9.7600e-003 | 9.3400e-003 | 512.4698 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0467** | **0.4245** | **0.3566** | **2.5500e-003** | | **0.0323** | **0.0323** | | **0.0323** | **0.0323** | | **509.3699** | **509.3699** | **9.7600e-003** | **9.3400e-003** | **512.4698** |

# 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 | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 2.3183 | 8.0000e-005 | 8.7500e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | | 0.0183 | 0.0183 | 5.0000e-005 | | 0.0194 |
| Unmitigated | 2.3183 | 8.0000e-005 | 8.7500e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | | 0.0183 | 0.0183 | 5.0000e-005 | | 0.0194 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.5303 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.7872 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 8.5000e-004 | 8.0000e-005 | 8.7500e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | | 0.0183 | 0.0183 | 5.0000e-005 | | 0.0194 |
| **Total** | **2.3183** | **8.0000e-005** | **8.7500e-003** | **0.0000** | | **3.0000e-005** | **3.0000e-005** | | **3.0000e-005** | **3.0000e-005** | | **0.0183** | **0.0183** | **5.0000e-005** | | **0.0194** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.5303 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 1.7872 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 8.5000e-004 | 8.0000e-005 | 8.7500e-003 | 0.0000 | | 3.0000e-005 | 3.0000e-005 | | 3.0000e-005 | 3.0000e-005 | | 0.0183 | 0.0183 | 5.0000e-005 | | 0.0194 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **2.3183** | **8.0000e-005** | **8.7500e-003** | **0.0000** | | **3.0000e-005** | **3.0000e-005** | | **3.0000e-005** | **3.0000e-005** | | **0.0183** | **0.0183** | **5.0000e-005** | | **0.0194** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|
| Tractors/Loaders/Backhoes | 1 | 8.00 | 260 | 97 | 0.37 | Diesel |

**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 | lb/day | | | | | | | | | | lb/day | | | | | |
| Tractors/Loaders/Backhoes | 0.3406 | 3.2551 | 2.4126 | 3.1100e-003 | | 0.2506 | 0.2506 | | 0.2306 | 0.2306 | | 323.6773 | 323.6773 | 0.0976 | | 325.7276 |
| **Total** | **0.3406** | **3.2551** | **2.4126** | **3.1100e-003** | | **0.2506** | **0.2506** | | **0.2306** | **0.2306** | | **323.6773** | **323.6773** | **0.0976** | | **325.7276** |

## 10.0 Vegetation

# Glenn County SWCF - Phase 2

### Glenn County, Summer

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 133.00 | 1000sqft | 3.05 | 133,000.00 | 0 |
| Other Asphalt Surfaces | 23.48 | 1000sqft | 0.54 | 23,480.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Rural | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 3 | | | **Operational Year** | 2017 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Square footage based on PD

Construction Phase - Assumed Phase 1 constructino would take 6 months to complete starting in early 2017.

Grading -

Architectural Coating -

Operational Off-Road Equipment - Assuming 1 front end loader would be used during operations

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|

| | | | |
|---|---|---|---|
| tblConstructionPhase | NumDays | 18.00 | 65.00 |
| tblConstructionPhase | NumDays | 230.00 | 129.00 |
| tblConstructionPhase | NumDays | 8.00 | 2.00 |
| tblConstructionPhase | NumDays | 18.00 | 7.00 |
| tblConstructionPhase | NumDays | 5.00 | 2.00 |
| tblConstructionPhase | PhaseEndDate | 10/6/2017 | 7/9/2017 |
| tblConstructionPhase | PhaseEndDate | 7/7/2017 | 7/9/2017 |
| tblConstructionPhase | PhaseStartDate | 7/10/2017 | 4/8/2017 |
| tblOperationalOffRoadEquipment | OperOffRoadEquipmentNumber | 0.00 | 1.00 |
| tblProjectCharacteristics | OperationalYear | 2014 | 2017 |
| tblProjectCharacteristics | UrbanizationLevel | Urban | Rural |

## 2.0 Emissions Summary

### 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2017 | 60.0602 | 51.8701 | 40.8041 | 0.0485 | 18.2962 | 2.7559 | 21.0520 | 9.9917 | 2.5354 | 12.5270 | 0.0000 | 4,482.4726 | 4,482.4726 | 1.2379 | 0.0000 | 4,508.4691 |
| **Total** | **60.0602** | **51.8701** | **40.8041** | **0.0485** | **18.2962** | **2.7559** | **21.0520** | **9.9917** | **2.5354** | **12.5270** | **0.0000** | **4,482.4726** | **4,482.4726** | **1.2379** | **0.0000** | **4,508.4691** |

## Mitigated Construction

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2017 | 60.0602 | 51.8701 | 40.8041 | 0.0485 | 18.2962 | 2.7559 | 21.0520 | 9.9917 | 2.5354 | 12.5270 | 0.0000 | 4,482.4726 | 4,482.4726 | 1.2379 | 0.0000 | 4,508.4691 |
| **Total** | **60.0602** | **51.8701** | **40.8041** | **0.0485** | **18.2962** | **2.7559** | **21.0520** | **9.9917** | **2.5354** | **12.5270** | **0.0000** | **4,482.4726** | **4,482.4726** | **1.2379** | **0.0000** | **4,508.4691** |

| | **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** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 4.3438 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0343 | 0.0343 | 1.0000e-004 | | 0.0363 |
| Energy | 0.0855 | 0.7774 | 0.6530 | 4.6600e-003 | | 0.0591 | 0.0591 | | 0.0591 | 0.0591 | | 932.8219 | 932.8219 | 0.0179 | 0.0171 | 938.4989 |
| Mobile | 7.6217 | 27.4680 | 81.1414 | 0.1513 | 7.7401 | 0.3869 | 8.1270 | 2.0796 | 0.3553 | 2.4348 | | 13,434.1793 | 13,434.1793 | 0.4283 | | 13,443.1744 |
| Offroad | 0.3168 | 3.0439 | 2.3938 | 3.1100e-003 | | 0.2289 | 0.2289 | | 0.2106 | 0.2106 | | 318.2649 | 318.2649 | 0.0975 | | 320.3128 |
| **Total** | **12.3678** | **31.2894** | **84.2045** | **0.1591** | **7.7401** | **0.6749** | **8.4151** | **2.0796** | **0.6250** | **2.7046** | | **14,685.3004** | **14,685.3004** | **0.5438** | **0.0171** | **14,702.0223** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 4.3438 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0343 | 0.0343 | 1.0000e-004 | | 0.0363 |
| Energy | 0.0855 | 0.7774 | 0.6530 | 4.6600e-003 | | 0.0591 | 0.0591 | | 0.0591 | 0.0591 | | 932.8219 | 932.8219 | 0.0179 | 0.0171 | 938.4989 |
| Mobile | 7.6217 | 27.4680 | 81.1414 | 0.1513 | 7.7401 | 0.3869 | 8.1270 | 2.0796 | 0.3553 | 2.4348 | | 13,434.1793 | 13,434.1793 | 0.4283 | | 13,443.1744 |
| Offroad | 0.3168 | 3.0439 | 2.3938 | 3.1100e-003 | | 0.2289 | 0.2289 | | 0.2106 | 0.2106 | | 318.2649 | 318.2649 | 0.0975 | | 320.3128 |
| **Total** | **12.3678** | **31.2894** | **84.2045** | **0.1591** | **7.7401** | **0.6749** | **8.4151** | **2.0796** | **0.6250** | **2.7046** | | **14,685.3004** | **14,685.3004** | **0.5438** | **0.0171** | **14,702.0223** |

| | 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 | 2.56 | 9.73 | 2.84 | 1.96 | 0.00 | 33.92 | 2.72 | 0.00 | 33.70 | 7.79 | 0.00 | 2.17 | 2.17 | 17.93 | 0.00 | 2.18 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Site Preparation | Site Preparation | 1/4/2017 | 1/5/2017 | 5 | 2 | |
| 2 | Grading | Grading | 1/6/2017 | 1/9/2017 | 5 | 2 | |
| 3 | Building Construction | Building Construction | 1/10/2017 | 7/9/2017 | 5 | 129 | |
| 4 | Architectural Coating | Architectural Coating | 4/8/2017 | 7/9/2017 | 5 | 65 | |
| 5 | Paving | Paving | 7/10/2017 | 7/18/2017 | 5 | 7 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 1**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 234,720; Non-Residential Outdoor: 78,240 (Architectural Coating – sqft)**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Grading | Excavators | 1 | 8.00 | 162 | 0.38 |
| Site Preparation | Rubber Tired Dozers | 3 | 8.00 | 255 | 0.40 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Site Preparation | Tractors/Loaders/Backhoes | | 4 | 8.00 | 97 | 0.37 |
| Grading | Graders | | 1 | 8.00 | 174 | 0.41 |
| Grading | Rubber Tired Dozers | | 1 | 8.00 | 255 | 0.40 |
| Grading | Tractors/Loaders/Backhoes | | 3 | 8.00 | 97 | 0.37 |
| Building Construction | Cranes | | 1 | 7.00 | 226 | 0.29 |
| Building Construction | Forklifts | | 3 | 8.00 | 89 | 0.20 |
| Building Construction | Generator Sets | | 1 | 8.00 | 84 | 0.74 |
| Building Construction | Tractors/Loaders/Backhoes | | 3 | 7.00 | 97 | 0.37 |
| Building Construction | Welders | | 1 | 8.00 | 46 | 0.45 |
| Architectural Coating | Air Compressors | | 1 | 6.00 | 78 | 0.48 |
| Paving | Cement and Mortar Mixers | | 2 | 6.00 | 9 | 0.56 |
| Paving | Pavers | | 1 | 8.00 | 125 | 0.42 |
| Paving | Paving Equipment | | 2 | 6.00 | 130 | 0.36 |
| Paving | Rollers | | 2 | 6.00 | 80 | 0.38 |
| Paving | Tractors/Loaders/Backhoes | | 1 | 8.00 | 97 | 0.37 |

**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 | 7 | 18.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Grading | 6 | 15.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Building Construction | 9 | 66.00 | 26.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Architectural Coating | 1 | 13.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |
| Paving | 8 | 20.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Site Preparation - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0663 | 0.0000 | 18.0663 | 9.9307 | 0.0000 | 9.9307 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.8382 | 51.7535 | 39.3970 | 0.0391 | | 2.7542 | 2.7542 | | 2.5339 | 2.5339 | | 4,003.0859 | 4,003.0859 | 1.2265 | | 4,028.8432 |
| **Total** | **4.8382** | **51.7535** | **39.3970** | **0.0391** | **18.0663** | **2.7542** | **20.8205** | **9.9307** | **2.5339** | **12.4646** | | **4,003.0859** | **4,003.0859** | **1.2265** | | **4,028.8432** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1010 | 0.1167 | 1.4071 | 2.9900e-003 | 0.2299 | 1.6500e-003 | 0.2316 | 0.0610 | 1.5100e-003 | 0.0625 | | 231.1610 | 231.1610 | 0.0114 | | 231.4003 |
| **Total** | **0.1010** | **0.1167** | **1.4071** | **2.9900e-003** | **0.2299** | **1.6500e-003** | **0.2316** | **0.0610** | **1.5100e-003** | **0.0625** | | **231.1610** | **231.1610** | **0.0114** | | **231.4003** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 18.0663 | 0.0000 | 18.0663 | 9.9307 | 0.0000 | 9.9307 | | | 0.0000 | | | 0.0000 |
| Off-Road | 4.8382 | 51.7535 | 39.3970 | 0.0391 | | 2.7542 | 2.7542 | | 2.5339 | 2.5339 | 0.0000 | 4,003.0859 | 4,003.0859 | 1.2265 | | 4,028.8432 |
| **Total** | **4.8382** | **51.7535** | **39.3970** | **0.0391** | **18.0663** | **2.7542** | **20.8205** | **9.9307** | **2.5339** | **12.4646** | **0.0000** | **4,003.0859** | **4,003.0859** | **1.2265** | | **4,028.8432** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1010 | 0.1167 | 1.4071 | 2.9900e-003 | 0.2299 | 1.6500e-003 | 0.2316 | 0.0610 | 1.5100e-003 | 0.0625 | | 231.1610 | 231.1610 | 0.0114 | | 231.4003 |
| **Total** | **0.1010** | **0.1167** | **1.4071** | **2.9900e-003** | **0.2299** | **1.6500e-003** | **0.2316** | **0.0610** | **1.5100e-003** | **0.0625** | | **231.1610** | **231.1610** | **0.0114** | | **231.4003** |

## 3.3 Grading - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.5523 | 0.0000 | 6.5523 | 3.3675 | 0.0000 | 3.3675 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.4555 | 35.9825 | 25.3812 | 0.0297 | | 2.0388 | 2.0388 | | 1.8757 | 1.8757 | | 3,043.6667 | 3,043.6667 | 0.9326 | | 3,063.2507 |
| **Total** | **3.4555** | **35.9825** | **25.3812** | **0.0297** | **6.5523** | **2.0388** | **8.5912** | **3.3675** | **1.8757** | **5.2432** | | **3,043.6667** | **3,043.6667** | **0.9326** | | **3,063.2507** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0842 | 0.0972 | 1.1725 | 2.4900e-003 | 0.1916 | 1.3700e-003 | 0.1930 | 0.0508 | 1.2600e-003 | 0.0521 | | 192.6342 | 192.6342 | 9.4900e-003 | | 192.8336 |
| **Total** | **0.0842** | **0.0972** | **1.1725** | **2.4900e-003** | **0.1916** | **1.3700e-003** | **0.1930** | **0.0508** | **1.2600e-003** | **0.0521** | | **192.6342** | **192.6342** | **9.4900e-003** | | **192.8336** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.5523 | 0.0000 | 6.5523 | 3.3675 | 0.0000 | 3.3675 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.4555 | 35.9825 | 25.3812 | 0.0297 | | 2.0388 | 2.0388 | | 1.8757 | 1.8757 | 0.0000 | 3,043.6667 | 3,043.6667 | 0.9326 | | 3,063.2507 |
| **Total** | **3.4555** | **35.9825** | **25.3812** | **0.0297** | **6.5523** | **2.0388** | **8.5912** | **3.3675** | **1.8757** | **5.2432** | **0.0000** | **3,043.6667** | **3,043.6667** | **0.9326** | | **3,063.2507** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0842 | 0.0972 | 1.1725 | 2.4900e-003 | 0.1916 | 1.3700e-003 | 0.1930 | 0.0508 | 1.2600e-003 | 0.0521 | | 192.6342 | 192.6342 | 9.4900e-003 | | 192.8336 |
| **Total** | **0.0842** | **0.0972** | **1.1725** | **2.4900e-003** | **0.1916** | **1.3700e-003** | **0.1930** | **0.0508** | **1.2600e-003** | **0.0521** | | **192.6342** | **192.6342** | **9.4900e-003** | | **192.8336** |

## 3.4 Building Construction - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 3.1024 | 26.4057 | 18.1291 | 0.0268 | | 1.7812 | 1.7812 | | 1.6730 | 1.6730 | | 2,639.8053 | 2,639.8053 | 0.6497 | | 2,653.4490 |
| **Total** | **3.1024** | **26.4057** | **18.1291** | **0.0268** | | **1.7812** | **1.7812** | | **1.6730** | **1.6730** | | **2,639.8053** | **2,639.8053** | **0.6497** | | **2,653.4490** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.3912 | 1.8354 | 3.9095 | 5.5700e-003 | 0.1540 | 0.0290 | 0.1830 | 0.0436 | 0.0266 | 0.0702 | | 546.6792 | 546.6792 | 4.0000e-003 | | 546.7632 |
| Worker | 0.3703 | 0.4278 | 5.1592 | 0.0110 | 0.8430 | 6.0400e-003 | 0.8491 | 0.2236 | 5.5400e-003 | 0.2291 | | 847.5904 | 847.5904 | 0.0418 | | 848.4677 |
| **Total** | **0.7614** | **2.2632** | **9.0687** | **0.0165** | **0.9970** | **0.0350** | **1.0320** | **0.2672** | **0.0321** | **0.2993** | | **1,394.2696** | **1,394.2696** | **0.0458** | | **1,395.2309** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 3.1024 | 26.4057 | 18.1291 | 0.0268 | | 1.7812 | 1.7812 | | 1.6730 | 1.6730 | 0.0000 | 2,639.8053 | 2,639.8053 | 0.6497 | | 2,653.4490 |
| **Total** | **3.1024** | **26.4057** | **18.1291** | **0.0268** | | **1.7812** | **1.7812** | | **1.6730** | **1.6730** | **0.0000** | **2,639.8053** | **2,639.8053** | **0.6497** | | **2,653.4490** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.3912 | 1.8354 | 3.9095 | 5.5700e-003 | 0.1540 | 0.0290 | 0.1830 | 0.0436 | 0.0266 | 0.0702 | | 546.6792 | 546.6792 | 4.0000e-003 | | 546.7632 |
| Worker | 0.3703 | 0.4278 | 5.1592 | 0.0110 | 0.8430 | 6.0400e-003 | 0.8491 | 0.2236 | 5.5400e-003 | 0.2291 | | 847.5904 | 847.5904 | 0.0418 | | 848.4677 |
| **Total** | **0.7614** | **2.2632** | **9.0687** | **0.0165** | **0.9970** | **0.0350** | **1.0320** | **0.2672** | **0.0321** | **0.2993** | | **1,394.2696** | **1,394.2696** | **0.0458** | | **1,395.2309** |

## 3.5 Architectural Coating - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 55.7911 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3323 | 2.1850 | 1.8681 | 2.9700e-003 | | 0.1733 | 0.1733 | | 0.1733 | 0.1733 | | 281.4481 | 281.4481 | 0.0297 | | 282.0721 |
| **Total** | **56.1235** | **2.1850** | **1.8681** | **2.9700e-003** | | **0.1733** | **0.1733** | | **0.1733** | **0.1733** | | **281.4481** | **281.4481** | **0.0297** | | **282.0721** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0729 | 0.0843 | 1.0162 | 2.1600e-003 | 0.1661 | 1.1900e-003 | 0.1672 | 0.0440 | 1.0900e-003 | 0.0451 | | 166.9496 | 166.9496 | 8.2300e-003 | | 167.1224 |
| **Total** | **0.0729** | **0.0843** | **1.0162** | **2.1600e-003** | **0.1661** | **1.1900e-003** | **0.1672** | **0.0440** | **1.0900e-003** | **0.0451** | | **166.9496** | **166.9496** | **8.2300e-003** | | **167.1224** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Archit. Coating | 55.7911 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Off-Road | 0.3323 | 2.1850 | 1.8681 | 2.9700e-003 | | 0.1733 | 0.1733 | | 0.1733 | 0.1733 | 0.0000 | 281.4481 | 281.4481 | 0.0297 | | 282.0721 |
| **Total** | **56.1235** | **2.1850** | **1.8681** | **2.9700e-003** | | **0.1733** | **0.1733** | | **0.1733** | **0.1733** | **0.0000** | **281.4481** | **281.4481** | **0.0297** | | **282.0721** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0729 | 0.0843 | 1.0162 | 2.1600e-003 | 0.1661 | 1.1900e-003 | 0.1672 | 0.0440 | 1.0900e-003 | 0.0451 | | 166.9496 | 166.9496 | 8.2300e-003 | | 167.1224 |
| **Total** | **0.0729** | **0.0843** | **1.0162** | **2.1600e-003** | **0.1661** | **1.1900e-003** | **0.1672** | **0.0440** | **1.0900e-003** | **0.0451** | | **166.9496** | **166.9496** | **8.2300e-003** | | **167.1224** |

## 3.6 Paving - 2017

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.6554 | 16.8035 | 12.4837 | 0.0186 | | 1.0056 | 1.0056 | | 0.9269 | 0.9269 | | 1,873.8264 | 1,873.8264 | 0.5588 | | 1,885.5609 |
| Paving | 0.2021 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.8575** | **16.8035** | **12.4837** | **0.0186** | | **1.0056** | **1.0056** | | **0.9269** | **0.9269** | | **1,873.8264** | **1,873.8264** | **0.5588** | | **1,885.5609** |

**Unmitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1122 | 0.1296 | 1.5634 | 3.3200e-003 | 0.2555 | 1.8300e-003 | 0.2573 | 0.0678 | 1.6800e-003 | 0.0694 | | 256.8456 | 256.8456 | 0.0127 | | 257.1114 |
| **Total** | **0.1122** | **0.1296** | **1.5634** | **3.3200e-003** | **0.2555** | **1.8300e-003** | **0.2573** | **0.0678** | **1.6800e-003** | **0.0694** | | **256.8456** | **256.8456** | **0.0127** | | **257.1114** |

**Mitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Off-Road | 1.6554 | 16.8035 | 12.4837 | 0.0186 | | 1.0056 | 1.0056 | | 0.9269 | 0.9269 | 0.0000 | 1,873.8264 | 1,873.8264 | 0.5588 | | 1,885.5609 |
| Paving | 0.2021 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| **Total** | **1.8575** | **16.8035** | **12.4837** | **0.0186** | | **1.0056** | **1.0056** | | **0.9269** | **0.9269** | **0.0000** | **1,873.8264** | **1,873.8264** | **0.5588** | | **1,885.5609** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.1122 | 0.1296 | 1.5634 | 3.3200e-003 | 0.2555 | 1.8300e-003 | 0.2573 | 0.0678 | 1.6800e-003 | 0.0694 | | 256.8456 | 256.8456 | 0.0127 | | 257.1114 |
| **Total** | **0.1122** | **0.1296** | **1.5634** | **3.3200e-003** | **0.2555** | **1.8300e-003** | **0.2573** | **0.0678** | **1.6800e-003** | **0.0694** | | **256.8456** | **256.8456** | **0.0127** | | **257.1114** |

# 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 | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 7.6217 | 27.4680 | 81.1414 | 0.1513 | 7.7401 | 0.3869 | 8.1270 | 2.0796 | 0.3553 | 2.4348 | | 13,434.1793 | 13,434.1793 | 0.4283 | | 13,443.1744 |
| Unmitigated | 7.6217 | 27.4680 | 81.1414 | 0.1513 | 7.7401 | 0.3869 | 8.1270 | 2.0796 | 0.3553 | 2.4348 | | 13,434.1793 | 13,434.1793 | 0.4283 | | 13,443.1744 |

### 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 927.01 | 175.56 | 90.44 | 2,705,006 | 2,705,006 |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 927.01 | 175.56 | 90.44 | 2,705,006 | 2,705,006 |

### 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 |
| General Light Industry | 14.70 | 6.60 | 6.60 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 14.70 | 6.60 | 6.60 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.351369 | 0.043669 | 0.182461 | 0.157680 | 0.084973 | 0.010202 | 0.024524 | 0.135556 | 0.000860 | 0.000806 | 0.004798 | 0.001072 | 0.002029 |

## 5.0 Energy Detail

### 4.4 Fleet Mix

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 | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Mitigated | 0.0855 | 0.7774 | 0.6530 | 4.6600e-003 | | 0.0591 | 0.0591 | | 0.0591 | 0.0591 | | 932.8219 | 932.8219 | 0.0179 | 0.0171 | 938.4989 |
| NaturalGas Unmitigated | 0.0855 | 0.7774 | 0.6530 | 4.6600e-003 | | 0.0591 | 0.0591 | | 0.0591 | 0.0591 | | 932.8219 | 932.8219 | 0.0179 | 0.0171 | 938.4989 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| General Light Industry | 7928.99 | 0.0855 | 0.7774 | 0.6530 | 4.6600e-003 | | 0.0591 | 0.0591 | | 0.0591 | 0.0591 | | 932.8219 | 932.8219 | 0.0179 | 0.0171 | 938.4989 |
| **Total** | | **0.0855** | **0.7774** | **0.6530** | **4.6600e-003** | | **0.0591** | **0.0591** | | **0.0591** | **0.0591** | | **932.8219** | **932.8219** | **0.0179** | **0.0171** | **938.4989** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 7.92899 | 0.0855 | 0.7774 | 0.6530 | 4.6600e-003 | | 0.0591 | 0.0591 | | 0.0591 | 0.0591 | | 932.8219 | 932.8219 | 0.0179 | 0.0171 | 938.4989 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0855** | **0.7774** | **0.6530** | **4.6600e-003** | | **0.0591** | **0.0591** | | **0.0591** | **0.0591** | | **932.8219** | **932.8219** | **0.0179** | **0.0171** | **938.4989** |

# 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 | lb/day | | | | | | | | | | lb/day | | | | | |
| Mitigated | 4.3438 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0343 | 0.0343 | 1.0000e-004 | | 0.0363 |
| Unmitigated | 4.3438 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0343 | 0.0343 | 1.0000e-004 | | 0.0363 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.9935 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 3.3487 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.5700e-003 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0343 | 0.0343 | 1.0000e-004 | | 0.0363 |
| **Total** | **4.3438** | **1.5000e-004** | **0.0163** | **0.0000** | | **6.0000e-005** | **6.0000e-005** | | **6.0000e-005** | **6.0000e-005** | | **0.0343** | **0.0343** | **1.0000e-004** | | **0.0363** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 0.9935 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 3.3487 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 1.5700e-003 | 1.5000e-004 | 0.0163 | 0.0000 | | 6.0000e-005 | 6.0000e-005 | | 6.0000e-005 | 6.0000e-005 | | 0.0343 | 0.0343 | 1.0000e-004 | | 0.0363 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **4.3438** | **1.5000e-004** | **0.0163** | **0.0000** | | **6.0000e-005** | **6.0000e-005** | | **6.0000e-005** | **6.0000e-005** | | **0.0343** | **0.0343** | **1.0000e-004** | | **0.0363** |

## 7.0 Water Detail

### 7.1 Mitigation Measures Water

## 8.0 Waste Detail

### 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|
| Tractors/Loaders/Backhoes | 1 | 8.00 | 260 | 97 | 0.37 | Diesel |

**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 | lb/day | | | | | | | | | | lb/day | | | | | |
| Tractors/Loaders/Backhoes | 0.3168 | 3.0439 | 2.3938 | 3.1100e-003 | | 0.2289 | 0.2289 | | 0.2106 | 0.2106 | | 318.2649 | 318.2649 | 0.0975 | | 320.3128 |
| **Total** | **0.3168** | **3.0439** | **2.3938** | **3.1100e-003** | | **0.2289** | **0.2289** | | **0.2106** | **0.2106** | | **318.2649** | **318.2649** | **0.0975** | | **320.3128** |

# 10.0 Vegetation

# Appendix B

# Stationary Source Emissions

# Engine Emissions Assumptions

| Parameter | |
|---|---|
| Device | Generator Engine |
| Make | Avus |
| Model | JMS 320 |
| Fuel | Biogas |
| Standard Temperature (F)[1] | 60 |
| Generator Output (ekW)[2] | 1059 |
| Engine Output (bhp) | 710.7 |
| Biogas Flow Rate (scfh)[3] | 19180.12422 |
| Higher Heating Value (Btu/scf)[4] | 483 |
| Heat Input rate (MMBtu/hr @ HHV)[5] | 9.264 |
| F-Factor (dscf/MMBtu @ 0% O2)[4] | 8.776 |
| F-Factor (dsf CO2/MMBtu) | 1303 |
| N2O emission rate (kg/MMBtu) | 0.00063 |
| CH4 emission rate (kg/MMBtu) | 0.0032 |

# Engine Emissions

| Pollutant[7] | Emission Rate (g/BHP-h) | Emission Rate (g-BHP-h) | Maximum Emissions[10, 11] | | | |
|---|---|---|---|---|---|---|
| | | | Hourly (lbs) | Daily (lbs) | Annual (lbs) | Annual (tons) |
| CO | 2.5 | - | 0.42 | 10.13 | 3,696.19 | 1.85 |
| NOx | 1.1 | - | 0.19 | 4.46 | 1,626.32 | 0.81 |
| PM10[8] - lb/MMBtu | 0.0384 | - | 0.36 | 8.54 | 3,116.26 | 1.56 |
| PM2.5[9] - lb/MMBtu | 0.0384 | - | 0.36 | 8.54 | 3,116.26 | 1.56 |
| ROG | - | 0.2 | 0.03 | 0.81 | 295.70 | 0.15 |
| Sox | - | 0.6 | 0.10 | 2.43 | 887.09 | 0.44 |
| CO2 | | | 5.83 | 139.93 | 51,073.33 | 25.54 |
| N2O | | | 0.01 | 0.31 | 112.48 | 0.06 |
| CH4 | | | 0.07 | 1.57 | 571.31 | 0.29 |
| CO2e | | | 11.18 | 268.33 | 97,938.98 | 48.97 |

Notes:

1. Standard temperature is specified Section 2.AM of the District Rules.

2. Generator output (in kW) and engine output (in bhp) were specified by Caterpillar for a lower Btu fuel.

3. Biogas flow rate (in scfm) was calculated from the heat input rate (in Btu/min @ LHV, provided by Caterpillar for a lower Btu fuel) and the biogas HHV (in Btu/scf).

4. Higher heating value (HHV, in Btu/scf) and F-Factors (in dscf/MMBtu) were calculated for a fuel specification derived from the Arrow Feasibility Study.

5. Heat input rate (in MMBtu/hr) was calculated from the biogas flow rate (in scfh) and the biogas HHV (in Btu/scf).

6. Daily fuel consumption (in MMBtu/day) was calculated from the hourly heat input rate (in MMBtu/hr) at 24 hr/day. Annual heat was calculated from the daily heat input at 365 days/year.

7. CO/NOx/ROC emission rates (in gbhp-hr) were specified by Elite Energy and reflect a 3-way catalyst.

8. PM10 emission rate (in lb/MMBtu) was obtained from Table 3.2-1 of AP-42 (July 2000) for natual gas-fired rich burn engines. SOx emission rate (in lb/MMBtu) was calculated from the fuel sulfur content (in ppmv) and the HHV (in Btu/scf). Hourly emissions (in lb/hr) were calculated from the emission rate (in lb/MMBtu) and the heat input rate (in MMBtu/hr).

9. PM2.5 emisions were assumed to comprise 100% of PM10 emissions.

10. Daily emissions (in lb/day) were calculated from the hourly emisison rate at 24 hr/day.

11. Annual emissions (in lb/yr and tpy) were calculated from the daily emission rate at 365 day/yr.

# Flare Emissions Assumptions

| Parameter | |
|---|---|
| Device | Enclosed Flare |
| Make | N/A |
| Model | N/A |
| Fuel | Biogas |
| Higher Heating Value (Btu/scf)[1] | 1,012.0 |
| Heat Input Rate (MMBtu/hr @ HHV)[1] | 8.5 |
| Intel H2S Concentration (ppmvd)[2] | 90.0 |
| Intel NMHC Concentration (ppmvd)[2] | 5.0 |
| F-Factor (dscf CO2/MMBtu) | 1,309.0 |
| N2O emission rate (kg/MMBtu) | 0.00063 |
| CH4 emission rate (kg/MMBtu) | 0.0032 |
| Biogas Destruction Efficiency[2] | 98% |

| Fuel Consumption (MMBtu) | |
|---|---|
| Daily | Annual |
| 204 | 1700 |

# Flare Emissions

| Pollutant | Emission Rate (lbs/MMBtu)[2] | Maximum Emissions | | | |
|---|---|---|---|---|---|
| | | Hourly (lbs) | Daily (lbs) | Annual (lbs) | Annual (tons) |
| CO | 0.045454545 | 0.39 | 9.27 | 77.27 | 0.04 |
| NOx | 0.038537549 | 0.33 | 7.86 | 65.51 | 0.03 |
| PM10 | 0.014822134 | 0.13 | 3.02 | 25.20 | 0.01 |
| PM2.5 | 0.014822134 | 0.13 | 3.02 | 25.20 | 0.01 |
| ROG | 0.00011466 | 0.00 | 0.02 | 0.19 | 0.00 |
| SOx | 0.005533597 | 0.05 | 1.13 | 9.41 | 0.00 |
| CO2 | 0.005733014 | 11.26 | 1.17 | 2,252.00 | 1.13 |
| N2O | | 0.011781 | 0.28 | 2.36 | 0.00 |
| CH4 | | 0.06 | 1.44 | 11.97 | 0.01 |
| CO2e | | 16.17 | 118.98 | 3,233.75 | 1.62 |

Sources:

1 - Provided by Applicant

2 - AP42, Section 2.4 Municipal Solid Waste Landfills, Table 2.4-4.

# Appendix C

# Mobile Source Emissions

# Emission Factors

## Table 1: 2013 Running Emission Factors

| lbs/mi | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Veh Class | ROG | CO | NOx | CO2 | PM10 | PM2.5 | SOx | CH4 | Tire & Brake Wear PM10 | Tire & Brake Wear PM2.5 |
| LDA | 1.0E-04 | 3.6E-03 | 3.5E-04 | 6.6E-01 | 4.5E-06 | 4.2E-06 | 6.6E-06 | 3.1E-05 | 9.9E-05 | 3.9E-05 |
| LDT | 3.9E-04 | 1.0E-02 | 1.0E-03 | 7.6E-01 | 1.1E-05 | 9.9E-06 | 7.8E-06 | 8.4E-05 | 9.9E-05 | 3.9E-05 |
| HHDT | 9.1E-04 | 4.8E-03 | 1.9E-02 | 3.4E+00 | 7.0E-04 | 6.7E-04 | 3.3E-05 | 4.5E-05 | 2.2E-04 | 7.8E-05 |
| Source: EMFAC 2014 | | | | | | | | | | |

## Table 2: 2016 Running Emission Factors

| lbs/mi | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Veh Class | ROG | CO | NOx | CO2 | PM10 | PM2.5 | SOx | CH4 | Tire & Brake Wear PM10 | Tire & Brake Wear PM2.5 |
| LDA | 5.7E-05 | 2.3E-03 | 2.2E-04 | 6.2E-01 | 3.4E-06 | 3.2E-06 | 6.2E-06 | 1.9E-05 | 9.9E-05 | 3.9E-05 |
| LDT | 1.0E-04 | 3.9E-03 | 5.2E-04 | 8.4E-01 | 3.7E-06 | 3.4E-06 | 8.5E-06 | 3.5E-05 | 9.9E-05 | 3.9E-05 |
| HHDT | 3.3E-04 | 1.8E-03 | 1.1E-02 | 3.3E+00 | 2.1E-04 | 2.0E-04 | 3.1E-05 | 1.7E-05 | 2.2E-04 | 7.8E-05 |
| Source: EMFAC 2014 | | | | | | | | | | |

# Baseline 2013 Emissions

## Table 3: Baseline Condition Assumptions

| Baseline Condition Assumptions | | | |
|---|---|---|---|
| **Category** | **Vehicle Type** | **Max Daily Trips** | **Miles Traveled (round trips)** |
| **Inbound** | | | |
| To Glenn Co. Land Fill | | | |
| Curbsite Trucks | Packer Trucks | 7.9 | 30 |
| Commercial Deliveries | Light Duty Trucks | 19 | 30 |
| Private Individuals | Light Duty Auto | 60 | 30 |
| To Waste Management Chico Facility | | | |
| Curbsite trucks | Packer Trucks | 1 | 52.2 |
| **Outbound** | | | |
| From Glenn Co. Land Fill to PSC Env. Service Group Rancho Cordova | | | |
| Household Hazardous Waste | Heavy Truck | 1 | 220 |
| From Glenn Co. Land Fill to Waste Mgt. Chico Facility | | | |
| Recyleables | Heavy Truck | 1 | 258 |
| **Other Trips** | | | |
| Worker Trips | Auto | 20 | 20 |
| Source: CEAQ Air Quality Technical Report, August 2013. | | | |

## Table 4: Baseline Condition VMT

| Baseline VMT Data | | | | | | |
|---|---|---|---|---|---|---|
| **Category** | **Trips per day** | **Annual Trips** | **EMFAC Vehicle Type** | **Trip length (miles)** | **Daily VMT** | **Annual VMT** |
| **Inbound** | | | | | | |
| To Glenn Co. Land Fill | | | | | | |
| Curbsite Trucks | 8 | 2,473 | HHDT | 30 | 237 | 74,181 |
| Commercial Deliveries | 19 | 5,947 | LDT | 30 | 570 | 178,410 |
| Private Individuals | 60 | 18,780 | LDA | 30 | 1,800 | 563,400 |
| To Waste Management Chico Facility | | | | | | |
| Curbsite trucks | 1 | 313 | HHDT | 52 | 52 | 16,339 |
| **Outbound** | | | | | | |
| From Glenn Co. Land Fill to PSC Env. Service Group Rancho Cordova | | | | | | |
| Household Hazardous Waste | 1 | 313 | HHDT | 220 | 220 | 68,860 |
| From Glenn Co. Land Fill to Waste Mgt. Chico Facility | | | | | | |
| Recyleables | 1 | 313 | HHDT | 258 | 258 | 80,754 |
| **Other Trips** | | | | | | |
| Worker Trips | 20 | 6,260 | LDA | 20 | 400 | 125,200 |
| Source: ESA, 2015 | | | | | | |

## Table 5: Baseline Condition Emissions (pounds per day)

| | lbs/day | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Category** | **ROG** | **CO** | **NOx** | **CO2** | **PM10** | **PM2.5** | **SOx** | **CH4** | **Tire & Brake Wear PM10** | **Tire & Brake Wear PM2.5** |
| **Inbound** | | | | | | | | | | |
| To Glenn Co. Land Fill | | | | | | | | | | |
| Curbsite Trucks | 0.215 | 1.132 | 4.388 | 807.088 | 0.167 | 0.160 | 0.008 | 0.011 | 0.051 | 0.019 |
| Commercial Deliveries | 0.222 | 5.938 | 0.580 | 433.426 | 0.006 | 0.006 | 0.004 | 0.048 | 0.056 | 0.022 |
| Private Individuals | 0.188 | 6.423 | 0.633 | 1183.404 | 0.008 | 0.008 | 0.012 | 0.056 | 0.178 | 0.070 |
| To Waste Management Chico Facility | | | | | | | | | | |
| Curbsite trucks | 0.047 | 0.249 | 0.966 | 177.764 | 0.037 | 0.035 | 0.002 | 0.002 | 0.011 | 0.004 |
| **Outbound** | | | | | | | | | | |
| From Glenn Co. Land Fill to PSC Env. Service Group Rancho Cordova | | | | | | | | | | |
| Household Hazardous Waste | 0.199 | 1.051 | 4.073 | 749.196 | 0.155 | 0.148 | 0.007 | 0.010 | 0.047 | 0.017 |
| From Glenn Co. Land Fill to Waste Mgt. Chico Facility | | | | | | | | | | |
| Recyleables | 0.234 | 1.232 | 4.777 | 878.602 | 0.181 | 0.174 | 0.008 | 0.012 | 0.056 | 0.020 |
| **Other Trips** | | | | | | | | | | |
| Worker Trips | 0.042 | 1.427 | 0.141 | 262.979 | 0.002 | 0.002 | 0.003 | 0.012 | 0.039 | 0.016 |
| **Total Emissions** | 1.1 | 17.5 | 15.6 | 4,492.5 | 0.6 | 0.5 | 0.0 | 0.2 | 0.4 | 0.2 |
| Source: ESA, 2015 | | | | | | | | | | |

## Table 6: Baseline Condition Emissions (tons per year)

| Category | Tons/year | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ROG | CO | NOx | CO2 | PM10 | PM2.5 | SOx | CH4 | Tire & Brake Wear PM10 | Tire & Brake Wear PM2.5 |
| **Inbound** | | | | | | | | | | |
| To Glenn Co. Land Fill | | | | | | | | | | |
| Curbsite Trucks | 0.030 | 0.161 | 0.623 | 114.586 | 0.024 | 0.023 | 0.001 | 0.002 | 0.007 | 0.003 |
| Commercial Deliveries | 0.031 | 0.843 | 0.082 | 61.535 | 0.001 | 0.001 | 0.001 | 0.007 | 0.008 | 0.003 |
| Private Individuals | 0.027 | 0.912 | 0.090 | 168.013 | 0.001 | 0.001 | 0.002 | 0.008 | 0.025 | 0.010 |
| To Waste Management Chico Facility | | | | | | | | | | |
| Curbsite trucks | 0.007 | 0.035 | 0.137 | 25.238 | 0.005 | 0.005 | 0.000 | 0.000 | 0.002 | 0.001 |
| **Outbound** | | | | | | | | | | |
| From Glenn Co. Land Fill to PSC Env. Service Group Rancho Cordova | | | | | | | | | | |
| Household Hazardous Waste | 0.028 | 0.149 | 0.578 | 106.367 | 0.022 | 0.021 | 0.001 | 0.001 | 0.007 | 0.002 |
| From Glenn Co. Land Fill to Waste Mgt. Chico Facility | | | | | | | | | | |
| Recyleables | 0.033 | 0.175 | 0.678 | 124.739 | 0.026 | 0.025 | 0.001 | 0.002 | 0.008 | 0.003 |
| **Other Trips** | | | | | | | | | | |
| Worker Trips | 0.006 | 0.203 | 0.020 | 37.336 | 0.000 | 0.000 | 0.000 | 0.002 | 0.006 | 0.002 |
| **Total Emissions** | 0.2 | 2.5 | 2.2 | 637.8 | 0.1 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 |
| Source: ESA, 2015 | | | | | | | | | | |

# Future 2016 Emissions

## Table 7: Future Conditions Assumptions

| Future Conditions | | | |
|---|---|---|---|
| **Category** | **Vehicle Type** | **Max Daily Trips** | **Miles Traveled (Round Trips)** |
| **Inbound** | | | |
| From Glenn Co. to MSW Conversion Facility | | | |
| Curbsite Trucks | Packer Trucks | 240 | 30 |
| Private Trucks | LDT | 60 | 30 |
| From City of Chico to MSW Conversion Facility | | | |
| Curbsite trucks | Packer Trucks | 32 | 28 |
| **Outbound** | | | |
| From MSW Conversion Facility to Ostrom Landfill/Recyclable Facility | | | |
| Ostrom Landfill | Heavy Truck | 27 | 120 |
| Recycleable Facility | Heavy Truck | 27 | 28 |
| **Other Trips** | | | |
| Recovery Operations Employees | Auto | 10 | 20 |
| Transfer Station Employees | Auto | 20 | 20 |
| Contractors and Deliveries | Light Duty trucks | 9 | 20 |
| Source: TIA SWCF Glenn County, June 30, 2015. | | | |

## Table 8: Future Conditions VMT

| Baseline VMT Data | | | | | | |
|---|---|---|---|---|---|---|
| **Category** | **Trips per day** | **Annual Trips** | **EMFAC Vehicle Type** | **Trip length (miles)** | **Daily VMT** | **Annual VMT** |
| **Inbound** | | | | | | |
| From Glenn Co. to MSW Conversion Facility | | | | | | |
| Curbsite Trucks | 240 | 75,120 | HHDT | 30 | 7,200 | 2,253,600 |
| Private | 60 | 18,780 | LDT | 30 | 1,800 | 563,400 |
| From City of Chico to MSW Conversion Facility | | | | | | |
| Curbsite trucks | 32 | 10,016 | HHDT | 28 | 896 | 280,448 |
| **Outbound** | | | | | | |
| From MSW Conversion Facility to Ostrom Landfill/Recyclable Facility | | | | | | |
| Ostrom Landfill | 27 | 8,451 | HHDT | 120 | 3,240 | 1,014,120 |
| Recyclable Facility | 27 | 8,451 | HHDT | 28 | 756 | 236,628 |
| **Other Trips** | | | | | | |
| Recovery Operations Employees | 10 | 3,130 | LDA | 20 | 200 | 62,600 |
| Transfer Station Employees | 20 | 6,260 | LDA | 20 | 400 | 125,200 |
| Contractors and Deliveries | 9 | 2,817 | LDA | 20 | 180 | 56,340 |
| Source: ESA, 2015 | | | | | | |

## Table9: Future Emissions (pounds per day)

| lbs/day | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Category** | **ROG** | **CO** | **NOx** | **CO2** | **PM10** | **PM2.5** | **SOx** | **CH4** | **Tire & Brake Wear PM10** | **Tire & Brake Wear PM2.5** |
| **Inbound** | | | | | | | | | | |
| From Glenn Co. to MSW Conversion Facility | | | | | | | | | | |
| Curbsite Trucks | 2.354 | 13.074 | 77.059 | 23,595.363 | 1.491 | 1.427 | 0.225 | 0.122 | 1.551 | 0.563 |
| Private | 0.725 | 27.950 | 3.745 | 6,066.759 | 0.027 | 0.025 | 0.061 | 0.251 | 0.710 | 0.282 |
| From City of Chico to MSW Conversion Facility | | | | | | | | | | |
| Curbsite trucks | 0.293 | 1.627 | 9.590 | 2,936.312 | 0.186 | 0.178 | 0.028 | 0.015 | 0.193 | 0.070 |
| **Outbound** | | | | | | | | | | |
| From MSW Conversion Facility to Ostrom Landfill/Recycleable Facility | | | | | | | | | | |
| Ostrom Landfill | 1.059 | 5.883 | 34.676 | 10,617.913 | 0.671 | 0.642 | 0.101 | 0.055 | 0.698 | 0.253 |
| Recycleable Facility | 0.247 | 1.373 | 8.091 | 2,477.513 | 0.157 | 0.150 | 0.024 | 0.013 | 0.163 | 0.059 |
| **Other Trips** | | | | | | | | | | |
| Recovery Operations Employees | 0.011 | 0.457 | 0.044 | 123.817 | 0.001 | 0.001 | 0.001 | 0.004 | 0.020 | 0.008 |
| Transfer Station Employees | 0.023 | 0.914 | 0.089 | 247.634 | 0.001 | 0.001 | 0.002 | 0.008 | 0.039 | 0.016 |
| Contractors and Deliveries | 0.010 | 0.411 | 0.040 | 111.435 | 0.001 | 0.001 | 0.001 | 0.003 | 0.018 | 0.007 |
| **Total Emissions** | 4.722 | 51.688 | 133.334 | 46,176.747 | 2.534 | 2.424 | 0.444 | 0.471 | 3.391 | 1.257 |
| Source: ESA, 2015 | | | | | | | | | | |

## Table9: Future Emissions (tons per year)

| Tons/year | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Category | ROG | CO | NOx | CO2 | PM10 | PM2.5 | SOx | CH4 | Tire & Brake Wear PM10 | Tire & Brake Wear PM2.5 |
| **Inbound** | | | | | | | | | | |
| From Glenn Co. to MSW Conversion Facility | | | | | | | | | | |
| Curbsite Trucks | 0.334 | 1.856 | 10.940 | 3,349.942 | 0.212 | 0.203 | 0.032 | 0.017 | 0.220 | 0.080 |
| Private | 0.103 | 3.968 | 0.532 | 861.326 | 0.004 | 0.004 | 0.009 | 0.036 | 0.101 | 0.040 |
| From City of Chico to MSW Conversion Facility | | | | | | | | | | |
| Curbsite trucks | 0.042 | 0.231 | 1.361 | 416.882 | 0.026 | 0.025 | 0.004 | 0.002 | 0.027 | 0.010 |
| **Outbound** | | | | | | | | | | |
| From MSW Conversion Facility to Ostrom Landfill/Recycleable Facility | | | | | | | | | | |
| Ostrom Landfill | 0.150 | 0.835 | 4.923 | 1,507.474 | 0.095 | 0.091 | 0.014 | 0.008 | 0.099 | 0.036 |
| Recycleable Facility | 0.035 | 0.195 | 1.149 | 351.744 | 0.022 | 0.021 | 0.003 | 0.002 | 0.023 | 0.008 |
| **Other Trips** | | | | | | | | | | |
| Recovery Operations Employees | 0.002 | 0.065 | 0.006 | 17.579 | 0.000 | 0.000 | 0.000 | 0.001 | 0.003 | 0.001 |
| Transfer Station Employees | 0.003 | 0.130 | 0.013 | 35.158 | 0.000 | 0.000 | 0.000 | 0.001 | 0.006 | 0.002 |
| Contractors and Deliveries | 0.001 | 0.000 | 0.000 | 0.051 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| **Total Emissions** | 0.567 | 3.312 | 18.393 | 5,678.828 | 0.356 | 0.340 | 0.054 | 0.031 | 0.378 | 0.137 |
| Source: ESA, 2015 | | | | | | | | | | |

# Appendix D

# CalEEMod Output for Area Source Emissions

# Glenn County SWCF - Operations

## Glenn County, Summer

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 205.63 | 1000sqft | 4.72 | 205,630.00 | 0 |
| Other Asphalt Surfaces | 34.37 | 1000sqft | 0.79 | 34,370.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Rural | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 3 | | | **Operational Year** | 2018 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Square footage based on PD

Construction Phase - No construction - only modeling operation of the front end loader.

Grading -

Architectural Coating -

Energy Use - 2013 Title 24 Standards

Operational Off-Road Equipment - Assuming 1 front end loader would be used during operations

Vehicle Trips - 39 employ/delivery trips * 1.5 tips per day * 205.63 building size/1000 ft = 0.28

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblEnergyUse | LightingElect | 3.11 | 2.33 |
| tblEnergyUse | T24E | 2.39 | 1.79 |
| tblEnergyUse | T24NG | 17.92 | 13.44 |
| tblOperationalOffRoadEquipment | OperDaysPerYear | 260.00 | 313.00 |
| tblOperationalOffRoadEquipment | OperOffRoadEquipmentNumber | 0.00 | 1.00 |
| tblProjectCharacteristics | OperationalYear | 2014 | 2018 |
| tblProjectCharacteristics | UrbanizationLevel | Urban | Rural |
| tblVehicleTrips | ST_TR | 1.32 | 0.28 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.28 |

# 2.0 Emissions Summary

## 2.1 Overall Construction (Maximum Daily Emission)

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2016 | 3.7660 | 38.5576 | 27.4252 | 0.0322 | 6.7439 | 2.1999 | 8.9438 | 3.4183 | 2.0239 | 5.4421 | 0.0000 | 3,294.3809 | 3,294.3809 | 0.9438 | 0.0000 | 3,314.1998 |
| **Total** | **3.7660** | **38.5576** | **27.4252** | **0.0322** | **6.7439** | **2.1999** | **8.9438** | **3.4183** | **2.0239** | **5.4421** | **0.0000** | **3,294.3809** | **3,294.3809** | **0.9438** | **0.0000** | **3,314.1998** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | lb/day | | | | | | | | | | lb/day | | | | | |
| 2016 | 3.7660 | 38.5576 | 27.4252 | 0.0322 | 6.7439 | 2.1999 | 8.9438 | 3.4183 | 2.0239 | 5.4421 | 0.0000 | 3,294.3809 | 3,294.3809 | 0.9438 | 0.0000 | 3,314.1998 |
| **Total** | **3.7660** | **38.5576** | **27.4252** | **0.0322** | **6.7439** | **2.1999** | **8.9438** | **3.4183** | **2.0239** | **5.4421** | **0.0000** | **3,294.3809** | **3,294.3809** | **0.9438** | **0.0000** | **3,314.1998** |

| | **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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 6.6622 | 2.3000e-004 | 0.0248 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | | 9.0000e-005 | 9.0000e-005 | | 0.0525 | 0.0525 | 1.4000e-004 | | 0.0556 |
| Energy | 0.1050 | 0.9544 | 0.8017 | 5.7300e-003 | | 0.0725 | 0.0725 | | 0.0725 | 0.0725 | | 1,145.2978 | 1,145.2978 | 0.0220 | 0.0210 | 1,152.2679 |
| Mobile | 0.4286 | 1.5537 | 4.5430 | 9.4100e-003 | 0.4809 | 0.0232 | 0.5040 | 0.1292 | 0.0213 | 0.1505 | | 816.1562 | 816.1562 | 0.0246 | | 816.6732 |
| Offroad | 0.2661 | 2.6297 | 2.3367 | 3.1100e-003 | | 0.1863 | 0.1863 | | 0.1714 | 0.1714 | | 312.7760 | 312.7760 | 0.0974 | | 314.8208 |
| **Total** | **7.4619** | **5.1380** | **7.7063** | **0.0183** | **0.4809** | **0.2821** | **0.7630** | **0.1292** | **0.2653** | **0.3945** | | **2,274.2825** | **2,274.2825** | **0.1441** | **0.0210** | **2,283.8174** |

**Mitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Area | 6.6622 | 2.3000e-004 | 0.0248 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | | 9.0000e-005 | 9.0000e-005 | | 0.0525 | 0.0525 | 1.4000e-004 | | 0.0556 |
| Energy | 0.1050 | 0.9544 | 0.8017 | 5.7300e-003 | | 0.0725 | 0.0725 | | 0.0725 | 0.0725 | | 1,145.2978 | 1,145.2978 | 0.0220 | 0.0210 | 1,152.2679 |
| Mobile | 0.4286 | 1.5537 | 4.5430 | 9.4100e-003 | 0.4809 | 0.0232 | 0.5040 | 0.1292 | 0.0213 | 0.1505 | | 816.1562 | 816.1562 | 0.0246 | | 816.6732 |
| Offroad | 0.2661 | 2.6297 | 2.3367 | 3.1100e-003 | | 0.1863 | 0.1863 | | 0.1714 | 0.1714 | | 312.7760 | 312.7760 | 0.0974 | | 314.8208 |
| **Total** | **7.4619** | **5.1380** | **7.7063** | **0.0183** | **0.4809** | **0.2821** | **0.7630** | **0.1292** | **0.2653** | **0.3945** | | **2,274.2825** | **2,274.2825** | **0.1441** | **0.0210** | **2,283.8174** |

| | 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 | 3.57 | 51.18 | 30.32 | 17.04 | 0.00 | 66.04 | 24.42 | 0.00 | 64.60 | 43.44 | 0.00 | 13.75 | 13.75 | 67.58 | 0.00 | 13.78 |

## 3.0 Construction Detail

**Construction Phase**

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Phase 1 and 2 | Grading | 1/1/2016 | 1/28/2016 | 5 | 20 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)**

**OffRoad Equipment**

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Phase 1 and 2 | Excavators | 1 | 8.00 | 162 | 0.38 |

| | | | | | |
|---|---|---|---|---|---|
| Phase 1 and 2 | Graders | 1 | 8.00 | 174 | 0.41 |
| Phase 1 and 2 | Rubber Tired Dozers | 1 | 8.00 | 255 | 0.40 |
| Phase 1 and 2 | Tractors/Loaders/Backhoes | 3 | 8.00 | 97 | 0.37 |

**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 |
|---|---|---|---|---|---|---|---|---|---|---|
| Phase 1 and 2 | 6 | 15.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Phase 1 and 2 - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.5523 | 0.0000 | 6.5523 | 3.3675 | 0.0000 | 3.3675 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.6669 | 38.4466 | 26.0787 | 0.0298 | | 2.1984 | 2.1984 | | 2.0225 | 2.0225 | | 3,093.7889 | 3,093.7889 | 0.9332 | | 3,113.3860 |

| | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **3.6669** | **38.4466** | **26.0787** | **0.0298** | **6.5523** | **2.1984** | **8.7507** | **3.3675** | **2.0225** | **5.3900** | | **3,093.7889** | **3,093.7889** | **0.9332** | | **3,113.3860** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0991 | 0.1110 | 1.3465 | 2.4900e-003 | 0.1916 | 1.4500e-003 | 0.1931 | 0.0508 | 1.3200e-003 | 0.0521 | | 200.5920 | 200.5920 | 0.0106 | | 200.8138 |

| | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0991** | **0.1110** | **1.3465** | **2.4900e-003** | **0.1916** | **1.4500e-003** | **0.1931** | **0.0508** | **1.3200e-003** | **0.0521** | | **200.5920** | **200.5920** | **0.0106** | | **200.8138** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Fugitive Dust | | | | | 6.5523 | 0.0000 | 6.5523 | 3.3675 | 0.0000 | 3.3675 | | | 0.0000 | | | 0.0000 |
| Off-Road | 3.6669 | 38.4466 | 26.0787 | 0.0298 | | 2.1984 | 2.1984 | | 2.0225 | 2.0225 | 0.0000 | 3,093.7889 | 3,093.7889 | 0.9332 | | 3,113.3860 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **3.6669** | **38.4466** | **26.0787** | **0.0298** | **6.5523** | **2.1984** | **8.7507** | **3.3675** | **2.0225** | **5.3900** | **0.0000** | **3,093.7889** | **3,093.7889** | **0.9332** | | **3,113.3860** |

## Mitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | lb/day | | | | | | | | | | lb/day | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | | 0.0000 |
| Worker | 0.0991 | 0.1110 | 1.3465 | 2.4900e-003 | 0.1916 | 1.4500e-003 | 0.1931 | 0.0508 | 1.3200e-003 | 0.0521 | | 200.5920 | 200.5920 | 0.0106 | | 200.8138 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Total** | **0.0991** | **0.1110** | **1.3465** | **2.4900e-003** | **0.1916** | **1.4500e-003** | **0.1931** | **0.0508** | **1.3200e-003** | **0.0521** | | **200.5920** | **200.5920** | **0.0106** | | **200.8138** |

## 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 | lb/day | | | | | | | | | | lb/day | | | | | |
| Unmitigated | 0.4286 | 1.5537 | 4.5430 | 9.4100e-003 | 0.4809 | 0.0232 | 0.5040 | 0.1292 | 0.0213 | 0.1505 | | 816.1562 | 816.1562 | 0.0246 | | 816.6732 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.4286 | 1.5537 | 4.5430 | 9.4100e-003 | 0.4809 | 0.0232 | 0.5040 | 0.1292 | 0.0213 | 0.1505 | | 816.1562 | 816.1562 | 0.0246 | | 816.6732 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 57.58 | 57.58 | 0.00 | 190,667 | 190,667 |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 57.58 | 57.58 | 0.00 | 190,667 | 190,667 |

## 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 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| General Light Industry | 14.70 | 6.60 | 6.60 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 14.70 | 6.60 | 6.60 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.349924 | 0.043941 | 0.182098 | 0.157229 | 0.084870 | 0.010191 | 0.024896 | 0.137303 | 0.000863 | 0.000799 | 0.004800 | 0.001058 | 0.002029 |

## 5.0 Energy Detail

### 4.4 Fleet Mix

Historical Energy Use: N

### 5.1 Mitigation Measures Energy

| Category | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | lb/day | | | | | | | | | | lb/day | | | | | |
| NaturalGas Unmitigated | 0.1050 | 0.9544 | 0.8017 | 5.7300e-003 | | 0.0725 | 0.0725 | | 0.0725 | 0.0725 | | 1,145.2978 | 1,145.2978 | 0.0220 | 0.0210 | 1,152.2679 |
| NaturalGas Mitigated | 0.1050 | 0.9544 | 0.8017 | 5.7300e-003 | | 0.0725 | 0.0725 | | 0.0725 | 0.0725 | | 1,145.2978 | 1,145.2978 | 0.0220 | 0.0210 | 1,152.2679 |

## 5.2 Energy by Land Use - NaturalGas

**Unmitigated**

| Land Use | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 9735.03 | 0.1050 | 0.9544 | 0.8017 | 5.7300e-003 | | 0.0725 | 0.0725 | | 0.0725 | 0.0725 | | 1,145.2978 | 1,145.2978 | 0.0220 | 0.0210 | 1,152.2679 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.1050** | **0.9544** | **0.8017** | **5.7300e-003** | | **0.0725** | **0.0725** | | **0.0725** | **0.0725** | | **1,145.2978** | **1,145.2978** | **0.0220** | **0.0210** | **1,152.2679** |

**Mitigated**

| | NaturalGas Use | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Land Use | kBTU/yr | lb/day | | | | | | | | | | lb/day | | | | | |
| General Light Industry | 9.73503 | 0.1050 | 0.9544 | 0.8017 | 5.7300e-003 | | 0.0725 | 0.0725 | | 0.0725 | 0.0725 | | 1,145.2978 | 1,145.2978 | 0.0220 | 0.0210 | 1,152.2679 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.1050** | **0.9544** | **0.8017** | **5.7300e-003** | | **0.0725** | **0.0725** | | **0.0725** | **0.0725** | | **1,145.2978** | **1,145.2978** | **0.0220** | **0.0210** | **1,152.2679** |

# 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 | lb/day | | | | | | | | | | lb/day | | | | | |
| Unmitigated | 6.6622 | 2.3000e-004 | 0.0248 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | | 9.0000e-005 | 9.0000e-005 | | 0.0525 | 0.0525 | 1.4000e-004 | | 0.0556 |
| Mitigated | 6.6622 | 2.3000e-004 | 0.0248 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | | 9.0000e-005 | 9.0000e-005 | | 0.0525 | 0.0525 | 1.4000e-004 | | 0.0556 |

## 6.2 Area by SubCategory

**Unmitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 1.5238 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 5.1360 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.3700e-003 | 2.3000e-004 | 0.0248 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | | 9.0000e-005 | 9.0000e-005 | | 0.0525 | 0.0525 | 1.4000e-004 | | 0.0556 |
| **Total** | **6.6622** | **2.3000e-004** | **0.0248** | **0.0000** | | **9.0000e-005** | **9.0000e-005** | | **9.0000e-005** | **9.0000e-005** | | **0.0525** | **0.0525** | **1.4000e-004** | | **0.0556** |

**Mitigated**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SubCategory | lb/day | | | | | | | | | | lb/day | | | | | |
| Architectural Coating | 1.5238 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Consumer Products | 5.1360 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | | 0.0000 | | | 0.0000 |
| Landscaping | 2.3700e-003 | 2.3000e-004 | 0.0248 | 0.0000 | | 9.0000e-005 | 9.0000e-005 | | 9.0000e-005 | 9.0000e-005 | | 0.0525 | 0.0525 | 1.4000e-004 | | 0.0556 |
| **Total** | **6.6622** | **2.3000e-004** | **0.0248** | **0.0000** | | **9.0000e-005** | **9.0000e-005** | | **9.0000e-005** | **9.0000e-005** | | **0.0525** | **0.0525** | **1.4000e-004** | | **0.0556** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|
| Tractors/Loaders/Backhoes | 1 | 8.00 | 313 | 97 | 0.37 | Diesel |

**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 | lb/day | | | | | | | | | | lb/day | | | | | |
| Tractors/Loaders/Backhoes | 0.2661 | 2.6297 | 2.3367 | 3.1100e-003 | | 0.1863 | 0.1863 | | 0.1714 | 0.1714 | | 312.7760 | 312.7760 | 0.0974 | | 314.8208 |
| **Total** | **0.2661** | **2.6297** | **2.3367** | **3.1100e-003** | | **0.1863** | **0.1863** | | **0.1714** | **0.1714** | | **312.7760** | **312.7760** | **0.0974** | | **314.8208** |

## 10.0 Vegetation

# Glenn County SWCF - Operations

**Glenn County, Annual**

## 1.0 Project Characteristics

### 1.1 Land Usage

| Land Uses | Size | Metric | Lot Acreage | Floor Surface Area | Population |
|---|---|---|---|---|---|
| General Light Industry | 205.63 | 1000sqft | 4.72 | 205,630.00 | 0 |
| Other Asphalt Surfaces | 34.37 | 1000sqft | 0.79 | 34,370.00 | 0 |

### 1.2 Other Project Characteristics

| | | | | | |
|---|---|---|---|---|---|
| **Urbanization** | Rural | **Wind Speed (m/s)** | 2.2 | **Precipitation Freq (Days)** | 61 |
| **Climate Zone** | 3 | | | **Operational Year** | 2018 |
| **Utility Company** | Pacific Gas & Electric Company | | | | |
| **CO2 Intensity (lb/MWhr)** | 641.35 | **CH4 Intensity (lb/MWhr)** | 0.029 | **N2O Intensity (lb/MWhr)** | 0.006 |

### 1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Square footage based on PD

Construction Phase - No construction - only modeling operation of the front end loader.

Grading -

Architectural Coating -

Energy Use - 2013 Title 24 Standards

Operational Off-Road Equipment - Assuming 1 front end loader would be used during operations

Vehicle Trips - 39 employ/delivery trips * 1.5 tips per day * 205.63 building size/1000 ft = 0.28

| Table Name | Column Name | Default Value | New Value |
|---|---|---|---|
| tblEnergyUse | LightingElect | 3.11 | 2.33 |
| tblEnergyUse | T24E | 2.39 | 1.79 |
| tblEnergyUse | T24NG | 17.92 | 13.44 |
| tblOperationalOffRoadEquipment | OperDaysPerYear | 260.00 | 313.00 |
| tblOperationalOffRoadEquipment | OperOffRoadEquipmentNumber | 0.00 | 1.00 |
| tblProjectCharacteristics | OperationalYear | 2014 | 2018 |
| tblProjectCharacteristics | UrbanizationLevel | Urban | Rural |
| tblVehicleTrips | ST_TR | 1.32 | 0.28 |
| tblVehicleTrips | SU_TR | 0.68 | 0.00 |
| tblVehicleTrips | WD_TR | 6.97 | 0.28 |

## 2.0 Emissions Summary

### 2.1 Overall Construction

**Unmitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2016 | 0.0375 | 0.3857 | 0.2725 | 3.2000e-004 | 0.0674 | 0.0220 | 0.0894 | 0.0342 | 0.0202 | 0.0544 | 0.0000 | 29.7139 | 29.7139 | 8.5600e-003 | 0.0000 | 29.8937 |
| **Total** | **0.0375** | **0.3857** | **0.2725** | **3.2000e-004** | **0.0674** | **0.0220** | **0.0894** | **0.0342** | **0.0202** | **0.0544** | **0.0000** | **29.7139** | **29.7139** | **8.5600e-003** | **0.0000** | **29.8937** |

**Mitigated Construction**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Year | tons/yr | | | | | | | | | | MT/yr | | | | | |
| 2016 | 0.0375 | 0.3857 | 0.2725 | 3.2000e-004 | 0.0674 | 0.0220 | 0.0894 | 0.0342 | 0.0202 | 0.0544 | 0.0000 | 29.7139 | 29.7139 | 8.5600e-003 | 0.0000 | 29.8937 |
| **Total** | **0.0375** | **0.3857** | **0.2725** | **3.2000e-004** | **0.0674** | **0.0220** | **0.0894** | **0.0342** | **0.0202** | **0.0544** | **0.0000** | **29.7139** | **29.7139** | **8.5600e-003** | **0.0000** | **29.8937** |

| | **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** |

## 2.2 Overall Operational

**Unmitigated Operational**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Area | 1.2156 | 2.0000e-005 | 2.2400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.2900e-003 | 4.2900e-003 | 1.0000e-005 | 0.0000 | 4.5400e-003 |
| Energy | 0.0192 | 0.1742 | 0.1463 | 1.0500e-003 | | 0.0132 | 0.0132 | | 0.0132 | 0.0132 | 0.0000 | 684.9275 | 684.9275 | 0.0260 | 8.1100e-003 | 687.9883 |
| Mobile | 0.0654 | 0.2580 | 0.7417 | 1.3900e-003 | 0.0724 | 3.6200e-003 | 0.0760 | 0.0195 | 3.3300e-003 | 0.0228 | 0.0000 | 110.2264 | 110.2264 | 3.4800e-003 | 0.0000 | 110.2996 |
| Offroad | 0.0417 | 0.4116 | 0.3657 | 4.9000e-004 | | 0.0292 | 0.0292 | | 0.0268 | 0.0268 | 0.0000 | 44.4062 | 44.4062 | 0.0138 | 0.0000 | 44.6965 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 51.7586 | 0.0000 | 51.7586 | 3.0589 | 0.0000 | 115.9944 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 15.0860 | 74.8526 | 89.9386 | 1.5529 | 0.0373 | 134.1077 |
| **Total** | **1.3418** | **0.8437** | **1.2560** | **2.9300e-003** | **0.0724** | **0.0460** | **0.1184** | **0.0195** | **0.0434** | **0.0629** | **66.8447** | **914.4170** | **981.2616** | **4.6551** | **0.0454** | **1,093.0910** |

## 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 | 1.2156 | 2.0000e-005 | 2.2400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.2900e-003 | 4.2900e-003 | 1.0000e-005 | 0.0000 | 4.5400e-003 |
| Energy | 0.0192 | 0.1742 | 0.1463 | 1.0500e-003 | | 0.0132 | 0.0132 | | 0.0132 | 0.0132 | 0.0000 | 684.9275 | 684.9275 | 0.0260 | 8.1100e-003 | 687.9883 |
| Mobile | 0.0654 | 0.2580 | 0.7417 | 1.3900e-003 | 0.0724 | 3.6200e-003 | 0.0760 | 0.0195 | 3.3300e-003 | 0.0228 | 0.0000 | 110.2264 | 110.2264 | 3.4800e-003 | 0.0000 | 110.2996 |
| Offroad | 0.0417 | 0.4116 | 0.3657 | 4.9000e-004 | | 0.0292 | 0.0292 | | 0.0268 | 0.0268 | 0.0000 | 44.4062 | 44.4062 | 0.0138 | 0.0000 | 44.6965 |
| Waste | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 51.7586 | 0.0000 | 51.7586 | 3.0589 | 0.0000 | 115.9944 |
| Water | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 15.0860 | 74.8526 | 89.9386 | 1.5526 | 0.0372 | 134.0836 |
| **Total** | **1.3418** | **0.8437** | **1.2560** | **2.9300e-003** | **0.0724** | **0.0460** | **0.1184** | **0.0195** | **0.0434** | **0.0629** | **66.8447** | **914.4170** | **981.2616** | **4.6548** | **0.0453** | **1,093.0670** |

| | 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 | 3.10 | 48.78 | 29.12 | 16.72 | 0.00 | 63.35 | 24.63 | 0.00 | 61.80 | 42.64 | 0.00 | 4.86 | 4.53 | 0.30 | 0.13 | 4.09 |

## 3.0 Construction Detail

### Construction Phase

| Phase Number | Phase Name | Phase Type | Start Date | End Date | Num Days Week | Num Days | Phase Description |
|---|---|---|---|---|---|---|---|
| 1 | Phase 1 and 2 | Grading | 1/1/2016 | 1/28/2016 | 5 | 20 | |

**Acres of Grading (Site Preparation Phase): 0**

**Acres of Grading (Grading Phase): 0**

**Acres of Paving: 0**

**Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)**

### OffRoad Equipment

| Phase Name | Offroad Equipment Type | Amount | Usage Hours | Horse Power | Load Factor |
|---|---|---|---|---|---|
| Phase 1 and 2 | Excavators | 1 | 8.00 | 162 | 0.38 |
| Phase 1 and 2 | Graders | 1 | 8.00 | 174 | 0.41 |
| Phase 1 and 2 | Rubber Tired Dozers | 1 | 8.00 | 255 | 0.40 |
| Phase 1 and 2 | Tractors/Loaders/Backhoes | 3 | 8.00 | 97 | 0.37 |

### 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 |
|---|---|---|---|---|---|---|---|---|---|---|
| Phase 1 and 2 | 6 | 15.00 | 0.00 | 0.00 | 16.80 | 6.60 | 20.00 | LD_Mix | HDT_Mix | HHDT |

## 3.1 Mitigation Measures Construction

## 3.2 Phase 1 and 2 - 2016

**Unmitigated Construction On-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0655 | 0.0000 | 0.0655 | 0.0337 | 0.0000 | 0.0337 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0367 | 0.3845 | 0.2608 | 3.0000e-004 | | 0.0220 | 0.0220 | | 0.0202 | 0.0202 | 0.0000 | 28.0664 | 28.0664 | 8.4700e-003 | 0.0000 | 28.2442 |
| **Total** | **0.0367** | **0.3845** | **0.2608** | **3.0000e-004** | **0.0655** | **0.0220** | **0.0875** | **0.0337** | **0.0202** | **0.0539** | **0.0000** | **28.0664** | **28.0664** | **8.4700e-003** | **0.0000** | **28.2442** |

## Unmitigated Construction Off-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 8.5000e-004 | 1.2400e-003 | 0.0117 | 2.0000e-005 | 1.8500e-003 | 1.0000e-005 | 1.8600e-003 | 4.9000e-004 | 1.0000e-005 | 5.0000e-004 | 0.0000 | 1.6475 | 1.6475 | 1.0000e-004 | 0.0000 | 1.6496 |
| **Total** | **8.5000e-004** | **1.2400e-003** | **0.0117** | **2.0000e-005** | **1.8500e-003** | **1.0000e-005** | **1.8600e-003** | **4.9000e-004** | **1.0000e-005** | **5.0000e-004** | **0.0000** | **1.6475** | **1.6475** | **1.0000e-004** | **0.0000** | **1.6496** |

## Mitigated Construction On-Site

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Fugitive Dust | | | | | 0.0655 | 0.0000 | 0.0655 | 0.0337 | 0.0000 | 0.0337 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Off-Road | 0.0367 | 0.3845 | 0.2608 | 3.0000e-004 | | 0.0220 | 0.0220 | | 0.0202 | 0.0202 | 0.0000 | 28.0664 | 28.0664 | 8.4700e-003 | 0.0000 | 28.2441 |
| **Total** | **0.0367** | **0.3845** | **0.2608** | **3.0000e-004** | **0.0655** | **0.0220** | **0.0875** | **0.0337** | **0.0202** | **0.0539** | **0.0000** | **28.0664** | **28.0664** | **8.4700e-003** | **0.0000** | **28.2441** |

**Mitigated Construction Off-Site**

| | ROG | NOx | CO | SO2 | Fugitive PM10 | Exhaust PM10 | PM10 Total | Fugitive PM2.5 | Exhaust PM2.5 | PM2.5 Total | Bio- CO2 | NBio- CO2 | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | tons/yr | | | | | | | | | | MT/yr | | | | | |
| Hauling | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Vendor | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Worker | 8.5000e-004 | 1.2400e-003 | 0.0117 | 2.0000e-005 | 1.8500e-003 | 1.0000e-005 | 1.8600e-003 | 4.9000e-004 | 1.0000e-005 | 5.0000e-004 | 0.0000 | 1.6475 | 1.6475 | 1.0000e-004 | 0.0000 | 1.6496 |
| **Total** | **8.5000e-004** | **1.2400e-003** | **0.0117** | **2.0000e-005** | **1.8500e-003** | **1.0000e-005** | **1.8600e-003** | **4.9000e-004** | **1.0000e-005** | **5.0000e-004** | **0.0000** | **1.6475** | **1.6475** | **1.0000e-004** | **0.0000** | **1.6496** |

# 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 | | | | | |
| Unmitigated | 0.0654 | 0.2580 | 0.7417 | 1.3900e-003 | 0.0724 | 3.6200e-003 | 0.0760 | 0.0195 | 3.3300e-003 | 0.0228 | 0.0000 | 110.2264 | 110.2264 | 3.4800e-003 | 0.0000 | 110.2996 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mitigated | 0.0654 | 0.2580 | 0.7417 | 1.3900e-003 | 0.0724 | 3.6200e-003 | 0.0760 | 0.0195 | 3.3300e-003 | 0.0228 | 0.0000 | 110.2264 | 110.2264 | 3.4800e-003 | 0.0000 | 110.2996 |

## 4.2 Trip Summary Information

| | Average Daily Trip Rate | | | Unmitigated | Mitigated |
|---|---|---|---|---|---|
| Land Use | Weekday | Saturday | Sunday | Annual VMT | Annual VMT |
| General Light Industry | 57.58 | 57.58 | 0.00 | 190,667 | 190,667 |
| Other Asphalt Surfaces | 0.00 | 0.00 | 0.00 | | |
| Total | 57.58 | 57.58 | 0.00 | 190,667 | 190,667 |

## 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 |
| General Light Industry | 14.70 | 6.60 | 6.60 | 59.00 | 28.00 | 13.00 | 92 | 5 | 3 |
| Other Asphalt Surfaces | 14.70 | 6.60 | 6.60 | 0.00 | 0.00 | 0.00 | 0 | 0 | 0 |

| LDA | LDT1 | LDT2 | MDV | LHD1 | LHD2 | MHD | HHD | OBUS | UBUS | MCY | SBUS | MH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.349924 | 0.043941 | 0.182098 | 0.157229 | 0.084870 | 0.010191 | 0.024896 | 0.137303 | 0.000863 | 0.000799 | 0.004800 | 0.001058 | 0.002029 |

## 5.0 Energy Detail

### 4.4 Fleet Mix

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 | | | | | |
| NaturalGas Unmitigated | 0.0192 | 0.1742 | 0.1463 | 1.0500e-003 | | 0.0132 | 0.0132 | | 0.0132 | 0.0132 | 0.0000 | 189.6169 | 189.6169 | 3.6300e-003 | 3.4800e-003 | 190.7709 |
| Electricity Mitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 495.3106 | 495.3106 | 0.0224 | 4.6300e-003 | 497.2174 |
| Electricity Unmitigated | | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 495.3106 | 495.3106 | 0.0224 | 4.6300e-003 | 497.2174 |
| NaturalGas Mitigated | 0.0192 | 0.1742 | 0.1463 | 1.0500e-003 | | 0.0132 | 0.0132 | | 0.0132 | 0.0132 | 0.0000 | 189.6169 | 189.6169 | 3.6300e-003 | 3.4800e-003 | 190.7709 |

## 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 | | | | | |
| General Light Industry | 3.55329e+006 | 0.0192 | 0.1742 | 0.1463 | 1.0500e-003 | | 0.0132 | 0.0132 | | 0.0132 | 0.0132 | 0.0000 | 189.6169 | 189.6169 | 3.6300e-003 | 3.4800e-003 | 190.7709 |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | **0.0192** | **0.1742** | **0.1463** | **1.0500e-003** | | **0.0132** | **0.0132** | | **0.0132** | **0.0132** | **0.0000** | **189.6169** | **189.6169** | **3.6300e-003** | **3.4800e-003** | **190.7709** |

**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 | | | | | |
| Other Asphalt Surfaces | 0 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| General Light Industry | 3.55329e+006 | 0.0192 | 0.1742 | 0.1463 | 1.0500e-003 | | 0.0132 | 0.0132 | | 0.0132 | 0.0132 | 0.0000 | 189.6169 | 189.6169 | 3.6300e-003 | 3.4800e-003 | 190.7709 |
| **Total** | | **0.0192** | **0.1742** | **0.1463** | **1.0500e-003** | | **0.0132** | **0.0132** | | **0.0132** | **0.0132** | **0.0000** | **189.6169** | **189.6169** | **3.6300e-003** | **3.4800e-003** | **190.7709** |

## 5.3 Energy by Land Use - Electricity

**Unmitigated**

| | Electricity Use | | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|
| Land Use | kWh/yr | tons/yr | MT/yr | | | |
| General Light Industry | 1.70262e+006 | | 495.3106 | 0.0224 | 4.6300e-003 | 497.2174 |
| Other Asphalt Surfaces | 0 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | | **495.3106** | **0.0224** | **4.6300e-003** | **497.2174** |

**Mitigated**

| | Electricity Use | | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|
| Land Use | kWh/yr | tons/yr | MT/yr | | | |
| General Light Industry | 1.70262e+006 | | 495.3106 | 0.0224 | 4.6300e-003 | 497.2174 |
| Other Asphalt Surfaces | 0 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | | **495.3106** | **0.0224** | **4.6300e-003** | **497.2174** |

## 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 | | | | | |
| Unmitigated | 1.2156 | 2.0000e-005 | 2.2400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.2900e-003 | 4.2900e-003 | 1.0000e-005 | 0.0000 | 4.5400e-003 |
| Mitigated | 1.2156 | 2.0000e-005 | 2.2400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.2900e-003 | 4.2900e-003 | 1.0000e-005 | 0.0000 | 4.5400e-003 |

## 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 | 0.2781 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.9373 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 2.1000e-004 | 2.0000e-005 | 2.2400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.2900e-003 | 4.2900e-003 | 1.0000e-005 | 0.0000 | 4.5400e-003 |
| **Total** | **1.2156** | **2.0000e-005** | **2.2400e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | **0.0000** | **4.2900e-003** | **4.2900e-003** | **1.0000e-005** | **0.0000** | **4.5400e-003** |

**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 | 0.2781 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Consumer Products | 0.9373 | | | | | 0.0000 | 0.0000 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Landscaping | 2.1000e-004 | 2.0000e-005 | 2.2400e-003 | 0.0000 | | 1.0000e-005 | 1.0000e-005 | | 1.0000e-005 | 1.0000e-005 | 0.0000 | 4.2900e-003 | 4.2900e-003 | 1.0000e-005 | 0.0000 | 4.5400e-003 |
| **Total** | **1.2156** | **2.0000e-005** | **2.2400e-003** | **0.0000** | | **1.0000e-005** | **1.0000e-005** | | **1.0000e-005** | **1.0000e-005** | **0.0000** | **4.2900e-003** | **4.2900e-003** | **1.0000e-005** | **0.0000** | **4.5400e-003** |

# 7.0 Water Detail

## 7.1 Mitigation Measures Water

| | | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| Category | tons/yr | MT/yr | | | |
| Unmitigated | | 89.9386 | 1.5529 | 0.0373 | 134.1077 |
| Mitigated | | 89.9386 | 1.5526 | 0.0372 | 134.0836 |

## 7.2 Water by Land Use

**Unmitigated**

| | Indoor/Outdoor Use | | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|
| Land Use | Mgal | tons/yr | MT/yr | | | |
| General Light Industry | 47.5519 / 0 | | 89.9386 | 1.5529 | 0.0373 | 134.1077 |
| Other Asphalt Surfaces | 0 / 0 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | | **89.9386** | **1.5529** | **0.0373** | **134.1077** |

**Mitigated**

| | Indoor/Outdoor Use | | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|
| Land Use | Mgal | tons/yr | MT/yr | | | |
| General Light Industry | 47.5519 / 0 | | 89.9386 | 1.5526 | 0.0372 | 134.0836 |
| Other Asphalt Surfaces | 0 / 0 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | | **89.9386** | **1.5526** | **0.0372** | **134.0836** |

# 8.0 Waste Detail

## 8.1 Mitigation Measures Waste

**Category/Year**

| | | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|
| | tons/yr | MT/yr | | | |
| Mitigated | | 51.7586 | 3.0589 | 0.0000 | 115.9944 |
| Unmitigated | | 51.7586 | 3.0589 | 0.0000 | 115.9944 |

## 8.2 Waste by Land Use

**Unmitigated**

| | Waste Disposed | | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|
| Land Use | tons | tons/yr | MT/yr | | | |
| General Light Industry | 254.98 | | 51.7586 | 3.0589 | 0.0000 | 115.9944 |
| Other Asphalt Surfaces | 0 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | | **51.7586** | **3.0589** | **0.0000** | **115.9944** |

**Mitigated**

| | Waste Disposed | | Total CO2 | CH4 | N2O | CO2e |
|---|---|---|---|---|---|---|
| Land Use | tons | tons/yr | MT/yr | | | |
| General Light Industry | 254.98 | | 51.7586 | 3.0589 | 0.0000 | 115.9944 |
| Other Asphalt Surfaces | 0 | | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **Total** | | | **51.7586** | **3.0589** | **0.0000** | **115.9944** |

## 9.0 Operational Offroad

| Equipment Type | Number | Hours/Day | Days/Year | Horse Power | Load Factor | Fuel Type |
|---|---|---|---|---|---|---|
| Tractors/Loaders/Backhoes | 1 | 8.00 | 313 | 97 | 0.37 | Diesel |

**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 | | | | | |
| Tractors/Loaders/Backhoes | 0.0417 | 0.4116 | 0.3657 | 4.9000e-004 | | 0.0292 | 0.0292 | | 0.0268 | 0.0268 | 0.0000 | 44.4062 | 44.4062 | 0.0138 | 0.0000 | 44.6965 |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total | 0.0417 | 0.4116 | 0.3657 | 4.9000e-004 | | 0.0292 | 0.0292 | | 0.0268 | 0.0268 | 0.0000 | 44.4062 | 44.4062 | 0.0138 | 0.0000 | 44.6965 |

## 10.0 Vegetation