



**San Joaquin Valley Unified  
Air Pollution Control District**

**Lost Hills Oil Field Steam Generators  
Vintage Production California, LLC**

**Project Number S-1123645**

**Kern County**

**Initial Study and Draft  
Mitigated Negative Declaration**

**March 2013**

**SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT  
GOVERNING BOARD 2013**

**CHAIR:** SKIP BARWICK  
Vice Mayor, City of Tulare

**VICE CHAIR:** HUB WALSH  
Supervisor, Merced County

**MEMBERS:**

OLIVER L. BAINES III  
Councilmember, City of Fresno

HENRY JAY FORMAN, PH.D  
Appointed by Governor

TONY BARBA  
Supervisor, Kings County

HAROLD HANSON  
Councilmember, City of Bakersfield

SALLY J. BOMPREZZI  
Councilmember, City of Madera

WILLIAM O'BRIEN  
Supervisor, Stanislaus County

DENNIS BRAZIL  
Mayor, City of Gustine

ALEXANDER C. SHERRIFFS, M.D.  
Appointed by Governor

JUDITH G. CASE  
Supervisor, Fresno County

TOM WHEELER  
Supervisor, Madera County

DAVID COUCH  
Supervisor, Kern County

J. STEVEN WORTHLEY  
Supervisor, Tulare County

BOB ELLIOTT  
Supervisor, San Joaquin County

**AIR POLLUTION CONTROL OFFICER:**

SEYED SADREDIN



---

# INITIAL STUDY AND DRAFT MITIGATED NEGATIVE DECLARATION

## **Lost Hills Oil Field Steam Generators Vintage Production California, LLC**

### **Project Number S-1123645**

March 2013

Lead Agency: San Joaquin Valley Air Pollution Control District  
1990 East Gettysburg Avenue  
Fresno CA 93726-0244

Agency CEQA Contact: Jessica Willis, Air Quality Specialist  
Phone: (559) 230-6000  
Fax: (559) 230-6061

Agency Permits Contact: Richard Edgehill, Air Quality Engineer  
Phone: (661) 392-5500  
Fax: (661) 392-5585

Project Sponsor and Location: Vintage Production California, LLC  
9600 Ming Avenue  
Bakersfield, CA 93311

Project Contact: Jerry Frost, HES Advisor  
Phone: (661) 869-8000  
Fax: (661) 869-8059



TABLE OF CONTENTS

A. Introduction ..... 1

B. Purpose and Authority ..... 1

C. Project Background Information..... 2

    Project Description..... 2

    Project Construction ..... 4

    Process Description ..... 4

    Project Location ..... 5

    General Plan Designation and Zoning ..... 5

    Surrounding Land Uses and Setting ..... 5

    Other Public Agencies Whose Approval Is Required ..... 6

D. Decision to Prepare a Mitigated Negative Declaration..... 7

E. Environmental Factors Potentially Affected ..... 11

F. Determination ..... 11

G. Environmental Impact Checklist..... 12

    I. Aesthetics ..... 12

    II. Agricultural Resources ..... 13

    III. Air Quality ..... 17

    IV. Biological Resources ..... 26

    V. Cultural Resources ..... 34

    VI. Geology / Soils ..... 36

    VII. Greenhouse Gas Emissions..... 39

    VIII. Hazards and Hazardous Materials ..... 47

    IX. Hydrology / Water Quality..... 52

    X. Land Use / Planning ..... 56

    XI. Mineral Resources ..... 58

    XII. Noise ..... 59

    XIII. Population / Housing ..... 62

    XIV. Public Services ..... 63

    XV. Recreation ..... 65

    XVI. Transportation / Traffic ..... 66

    XVII. Utilities / Service Systems ..... 68

    XVIII. Mandatory Findings of Significance..... 71

H. Appendices ..... 73

    Appendix A. Acronyms and Abbreviations

    Appendix B. Mitigation Monitoring and Reporting Program

    Appendix C. Construction Emissions

    Appendix D. Engineering Evaluation

    Appendix E. Risk Management Review

    Appendix F. Reconnaissance-Level Biological Survey



---

## **A. Introduction**

Vintage Production California, LLC (VPC) is a Title V oil production company with facilities located in Kern County, California. VPC is proposing to expand its operations with the installation of nine (9) new field gas/natural gas-fired steam generators within VPC's Heavy Oil Western Stationary Source in the Lost Hills Oil Field, Kern County, California. The project is consistent with current operations and will allow for continued oil and gas related activities necessary to enhance oil recovery within the current operations of VPC. As presented in this environmental document, the San Joaquin Valley Unified Air Pollution Control District (District) has conducted an Initial Study and concludes that, with mitigation, the project will have a less than significant environmental impact.

## **B. Purpose and Authority**

The District has discretionary approval power over the project via its Permits Required Rule (Rule 2010) and New and Modified Stationary Source Review Rule (Rule 2201). No other agency is known to have discretionary approval over the project. As such, the District is the public agency having principal responsibility for approving the project and serves as Lead Agency (CCR §15367).

The California Environmental Quality Act (CEQA) requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The District adopted its *Environmental Review Guidelines* (ERG) in 2001. The ERG was prepared to comply with this requirement and is an internal document used to comply with CEQA.

The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
- Identify the ways that environmental damage can be avoided or significantly reduced.
- Prevent significant, avoidable damage to the environment by requiring changes in projects through use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
- 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.

Under CEQA the Lead Agency is required to:

- Conduct preliminary reviews to determine if applications are subject to CEQA [CCR §15060].



- 
- Conduct review to determine if projects are exempt from CEQA [CCR §15061].
  - Prepare Initial Studies for projects that may have adverse environmental impacts [CCR §15063].
  - Determine the significance of the environmental effects caused by the project [CCR §15064].
  - Prepare Negative Declarations or Mitigated Negative Declarations for projects with no significant environmental impacts [CCR §15070].
  - Prepare, or contract to prepare, EIRs for projects with significant environmental impacts [CCR §15081].
  - Adopt reporting or monitoring programs for the changes made to projects or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment [PRC §21081.6 & CCR §15097].
  - Comply with CEQA noticing and filing requirements.

### **C. Project Background Information**

#### **Project Description**

VPC is proposing to expand its operations with the installation of nine (9) new field gas/natural gas-fired steam generators in three (3) specified project sites within VPC's Heavy Oil Western Stationary Source (Facility S-1327) in the Lost Hills Oil Field. The District received an Authority to Construct (ATC) application for the installation of these nine (9) new steam generators, specifically: the modification of permits for five (5) previously permitted 85 MMBtu/hr field gas/natural gas-fired steam generators (units -141 through -145), the authorization of a new permit for one (1) new 85 MMBtu/hr field gas/natural gas-fired steam generator (unit -186), and the modification of permits for three (3) previously permitted 62.5 MMBtu/hr replacement field gas/natural gas-fired steam generators (units -162 through -164).

The six (6) 85 MMBtu/hr steam generators will be equipped with North American GLE low-NOx burner assemblies (or equivalent) capable of achieving NOx emissions of 7 ppmv at 3% O<sub>2</sub> (units -141 through -145 and unit -186). The three (3) 62.5 MMBtu/hr steam generators will be equipped with North American GLE low-NOx burner assemblies (or equivalent) capable of achieving NOx emissions of 9 ppmv at 3% O<sub>2</sub> with combustion of less than 50% Public Utility Commission (PUC) quality natural gas or 7 ppm NOx at 3% O<sub>2</sub> with combustion of greater than 50% Public Utility Commission (PUC) quality natural gas (units -162 through -164). All nine (9) steam generators will be equipped to achieve 25 ppmv CO at 3% O<sub>2</sub>, which satisfies the Technologically Feasible Best Available Control Technology (BACT) requirement of District Rule 2201. Units -141 through -145 and unit -186 will be authorized to burn only PUC quality natural gas with a sulfur content not exceeding 1.0 grain of sulfur per 100 standard cubic feet. Units -162 through -164 will also be authorized to burn non-PUC quality gas and will be equipped with a shared sulfur scrubber.



The District prepared an engineering evaluation (Project S-1123645) to evaluate the impacts from emissions associated with the proposed operations of the nine (9) new steam generators. Table 1 below provides a summary of the District's permitting actions for this project.

**Table 1: Summary of District Permitting Actions**

Unit #	Project Description	Development Options
-141 -142 -143 -144 -145	Five (5) new 85 MMBtu/hr steam generators	Option 1 – lower NOx limit from 9 ppmv to 7 ppmv at 3% O <sub>2</sub> for units -155 thru -158 with cancellation of PTOs for tank units -107, -111, -115, and steam generator unit-116  Option 2 – lower NOx limit from 9 ppmv to 7 ppmv at 3% O <sub>2</sub> for units -155 thru -158 with cancellation of PTOs for tank units -107, -111, -115, and steam generator units -116, -120, -137, -138
-162 -163 -164	Three (3) new 62.5 MMBtu/hr steam generators	NOx limit of 9 ppmv at 3% O <sub>2</sub>
-186	One (1) new 85 MMBtu/hr steam generator.	NOx limit of 7 ppmv at 3% O <sub>2</sub>

VPC is a major source as defined in Section 3.23 of District Rule 2201 (New and Modified Stationary Source Review Rule). Therefore, the installation and operation of stationary source equipment for this project is subject to District permit requirements. New and modified equipment must satisfy the requirements of New Source Review (NSR). The proposed steam generators trigger BACT requirements for NOx, SOx, PM10, CO, VOC, and CO<sub>2e</sub> emissions and offsets for NOx, PM10, and VOC emissions will be required.



VPC's Facility S-1327 received their Title V permit on December 31, 2012. Pursuant to Rule 2520 (Federally Mandated Operating Permits), Section 3.20, the project is classified as a Title V significant modification and will be processed with a Certificate of Conformity. As such, prior to the issuance of the ATCs, the project must be submitted to the US Environmental Protection Agency (US EPA) for a 45-day comment period. Thus, VPC will apply to administratively amend the Title V operating permit to include the requirements of the ATCs issued with the project.

### **Project Construction**

Construction of the steam generators is expected to begin in 2013 with full buildout expected to occur by 2016. The steam generators will be sited in areas where there will be minimal "new" disturbance of soil, native vegetation, and habitat. Construction activities include site preparation (concrete foundations), installation of nine (9) steam generators and associated piping and electrical systems, and construction worker commutes.

Approximately 6.4 acres of soil are expected to be disturbed in connection with construction activities, most of which is previously disturbed surface from other oilfield related activities. All of the surface area disturbed by construction is expected to remain as part of the plant site after construction is complete. The project areas anticipate approximately two (2) vehicle access points during and after construction. Temporary equipment staging areas will become part of the plant site and be set aside for employee and visitor vehicle parking.

There will be few if any new permanent employees; existing VPC staff and contract workers will be reassigned to this location from other positions at the Lost Hills Oil Field. It is expected that approximately 26 workers will be needed during peak construction activities.

### **Process Description**

Steam generators are an integral part of normal steamflood operations where steam is injected into the subsurface formation to aid in oil recovery. A steam generator is a device that uses a heat source to boil liquid water and convert it into its vapor phase, referred to as steam. The heat may be derived from the combustion of a fuel. Oilfield steam generators are designed to produce steam for injection into heavy oil reservoirs to enhance the recovery of viscous crude oils. Steam leaves the steam generation plant and enters the field distribution system. The distribution system transports the steam to measurement and control equipment located at each steam injector. There the steam is metered and controlled to achieve the target injection rate. The proposed steam generators will be used for steam enhanced oil production at various specified locations. Depending on the location, the proposed steam generators will provide steam to wells permitted under existing ATC permit numbers S-1327-110 and S-1327-161.





**Project Location**

The steam generators will be located in three (3) specified locations within the Lost Hills Oil Field, as designated by the California Department of Oil, Gas, and Geothermal Resources (DOGGR). Lost Hills Oil Field is located within Kern County, California, which is the San Joaquin Valley Air Basin (see Figure 1). Table 2 below identifies the specified project areas in which the steam generators will be located.

The Lost Hills Oil Field covers an area of approximately 31.25 square miles and is located approximately 45 miles northwest of the City of Bakersfield and two (2) miles northwest of the unincorporated community of Lost Hills (see Figure 2). The project is located approximately six (6) miles northwest of Lost Hills. Figure 3 shows the project areas within the Lost Hills Oil Field.

**Table 2: Location of Proposed Project**

<b>Project Site</b>	<b>Section</b>	<b>Township</b>	<b>Range</b>	<b>APN</b>
North	34	25 S	20 E	044-070-45, -67
Central	2	26 S	20 E	057-201-11
South	11	26 S	20 E	057-202-16

**General Plan Designation and Zoning**

The project sites are currently designated in the Kern County 2009 General Plan as Intensive Agriculture (Code 8.1) and Mineral and Petroleum (Code 8.4). The project sites are currently zoned as Exclusive Agriculture (Zone A). Pursuant to Section 19.12.020(E) of the Zoning Ordinance of Kern County, oil production activities, including steam generators (excluding coal fired), are a permitted use, by right, in Zone A.

**Surrounding Land Uses and Setting**

The areas immediately surrounding the project sites are currently zoned Exclusive Agriculture (Zone A). Various land uses surround the project sites. Depending on location, these uses include agriculture, solid waste disposal (composting), and oilfield operations. Table 3, Figures 4 and Figure 5 below identify surrounding land uses, general plan land use designations and zoning, respectively.



**Table 3: Land Use Designation, Zoning and Surrounding Areas**

<b>Project Site</b>	<b>General Plan Designation</b>	<b>Zoning</b>	<b>Surrounding Land Uses</b>
1 - North	8.1 – Intensive Agriculture 8.4 – Mineral & Petroleum	Zone A (Exclusive Ag)	North– Intensive Agriculture East – Intensive Agriculture Southwest – Solid Waste (composting) Disposalg
2 - Central	8.1 – Intensive Agriculture 8.4 – Mineral & Petroleum	Zone A (Exclusive Ag)	North – Intensive Agriculture East – Intensive Agriculture West – Mineral & Petroleum
3 - South	8.4 – Mineral & Petroleum	Zone A (Exclusive Ag)	East – Mineral & Petroleum South – Mineral & Petroleum West – Mineral & Petroleum and Extensive Ag.

Lost Hills Elementary School and A.M. Thomas Middle School are located southeast of the project in the unincorporated community of Lost Hills. The District has verified that the project is not within 1,000 feet of the outer boundary of either school. Therefore, the public notification requirement of California Health and Safety Code 42301.6 is not applicable to the project.

**Other Public Agencies Whose Approval Is Required**

***California Air Resources Board (ARB)***

Pursuant to District Rule 2201, Section 3.18 the project is classified as a Federal Major Modification. As such, the project must be submitted to the ARB for a 30-day comment period.

***California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR)***

The DOGGR has the authority to order the re-abandonment of previously abandoned wells. Prior to construction, VPC will provide the District with documentation demonstrating that maps identifying all wells in the vicinity of the steam generator sites have been submitted to DOGGR for review.

***California Department of Fish and Wildlife (CDFW)***

The CDFW has regulatory authority over projects that could result in the “take” of any species identified by the State of California as threatened or endangered. If the project



would result in the take of any identified species, an Incidental Take Permit would be required.

### ***California Regional Water Quality Control Board (RWQCB)***

The project will result in no waste or water discharge; hence no approvals from the RWQCB will be required. Also, no streambed or lake alterations will occur as a result of the project.

### ***Kern County Planning Department***

The project is within VPC's existing surface boundaries in the Lost Hills Oil Field. The proposed steam generators are permitted uses under the existing county land use designations and zoning. As such, the Kern County Planning Department requires only the issuance of grading and building permits. All applicable building permits from the Kern County Planning and Building Department will be acquired prior to commencement of site work. Currently no other specific project-related items have been identified which will require further approval by the Kern County Planning Department.

### ***US Environmental Protection Agency (US EPA)***

As the project is classified as a Title V major modification to be processed with a Certificate of Conformity, it must be submitted to the US EPA for a 45-day comment period. VPC must apply to administratively amend the Title V operating permit to include the requirements of the ATCs issued with the project.

### ***US Fish and Wildlife Service (USFWS)***

The USFWS has regulatory authority over projects that could result in the "take" of any species identified as threatened or endangered. If the project would result in the incidental take of any federally identified species, an Incidental Take Permit and/or a Habitat Conservation Plan would be required.

## **D. Decision to Prepare a Mitigated Negative Declaration**

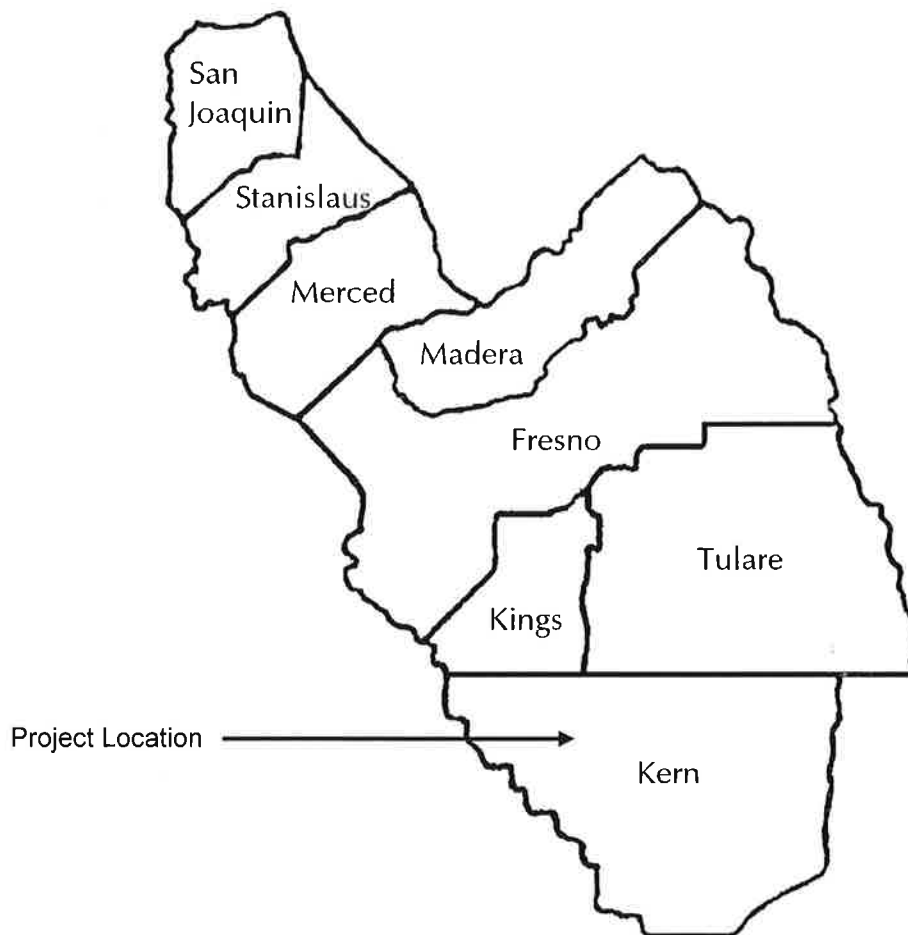
Consistent with CEQA requirements the District prepared an Initial Study that evaluated potential environmental effects of the project. The District has determined that with mitigation the project will have a less than significant impact on the environment. The District concludes that a Mitigated Negative Declaration would be appropriate for the project. Project design elements and mitigation measures that reduce the project's impact on the environment would be enforced through:

- District permit conditions and offset fees;
- Incorporation of Best Performance Standards (BPS);



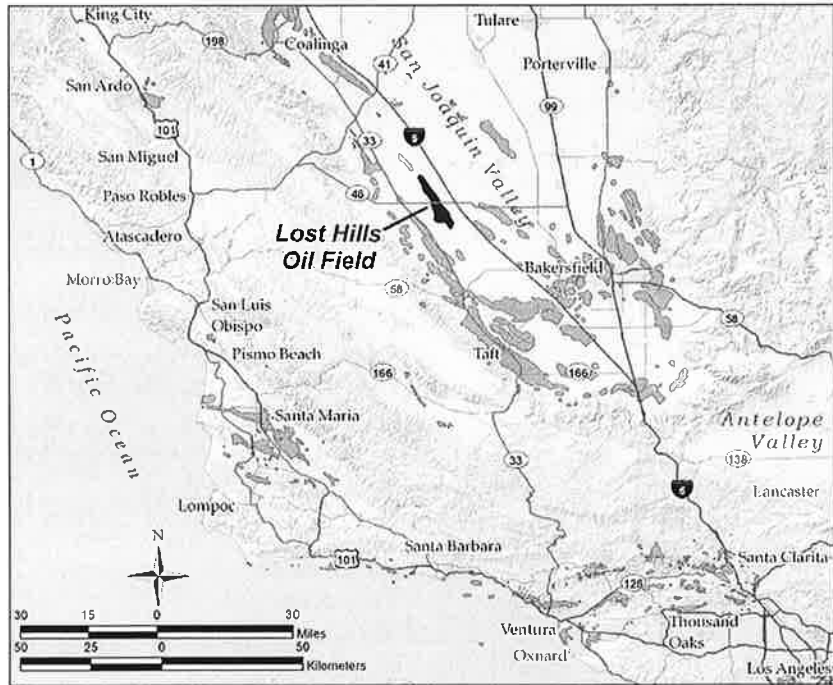
- Corrective actions to be taken to reduce impacts if species known to be protected are identified within the project sites;
- Cessation of construction activities if cultural/archaeological remains are found; and
- Compliance with requirements as deemed necessary by Responsible Agencies.

**Figure 1. Regional Location within the SJVAB**



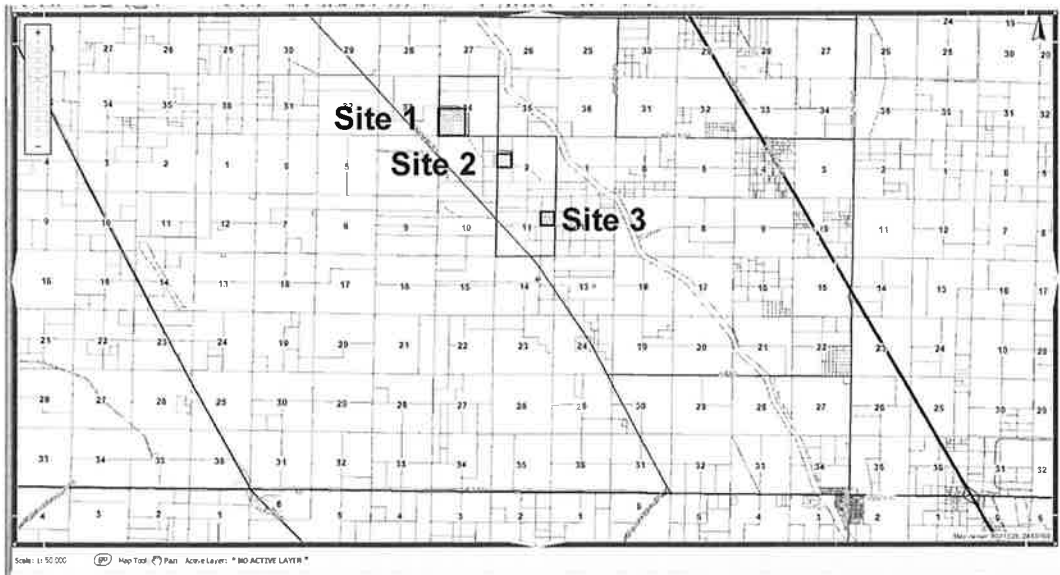


**Figure 2: Lost Hills Oilfield**



Map provided by Wikipedia. February 2013. Website: [http://en.wikipedia.org/wiki/Lost\\_Hills\\_Oil\\_Field](http://en.wikipedia.org/wiki/Lost_Hills_Oil_Field)

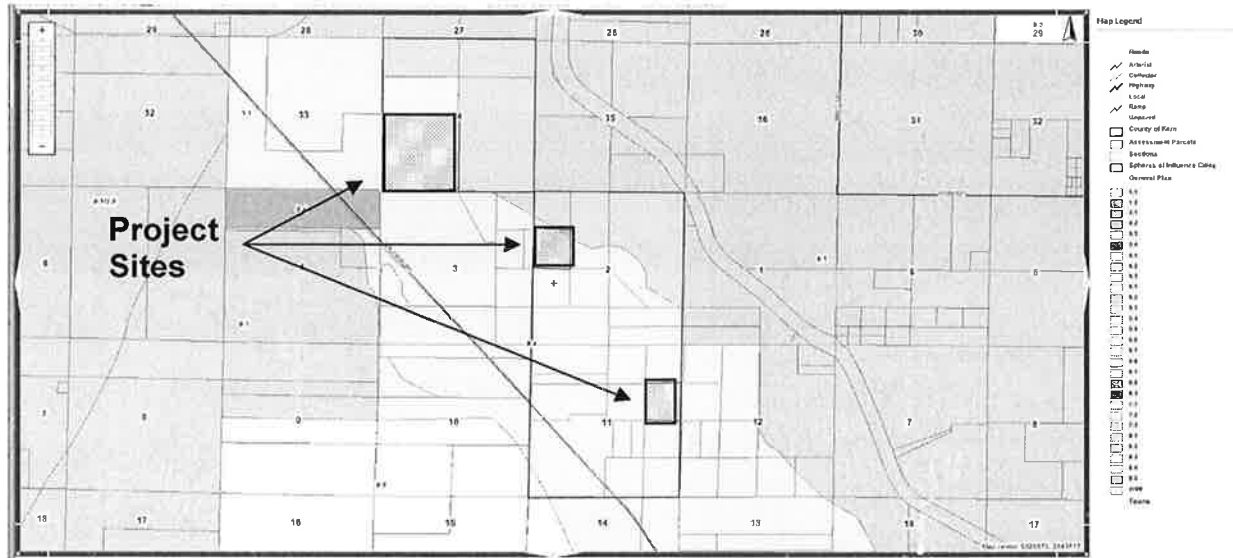
**Figure 3: Project Location and Vicinity Map**



Map provided by Kern County GIS. February 2013. Website: <http://www.co.kern.ca.us/>

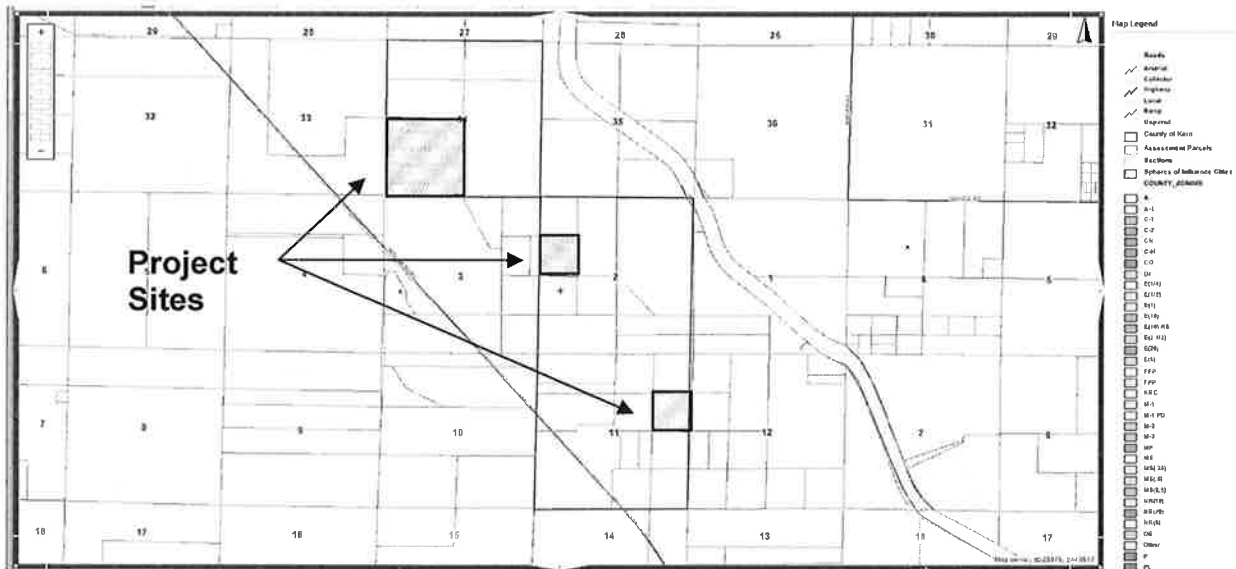


**Figure 4: General Plan Land Use Designation**



Map provided by Kern County GIS. February 2013. Website: <http://www.co.kern.ca.us/>

**Figure 5: Kern County Zoning**



Map provided by Kern County GIS. February 2013. Website: <http://www.co.kern.ca.us/>



**E. Environmental Factors Potentially Affected**


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

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Aesthetics                      | <input type="checkbox"/> Agriculture and Forestry Resources | <input checked="" type="checkbox"/> Air Quality             |
| <input checked="" type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources                 | <input type="checkbox"/> Geology / Soils                    |
| <input type="checkbox"/> Greenhouse Gas Emissions        | <input type="checkbox"/> Hazards & Hazardous Materials      | <input type="checkbox"/> Hydrology / Water Quality          |
| <input type="checkbox"/> Land Use / Planning             | <input type="checkbox"/> Mineral Resources                  | <input type="checkbox"/> Noise                              |
| <input type="checkbox"/> Population / Housing            | <input type="checkbox"/> Public Services                    | <input type="checkbox"/> Recreation                         |
| <input type="checkbox"/> Transportation / Traffic        | <input type="checkbox"/> Utilities / Service Systems        | <input type="checkbox"/> Mandatory Findings of Significance |

**F. Determination**

I certify that the Project was independently reviewed and analyzed and that this document reflects the independent judgment of the District.

- I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION has been prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature:   
 Printed Name: David Warner  
 Title: Director of Permit Services

Date: MAR 29 2013



**G. Environmental Impact Checklist**

<b>I. Aesthetics</b> Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Have a substantial adverse effect on a scenic vista?				<b>X</b>
b) Substantially damage scenic resources, including, but not limited to trees, rock, outcroppings, and historic buildings within a state scenic highway?				<b>X</b>
c) Substantially degrade the existing visual character or quality of the site and its surroundings?				<b>X</b>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				<b>X</b>

**I. AESTHETICS**

**Scenic Vistas and Visual Character (a-d)**

**Conclusion:** The project will not have an impact on scenic vistas, damage scenic resources, degrade visual character in and around the sites or create new sources of light or glare.

**Discussion:** The project is located within the boundaries of the existing Lost Hills Oil Field as designated by DOGGR which historically has allowed for the exploration and production of oil. The project is consistent with current and surrounding land uses. No scenic vistas or highways exist on the project site or on the properties adjacent to the project site. No scenic resources such as rock outcroppings, trees, or historic buildings exist on the project site. The absence of scenic vistas and other scenic resources on or near the project site precludes the possibility of potential adverse impacts.

The project is located approximately six (6) miles north of the unincorporated community of Lost Hills. Existing lighted oilfield sources are located between the project site and Lost Hills. Ground preparation activities are expected to be conducted during daylight hours only. Minimal operational lighting may be installed at the site and will be consistent with the existing operations. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that construction and operation of the project would have a detrimental impact on aesthetics.

**Mitigation:** None required.





**References**

California Department of Transportation. *Officially Designated State Scenic Highways*.  
 Website: [http://www.dot.ca.gov/hq/LandArch/scenic\\_highways/index.htm](http://www.dot.ca.gov/hq/LandArch/scenic_highways/index.htm)

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

II. Agricultural Resources	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
<p>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1197) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agricultural and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resource Board.</p> <p>Would the Project</p>				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				<b>X</b>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?			<b>X</b>	
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220 (g)), timberland (as defined by Public Resource Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104 (g))?				<b>X</b>
d) Result in the loss of forest land or conversion of forest land to non-forest use?				<b>X</b>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?				<b>X</b>



## II. AGRICULTURAL RESOURCES

### Farm Land (a, e)

**Conclusion:** The project will not conflict with existing zoning and will have a less than significant impact on agricultural lands.

**Discussion:** The project is located within the boundaries of the existing Lost Hills Oil Field as designated by DOGGR. The exploration and production of oil have historically been allowed on and near the project sites. The project is consistent with current and surrounding land uses. As seen in Figures 4 and 5, the project sites are currently zoned as Limited Agriculture (Zone A) and are currently designated in the Kern County 2009 General Plan as Intensive Agriculture (Code 8.1) and Mineral and Petroleum (Code 8.4). Pursuant to Section 19.14.020(E) of the Zoning Ordinance of Kern County, steam generators (excluding coal fired) and oilfield operations, are a permitted use, by right, in Zone A.

Table 4 below, identifies the farmland map designation by project site. The project sites have been designated by the Department of Conservation as the following four (4) land types: grazing land, nonagricultural and natural vegetation, semi-agricultural and rural commercial, and vacant or disturbed land. The project does not include the conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance into non-agricultural uses. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that construction and operation of the project would have a significant impact on farm lands.

**Table 4: Important Farmland Map Designations \***

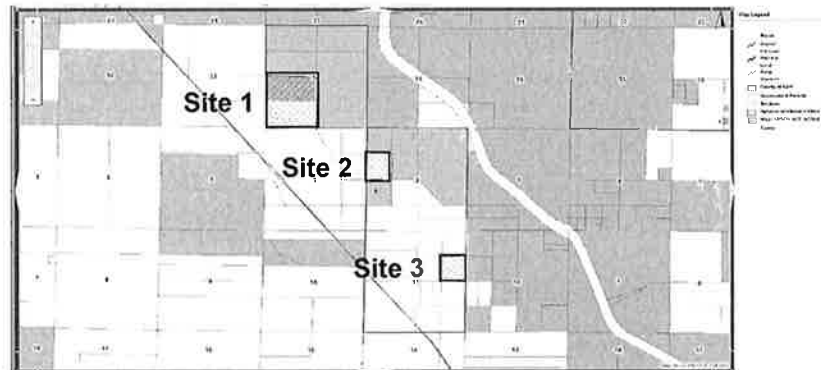
Project Site	APN	Farmland Map Designation *
1	044-070-45	Grazing
	044-070-67	Nonagricultural & Natural Vegetation; Vacant or Disturbed
2	057-201-11	Nonagricultural & Natural Vegetation; Semi-Agricultural & Rural Commercial
3	057-202-16	Vacant or Disturbed Land
* As seen in the map "Rural Land Mapping Edition, Kern County Important Farmland, 2010". Website: <a href="ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/ker10_west.pdf">ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/ker10_west.pdf</a>		



## Williamson Act Land

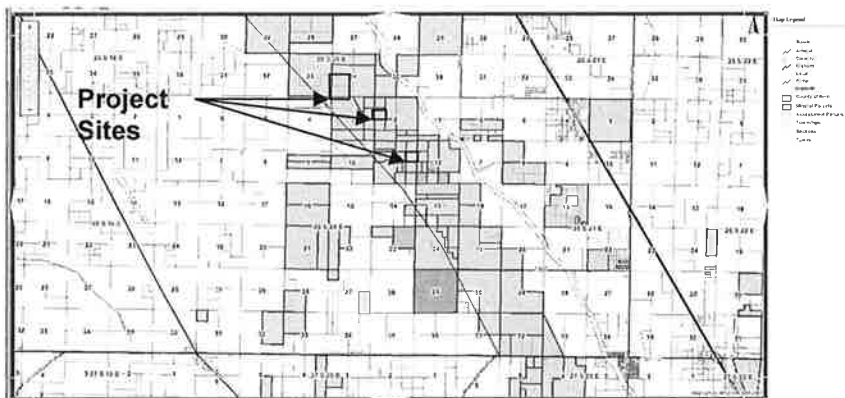
The project sites are within the boundaries of the existing Lost Hills Oil Field as designated by DOGGR. The exploration and production of oil have historically been allowed on and near the project area. Figure 6 below identifies Williamson Act properties in the project vicinity. The map identifies the northern half of the Project Site 1 as having active Williamson Act contracts. However, as seen in Figure 7 below, Kern County has designated all project sites as mineral parcels and all have land use designation for agricultural uses. Pursuant to Kern County Zoning Ordinance, oilfield operations are a permitted use by right on land zoned for agriculture. As such, the County considers oil and gas activity to be a compatible use under the Williamson Act. Oil and gas activity is allowed intermingled and adjacent to agriculture activity without triggering Williamson Act issues. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that construction and operation of the project would conflict with existing zoning for agricultural use or a Williamson Act contract.

**Figure 6. Kern County Williamson Act Lands**



Map provided by Kern County GIS. February 2013. Website: <http://www.co.kern.ca.us/>

**Figure 7. Kern County Designated Mineral Parcels**



Map provided by Kern County GIS. February 2013. Website: <http://www.co.kern.ca.us/>



---

### **Forest Lands (c, d, e)**

**Conclusion:** The project will not conflict with existing zoning and will not have an impact on forest lands.

**Discussion:** The project is within the boundaries of the existing Lost Hills Oil Field as designated by DOGGR. The exploration and production of oil have historically been allowed on the project sites. The project sites are currently zoned as Limited Agriculture (Zone A) and are currently designated in the Kern County 2009 General Plan as Intensive Agriculture (Code 8.1) and Mineral and Petroleum (Code 8.4). Pursuant to Section 19.14.020(E) of the Zoning Ordinance of Kern County, steam generators (excluding coal fired), are a permitted use, by right, in Zone A. No forest lands are located on the project sites. The project is consistent with current and surrounding land uses and will not convert forest lands to non-forest uses. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that construction and operation of the project would have an impact on forest lands.

**Mitigation:** None required.

### **References**

California Department of Conservation. *Farmland Mapping & Monitoring Program*. Website: <http://www.conservation.ca.gov/DLRP/fmmp/Pages/Index.aspx>

California Department of Conservation. *Farmland Mapping & Monitoring Program FMMP Map Products*. Website: <http://www.conservation.ca.gov/dlrp/fmmp/products/Pages/FMMP-MapProducts.aspx>

California Department of Conservation. *FMMP Map Products*. Website: [http://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/ker10\\_west.pdf](http://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/ker10_west.pdf)

County of Kern. *2009 General Plan*. Website: <http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGP.pdf>.

County of Kern. *Engineering, Surveying and Permit Services*. Website: <http://esps.kerndsa.com/gis>.

County of Kern. *Planning and Community Development*. Website: <http://pcd.kerndsa.com/planning/latest-planning-news/257-zoning-ordinance>.

Frost, Jerry, Operations Manager. Vintage Production California, LLC. Electronic and Telephone Communication.



III. Air Quality		Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the Project:					
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.					
Would the Project:					
a)	Conflict with or obstruct implementation of the applicable air quality plan?		X		
b)	Violate any air quality standard or contribute substantially to an existing or projected air quality violation?		X		
c)	Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?		X		
d)	Expose sensitive receptors to substantial pollutant concentrations?			X	
e)	Create objectionable odors affecting a substantial number of people?			X	

### III. AIR QUALITY

#### Air Quality Plans and Standards (a, b, c)

**Conclusion:** The project, with the incorporation of mitigation measures, will have a less than significant impact on air quality.

**Discussion:** The District is tasked with implementing programs and regulations by the Federal Clean Air Act and the California Clean Air Act and has prepared plans to attain federal and state Ambient Air Quality Standards (AAQS). The District has established thresholds of significance for criteria pollutant emissions, which are based on federal and District New Source Review (NSR) offset requirements for stationary sources.

Stationary sources in the District are subject to some of the toughest regulatory requirements in the nation. Emission reductions achieved through implementation of federal offset requirements are a major component of the District's air quality plans. Thus, projects with emissions below the thresholds of significance for criteria pollutants would be determined not to conflict or obstruct implementation of the District's air quality plans.

Emissions from operational non-permitted equipment and activities are evaluated separate from permitted equipment and activities. A project would be determined to



have a significant long-term impact on air quality if the emissions sum for any criteria pollutant exceeds its respective threshold of significance. The District's thresholds of significance for criteria pollutant emissions and their application are presented below in Table 5.

**Table 5: District Thresholds of Significance for Criteria Pollutants**

<b>Pollutant</b>	<b>Construction Emission Threshold (tpy*)</b>	<b>Permitted Operational Emission Threshold (tpy)</b>	<b>Non-Permitted Operational Emission Threshold (tpy)</b>
NOx	10	10	10
SOx	27	27	27
PM <sub>10</sub>	15	15	15
CO	100	100	100
ROG (VOC)	10	10	10
* tpy = tons per year			

Project Details

As discussed in Section C. Project Background Information (pages 2-5), VPC proposes to expand its operations in the Kern Front Oil Field with the installation of nine (9) new field gas/natural gas-fired steam generators. The nine (9) steam generators are necessary to produce steam for existing and future thermally enhanced oil recovery (TEOR) operations. VPC intends to stage construction of the project over the next three (3) years. The District prepared an engineering evaluation (Project S-1123645) to evaluate the air quality impacts from emissions associated with the proposed operations of the steam generators.

Construction Emissions

The steam generators will be sited in areas where there will be minimal “new” disturbance of soil, native vegetation, and habitat. Construction activities include site preparation (concrete foundations), installation of nine (9) steam generators and associated piping and electrical systems, and construction worker commutes. Construction activities are expected to begin in 2013 with full buildout expected to occur by 2016. VPC anticipates beginning construction of four (4) steam generators in 2013; three (3) steam generators in 2014; and two (2) steam generators in 2015. Table 6 below presents the estimated annual construction emissions.

As demonstrated in Table 6, construction related emissions do not exceed the District's thresholds of significance and, as such, mitigation measures are not required.



Therefore, the District concludes that project related construction emissions will have a less than significant impact on air quality.

**Table 6 –Construction Emissions <sup>a</sup>**

	NOx (tons)	PM <sub>10</sub> <sup>b</sup> (tons)	CO (tons)	VOC (tons)
Construction Emissions – 2013	4.8	1.2	3.1	0.4
Construction Emissions – 2014	6.4	0.6	5.0	0.6
Construction Emissions – 2015	4.2	0.3	3.3	0.4
Significance Thresholds	10.00	15.00	100.00	10.00
Exceeds Significance Threshold? <sup>c</sup>	No	No	No	No
<sup>a</sup> To present a worst-case scenario, the emissions presented include construction of the steam generators and the wells that they would be providing with steam. Operational emissions of the wells were evaluated under Project S-1110574 which was finalized in April 2011. <sup>b</sup> Emissions include both fugitive dust and equipment exhaust emissions. <sup>c</sup> Thresholds as compared to the year with highest construction emissions.				

Operational Emissions

*Mobile Source Emissions:* The project will be maintained and manned by existing VPC personnel and contractors. Therefore, the project will not result in any new mobile source emissions.

*Stationary Source Emissions:* Steam generators are capable of generating NOx, SOx, PM<sub>10</sub>, CO, and VOC emissions. The District received an ATC application for the installation and operation of the nine (9) new steam generators. The District prepared engineering evaluation S-1123645 which demonstrates that, with the incorporation of design elements and permit conditions, potential impacts from project related criteria pollutant emissions would be mitigated to a less than significant impact.

VPC has requested two (2) development options for the installation of five (5) of the proposed 85 MMBtu/hr steam generators (units -141 through -145). These options, identified below, allow the applicant some flexibility in overall project design while providing options for compliance with the District’s requirements for BACT.

- Option 1: Installation of five (5) 85 MMBtu/hr field gas/natural gas-fired steam generators equipped to achieve 7 ppmv NOx at 3% O<sub>2</sub>, with cancellation of Permits to Operate (PTOs) for tank units -107, -111, -115, and steam generator unit-116.



Option 2: Installation of five (5) 85 MMBtu/hr field gas/natural gas-fired steam generators equipped to achieve 7 ppmv NO<sub>x</sub> at 3% O<sub>2</sub>, with cancellation of PTOs for tank units -107, -111, -115, and steam generator units-116, -120, -137, -138.

As such, a total of ten (10) ATCs will be issued for units -141 through -145 and one (1) ATC each for units -162 through -164 and -186. Although fourteen (14) ATCs will be issued, only nine (9) steam generators will be authorized to be installed. The emissions limits established in the permit conditions represent the worst-case emissions scenario. Buildout of either options would not exceed these limits.

**Table 7 – Operational Emissions**

	NO <sub>x</sub> * (tpy)	SO <sub>x</sub> (tpy)	PM <sub>10</sub> * (tpy)	CO (tpy)	VOC * (tpy)
Project Stationary Source Emissions (Option 1)	17.18	9.05	11.34	41.93	7.26
Project Stationary Source Emissions (Option 2)	11.42	3.81	8.91	30.42	6.30
Significance Thresholds	10.00	27.00	15.00	100.00	10.00
Exceeds Significance Thresholds	Yes	No	No	No	No
Offsets Required / ERC Surrendered (Option 1) ‡	30.96	0.00	16.93	0.00	10.88
Offsets Required / ERC Surrendered (Option 2) ‡	22.33	0.00	13.29	0.00	9.44
<p>* The facility exceeds offset thresholds prior to project implementation; therefore, emissions must be fully offset.</p> <p>‡ Offsets required were calculated using net emissions from the operations of the new generators plus the cancellation of existing tank and steam generator permits. Offset requirements were calculated at a ratio of 1.5 to 1.</p>					

Project related criteria pollutant emissions exceeding the District's thresholds of significance are required to be offset. The requirement is enforced through permit conditions requiring the surrendering of emission reduction credits (ERCs). Table 7 above identifies the criteria pollutant emissions and the offsets required for the steam generators under each netting option. As demonstrated below, Option 1 represents the worst-case emissions scenario for the buildout of the project. Under Option 1 annual net increases in emissions from the project are: 17.18 tpy NO<sub>x</sub>, 9.05 tpy SO<sub>x</sub>, 11.34 tpy





PM<sub>10</sub>, 41.93 tpy CO, and 7.26 tpy VOC. VPC will be required to surrender ERCs to offset operational emissions by an estimated 30.96 tons of NO<sub>x</sub>, 16.93 tons of PM<sub>10</sub>, and 10.88 tons of VOC if the project is developed under Option 1 and 22.33 tons of NO<sub>x</sub>, 13.29 tons of PM<sub>10</sub>, and 9.44 tons of VOC if developed under Option 2.

The District concludes that through a combination of project design features and permit conditions, project related operational emissions will have a less than significant impact on air quality.

### Air Quality Plans

As summarized in Table 6, project related construction emissions are below the District's thresholds of significance. As summarized in Table 7, operational stationary source emissions will be mitigated to below the District's thresholds by surrendering ERCs. The ERCs must be surrendered to the District prior to the commencement of operation of the equipment proposed under the ATC. As such, the project does not conflict with the implementation strategy of the San Joaquin Valley Regional Air Quality Management Plans (2008 PM 2.5 Plan; 2007 8-Hour Ozone Plan; 2007 PM<sub>10</sub> Maintenance Plan; 2006 PM<sub>10</sub> SIP; 2004 1-Hour Ozone SIP; 2003 PM<sub>10</sub> SIP). Therefore, no further mitigation measures are required.

### Air Quality Standards

Determination of whether project emissions would violate any AAQS is largely a function of air quality dispersion modeling. If project emissions would not exceed state and federal AAQS at the project's property boundaries, the project would be considered to not violate any air quality standard or contribute substantially to an existing or projected air quality violation. The District performed an Ambient Air Quality Analysis based on emissions from Option 1, which represents the worst-case scenario, to determine whether project related criteria pollutant emissions have the potential to contribute to the possible violation of existing air quality standards. The analysis indicates that project related criteria pollutant emissions of NO<sub>x</sub>, SO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>, and CO will not exceed the US EPA significance level. Therefore, the project is not expected to cause or make worse a violation of an air quality standard.

### Cumulative Impacts

By its very nature, air pollution is largely a cumulative impact. The nonattainment status of regional pollutants is a result of past and present development. Future attainment of state and federal AAQS is a function of successful implementation of the District's attainment plans. Consequently, the District's application of thresholds of significance for criteria pollutants is relevant to the determination of whether a project's individual emissions would have a cumulatively significant impact on air quality. If a project's emissions is less than the thresholds of significance for criteria pollutants the project would not be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the District is in non-attainment under the applicable federal



or state AAQS. As discussed above, project emissions are below the District's thresholds of significance for criteria pollutant emissions. Therefore, project related emissions would have a less than significant impact on air quality.

**Mitigation:** To ensure compliance with District NSR requirements for offsetting operational emissions, the following measures will be made conditions of project approval and will be included in the project ATCs:

For Units -141 through -145 (Option 1) the following condition will be included in the ATC:

- **AIR-1** – *Prior to operating equipment under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,353 lb/quarter; PM10: 619 lb/quarter, and VOC: 144 lb/quarter. Offsets include the applicable offset ratio specified in Section 4.8 Rule 2201 (as amended 4/21/11). PM10 may be offset using SOx at an interpollutant offset ratio of 1.0 tons SOx/ton PM10. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act]*

For Units -141 through -145 (Option 2) the following condition will be included in the ATC:

- **AIR-2** – *Prior to operating equipment under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 490 lb/quarter and PM10: 255 lb/quarter. Offsets include the applicable offset ratio specified in Section 4.8 Rule 2201 (as amended 4/21/11). PM10 may be offset using SOx at an interpollutant offset ratio of 1.0 tons SOx/ton PM10. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act]*

For Units -162-1 through -164-1, the following condition will be included in the ATC:

- **AIR-3** – *Prior to operating equipment under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 2,256 lb/quarter; PM10: 1,560 lb/quarter; and VOC: 1,129 lb/quarter. Offsets include the applicable offset ratio specified in Section 4.8 Rule 2201 (as amended 4/21/11). PM10 may be offset using SOx at an interpollutant offset ratio of 1.0 tons SOx/ton PM10. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act]*

For Unit -186-0 the following condition will be included in the ATC:

- **AIR-4** – *Prior to operating equipment under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,943 lb/quarter; PM10: 692 lb/quarter; and VOC: 1,336 lb/quarter. Offsets include the applicable offset ratio specified in Section 4.8 Rule*



---

*2201 (as amended 4/21/11). PM10 may be offset using SOx at an interpollutant offset ratio of 1.0 tons SOx/ton PM10. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act]*

### **Health Risk Impacts (d)**

**Conclusion:** The project would not expose sensitive receptors to substantial pollutant concentrations.

**Discussion:** Under the Clean Air Act, toxic air contaminants (TACs) are airborne pollutants that may be expected to result in an increase in mortality or serious illness or which may pose a present or potential hazard to human health. Potential health impacts from TACs include long-term health effects such as cancer, birth defects, neurological damage, or genetic damage; or short-term effects such as eye watering, respiratory irritation, throat pain and headaches. TACs may also be referred to as hazardous air pollutants (HAPs). There are currently more than 900 substances classified by the US EPA and California Air Resources Board (ARB) as TACs. Air Quality problems occur when sources of TACs and sensitive receptors are located in proximity to one another.

TACs can be separated into carcinogens and non-carcinogens based on the nature of the physiological degradation associated with exposure to the pollutant. For regulatory purposes, carcinogens are assumed to have no safe threshold below which health impacts would not occur. Cancer risk is expressed as excess cancer cases per one million exposed individuals.

Non-carcinogens differ in that there is generally assumed to be a safe level of exposure below which no negative health impact would occur. These levels are determined on a pollutant-by-pollutant basis. Acute and chronic exposure to non-carcinogens is expressed by using a Hazard Index, which is the ratio of expected exposure levels to acceptable health-acceptable exposure levels.

The Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly) was enacted in 1987, and requires stationary sources to report the type and quantities of certain substances routinely released into the air. The goals of AB 2588 are to collect emission data, to identify facilities having localized impacts, to ascertain risks to acceptable levels. AB 2588 requires air districts to establish the prioritization score threshold at which facilities are required to prepare a health risk assessment (HRA). In establishing priorities, an air district must consider potency, toxicity, quantity, and volume of hazardous materials released from the facility, the proximity of the facility to potential receptors, and any other factors that the district determines may indicate that the facility may pose a significant risk.

In implementing its responsibilities under AB 2588, the District Governing Board adopted notification procedures, including prioritization score thresholds, for notifying the public of significant carcinogenic and non-carcinogenic health risks. The District



---

concludes that use of the existing prioritization score thresholds to establish thresholds of significance under CCR §15064.7 is an appropriate and effective means of promoting consistency in significance determinations within the environmental review process. The District's thresholds of significance for determining whether project emissions would expose sensitive receptors to substantial pollutant concentrations are:

- Carcinogens: Probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds ten (10) in one million.
- Non-Carcinogens: Ground Level concentrations of non-carcinogenic TACs would result in a Hazard Index greater than one (1) for the MEI.

An HRA is not required for a project with a prioritization score of less than one (1).

Potentially hazardous materials are not expected to be associated with the steam generator sites. The District performed a Risk Management Review (RMR) analysis to determine possible health impacts from the project's permitted stationary source emissions on the nearest sensitive receptors. The RMR demonstrates that the prioritization score for the project is less than one (1.0); however, the facility score was greater than one (1.0). As such, a refined analysis was required. The refined analysis indicates that the project's acute and chronic hazard indices are both below one (1.0) and the cancer exposure risk for the facility is less than one (1.0) in a million. Therefore, the project is approved without Toxic Best Available Control Technology (T-BACT). The District concludes that there is no substantial evidence of record to support a conclusion that the project would expose sensitive receptors to significant health risks.

**Mitigation:** None required.

### **Odor Impacts (e)**

**Conclusion:** The project would not create objectionable odor affecting a substantial number of people.

**Discussion:** While offensive odors rarely cause any physical harm, they can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the District. Any project with the potential to frequently expose members of the public to objectionable odors should be deemed to have a significant impact. Due to the subjective nature of odor impacts, the number of variables that can influence the potential for an odor impact, and the variety of odor sources, there is no quantitative or formulaic methodologies to determine if potential odors would have a significant impact. Rather, projects must be assessed on a case-by-case basis.

Diesel exhaust from construction activities may generate odors. However, construction emissions are temporary in nature and, due to the distance from the nearest sensitive



receptor (greater than 1 mile) the project is not expected to affect a substantial number of people.

The District's *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI) defines a significant odor impact as either more than one (1) confirmed complaint per year averaged over a three year period or two (2) unconfirmed complaints per year averaged over a three year period. A review of the District's compliance complaint database revealed that there have been no odor complaints received against VPC's operations in the Lost Hills Oilfield. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would create objectionable odors affecting a substantial number of people.

**Mitigation:** None required.

### **References**

California Air Resources Board. *AB 2588 Air Toxics "Hot Spots" Program*. Website: <http://www.arb.ca.gov/ab2588/ab2588.htm>.

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

San Joaquin Valley Unified Air Pollution Control District. March 2013. *Authority to Construct: Application Review*, Applicant No. S-1327, Project No. S-1123645. Available at San Joaquin Valley Air Pollution Control District. 34946 Flyover Court, Bakersfield, CA 93308-9725.

San Joaquin Valley Unified Air Pollution Control District. January 2002. *Guide for Assessing and Mitigation Air Quality Impacts*. Website: <http://www.valleyair.org/transportation/CEQA%20Rules/GAMAQI%20Jan%202002%20Rev.pdf>.

San Joaquin Valley Unified Air Pollution Control District. March 2013. *Risk Management Review* Applicant No. S-1327, Project No. S-1123645. Available at San Joaquin Valley Air Pollution Control District. 1990 East Gettysburg Avenue, Fresno, CA 93726.



<b>IV. Biological Resources</b>			<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
Would the Project:		<b>Potentially Significant Impact</b>			
a)	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?		<b>X</b>		
b)	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 the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?			<b>X</b>	
c)	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?			<b>X</b>	
d)	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			<b>X</b>	
e)	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			<b>X</b>	
f)	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?			<b>X</b>	

**IV. BIOLOGICAL RESOURCES**

**Candidate, Sensitive and Special Status Species (a)**

**Conclusion:** The project, with incorporation of mitigation measures, will have a less than significant impact on candidate, sensitive, or special status species.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on



---

property currently occupied by VPC for oil production activities consistent with current and surrounding land uses.

VPC implements a Biological Awareness training program for its Health, Environment, and Safety staff and selected contractor representatives, along with consulting with qualified biological contractors. In any event that further investigation is necessary, VPC complies with all U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) recommendations for assessment, analysis, and protection of biological resources. VPC has precautionary measures in place to avoid “take” of threatened and endangered species on VPC property or due to activities undertaken by VPC. According to the Federal Endangered Species Act (ESA) the term “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct of endangered species. “Take” includes the modification or degradation of habitat that could result in death or injury to listed species through the interference of behavioral patterns of those species. According to the California ESA the term “take” means to hunt, pursue, catch, capture, or kill or the attempt to hunt, pursue, catch, capture, or kill endangered species. VPC’s precautionary measures include the requirement of a biological survey to determine the presence or absence of candidate, sensitive, and special status species identified prior to all ground-disturbing activities.

VPC retained Robert A. Booher Consulting (RAB Consulting) to perform a Reconnaissance-Level Biological Survey of the steam generator project sites and a 500 foot buffer area around each site. Prior to conducting the survey, RAB Consulting queried the California Natural Diversity Database (CNDDDB 2012) to identify historical observations of threatened and endangered animal and plant species in the vicinity of the project sites. The database identified the following animal species in the vicinity of the project: San Joaquin kit fox, blunt-nosed leopard lizard, San Joaquin antelope squirrel, San Joaquin pocket mouse, and the San Joaquin whipsnake. However, no observations were recorded within 0.2 miles of the proposed sites and no observations have been recorded since 2004. RAB Consulting conducted a Reconnaissance-Level Biological Survey on December 4, 2012, (see Appendix F). The survey was conducted to identify special status species or any sign of species, including nests, dens, burrows, scats, tracks, and prey remains. The results of the survey demonstrate that neither sensitive wildlife species nor signs of their presence were observed in the project sites during the time of the survey. However, the survey did find scattered small mammal burrows that could support special-status small mammal species and blunt-nosed leopard lizards in the 500-foot buffer area surrounding Site 1.

Based on the time since previously reported observations and the lack of observations in the project area during the survey it is reasonable to conclude that the project would not result in direct impacts to threatened or endangered species. However, because a Reconnaissance-Level Biological Survey was conducted, not a formal survey utilizing agency approved methodologies, the following mitigation measures are incorporated to reduce potential impacts on biological species. Therefore, the District concludes that



with mitigation measures and VPC standard precautionary measures in place, the project would have a less than significant adverse impact on biological species.

**Mitigation:** See below.

To ensure the installation of the steam generators would not have a significant impact on candidate, sensitive, and special status species, the following conditions will be included in the ATC:

- **BIO-1** – *A Qualified Biologist will conduct a focused pre-construction survey to determine the presence/absence of potential impacts on sensitive species prior to the onset of ground disturbance. The survey shall be conducted in accordance with the standard protocol of the U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW). If more than 30 days pass before the onset of ground disturbance, an additional survey shall be conducted by a Qualified Biologist within 30 days prior to the onset of ground disturbance. Permittee shall make all biological surveys available to District staff upon request. [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **BIO-2** – *During construction activities, standardized avoidance measures shall be implemented to preclude take of special status species. If standardized avoidance measures cannot be achieved Permittee will consult with the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) to develop alternative compliance measures and/or obtain an Incidental Take Permit. If standardized avoidance measures fail and there is a take of a threatened or endangered species Permittee will notify USFWS, CDFW, and District immediately. Permittee shall make available to the District any documentation required by USFWS and CDFW. [Public Resources Code 21000-21177: California Environmental Quality Act]*

To ensure compliance with existing USFWS standard recommendation for protection of special status species, the following conditions will be included in the ATC:

- **BIO-3** – *Project-related vehicles should observe a daytime speed limit of 20-mph throughout the site in all project areas, except on county roads and State and Federal highways. In the event that construction activities should occur during night time, a 10-mph speed limit shall be observed from dusk until dawn. Off-road traffic outside of designated project areas should be prohibited. [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **BIO-4** – *During construction activities, all excavated, steep-walled holes or trenches more than two (2) feet deep shall be covered at the close of each working day by plywood or similar materials. If the holes or trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be*





---

*thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) shall be contacted as noted in Measure BIO-15. [Public Resources Code 21000-21177: California Environmental Quality Act]*

- **BIO-5** – *All construction pipes, culverts, or similar structures with a diameter of four (4) inches or greater that are stored at a construction site for one (1) or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the U.S. Fish and Wildlife Service (USFWS) has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped. [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **BIO-6** – *All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from the construction sites. [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **BIO-7** – *No firearms shall be allowed on the project sites. [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **BIO-8** – *No pets, such as dogs or cats, shall be permitted on the project sites. [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **BIO-9** – *Use of rodenticides and herbicides in the project sites shall be restricted. If use of these compounds is deemed necessary, Permittee shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency (US EPA), California Department of Food and Agriculture (CDFA), and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the U.S. Fish and Wildlife Service (USFWS). If rodent control must be conducted, zinc phosphide shall be used. [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **BIO-10** – *Permittee shall appoint a representative to be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone number shall be provided to the U.S. Fish and Wildlife Service (USFWS). [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **BIO-11** – *An employee education program shall be conducted for any project that has anticipated impacts to kit fox or other endangered species. The program should consist of a brief presentation by persons knowledgeable in kit fox biology*



---

*and legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the project. The program should include the following: a description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the previously referenced people and anyone else who may enter the project site. [Public Resources Code 21000-21177: California Environmental Quality Act]*

- **BIO-12** – *Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. should be re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas should be determined on a site-specific basis in consultation with the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and revegetation experts. [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **BIO-13** – *In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the Service should be contacted for guidance. [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **BIO-14** – *Any contractor, employee, or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative identified in Measure BIO-10 above. This representative shall contact the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) immediately in the case of a dead, injured or entrapped kit fox. The CDFW contact for immediate assistance is State Dispatch at (916) 445-0045. They will contact the local warden or, Mr. Paul Hoffman, Wildlife Biologist. Contact information for CDFW and USFWS is provided below in Measure BIO-15: [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **BIO-15** – *The Sacramento Fish and Wildlife Office and California Department of Fish and Wildlife (CDFW) shall be notified in writing within three (3) working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. Contact information is provided below. [Public Resources Code 21000-21177: California Environmental Quality Act]*



CDFW: *Ms. Reagen O'Leary, Environmental Scientist*  
*1234 E. Shaw Avenue*  
*Fresno, CA 93710*  
*Phone: (559) 243-4014*

CDFW: *Mr. Paul Hoffman, Wildlife Biologist*  
*1701 Nimbus Road, Suite A*  
*Rancho Cordova, CA 95670*  
*(530) 934-9309*

USFWS: *Chief of the Division of Endangered Species*  
*2800 Cottage Way, Suite W2605*  
*Sacramento, CA 95825-1846*  
*(916) 414-6620 or (916) 414-6600.*

- **BIO-16** – *New sightings of kit fox shall be reported to the California Natural Diversity Database (CNDDDB). A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the U.S. Fish and Wildlife Service (USFWS) at the following address: Endangered Species Division, 2800 Cottage Way, Suite W2605, Sacramento, CA 95825-1846. [Public Resources Code 21000-21177: California Environmental Quality Act]*

### **Riparian Habitats, Sensitive Natural Communities and Wetlands (b, c)**

**Conclusion:** The project will have a less than significant impact on riparian habitats, sensitive natural communities or federally protected wetlands.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. The project site is not part of any riparian habitat or other sensitive natural community as identified by the USFWS or CDFW. There are no waters on the project site subject to Section 404 of the Clean Water Act. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would have an impact on riparian habitats, sensitive natural communities or wetlands.

**Mitigation:** None required.

### **Migratory Corridors (d)**

**Conclusion:** The project will have a less than significant impact on migratory corridors.



---

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. RAB Consulting conducted a Reconnaissance-Level Biological Survey on December 4, 2012, (see Appendix F). The results of the survey demonstrate that sensitive wildlife species or their signs of their presence were not observed during the time of the survey. Furthermore, there is no substantial wildlife migration through the project sites due to the existence of major impediments, including Holloway Road located to the west and the California Aqueduct located to the east of the project site. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would have an impact on the migratory corridors and the movement of threatened and endangered species.

**Mitigation:** None required.

### **Policies, Ordinances and Conservation Plans (e-f)**

**Conclusion:** The project will not conflict with local policies or ordinances protecting biological resources or any provision of adopted federal, state, regional, or local conservation plans.

**Discussion:** Kern County has prepared two (2) conservation plans designed to protect biological resources in the project area. Collectively, the adopted Metropolitan Bakersfield Habitat Conservation Plan (MBHCP) and the Draft Valley Floor Habitat Conservation Plan (VFHCP) address impacts on biological resources throughout the majority of Kern County.

The MBHCP addresses impacts on biological species resulting from urban development of incorporated and unincorporated areas of the Bakersfield Metropolitan General Plan Area. The project is located approximately 45 miles northwest of Bakersfield and is not located on property within the MBHCP Plan. The Draft VFHCP identifies three (3) zones representing the importance of conservation in that area. Red zones represent habitat areas with high importance for conservation of the VFHCP covered species. Green zones are habitat areas of moderate importance. White zones are habitat areas of limited importance due to intensive land uses, such as cultivated agriculture. As the plan has not yet been adopted, projects within the VFHCP are not required to pay mitigation fees and must comply with all requirements deemed necessary by CDFW and USFWS. The project is located in a "Productive Oil Area" that is designated as having "Green Zone" habitat quality in the VFHCP. Although the VFHCP has not currently been adopted, the project does not propose actions or plans which would conflict with those considered in the Draft VFHCP.

The project is not located within the boundaries of a Natural Community Conservation Plans (NCCP) or any other USFWS designated critical habitat. Through compliance with VPC's environmental policies, practices and avoidance measures, no take of



endangered species are expected to occur during project implementation. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the construction and operation of the project would conflict with local policies or ordinances, or any provision of adopted federal, state, regional, or local conservation plans protecting biological resources.

**Mitigation:** See Mitigation Measures BIO-1 through BIO-16.

### **References**

California Department of Fish and Wildlife. *California Endangered Species Act (CESA)*. Website: [http://www.dfg.ca.gov/habcon/cesa/incidental/cesa\\_policy\\_law.html](http://www.dfg.ca.gov/habcon/cesa/incidental/cesa_policy_law.html)

California Department of Fish and Wildlife. *Conservation and Mitigation Banks in California Approved by the Department of Fish and Game*. Website: <http://www.dfg.ca.gov/habcon/conplan/mitbank/catalogue/catalogue.html>

California Department of Fish and Wildlife. *Natural Community Conservation Planning*. Website: <http://www.dfg.ca.gov/habcon/nccp/>.

County of Kern. *Engineering, Surveying and Permit Services*. Website: <http://esps.kerndsa.com/gis>.

County of Kern. *Metro Bakersfield Habitat Conservation Plan*. Website: <http://pcd.kerndsa.com/faq/metropolitan-bakersfield-habitat-conservation-plan>.

County of Kern. *Valley Floor Habitat Conservation Plan*. Website: [http://www.co.kern.ca.us/planning/pdfs/vfhcp\\_dec06.pdf](http://www.co.kern.ca.us/planning/pdfs/vfhcp_dec06.pdf)

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

United States Fish and Wildlife Service. *Endangered Species: Glossary*. Website: <http://www.fws.gov/midwest/endangered/glossary/index.html>

United States Fish and Wildlife Service. *Habitat Conservation Plans*. Website: <http://www.fws.gov/endangered/what-we-do/hcp-overview.html>

United States Fish and Wildlife Service. *FWS Critical Habitat for Threatened & Endangered Species – Critical Habitat Portal*. Website: <http://criticalhabitat.fws.gov/crithab/>

United States Fish and Wildlife Service. *Sacramento Fish and Wildlife Office*. Website: [http://www.fws.gov/sacramento/es/Habitat-Conservation-Plans/es\\_hcp.htm](http://www.fws.gov/sacramento/es/Habitat-Conservation-Plans/es_hcp.htm)



United States Fish and Wildlife Service. *Survey Protocols and Other Guidelines*.  
 Website: [http://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/es\\_survey.htm](http://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/es_survey.htm)

<b>V. Cultural Resources</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?			X	
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	
d) Disturb any human remains, including those interred outside of formal cemeteries?			X	

## V. CULTURAL RESOURCES

### Historical Resources (a)

**Conclusion:** The project will not have an impact on historical resources.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oilfield. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. A query of state and federal registers indicated that there are no registered historic resources within the project site. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would have an impact on historical resources.

**Mitigation:** None needed.

### Archaeological and Paleontological Resources and Human Remains (b, c, d)

**Conclusion:** The project will have a less than significant impact on archaeological and paleontological resources and human remains.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oilfield. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. Human remains are not known to exist within the project site. Although there is a possibility of archaeological and/or paleontological resources being uncovered during construction activities at sites that



have been previously developed, the area being disturbed is small. Prior to developing a specific location, the location will be reviewed to determine if there are any potentially impacted archaeological and/or paleontological resources such as abandoned structures, grave sites, or fossil beds. Standard protocol in compliance with existing regulations would require that, in the event that archaeological and/or paleontological resources, including human remains, are discovered during surface surveys, digging, scraping, or other construction activities, all work within 100 feet be ceased until the significance and extent of the find can be recovered by a qualified archaeologist and/or paleontologist for study. Mitigation measures have been incorporated into the project to minimize impacts on archaeological and paleontological resources. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would have a significant impact on archaeological or paleontological resources.

**Mitigation:** See below.

To ensure the project would not have a significant impact on archaeological/paleontological resources, the following condition will be included in the ATC:

- **CUL-1** – *In the event that archaeological/paleontological resources are discovered during ground-disturbing activities, all work within 100 feet of the find shall cease and the Permittee shall notify and retain a qualified archaeologist/paleontologist to assess and provide an evaluation of the significance of the find. A qualified archaeologist/paleontologist shall determine whether avoidance is necessary and feasible in light of the factors such as the nature of the find, project design, costs, and other considerations, and, if necessary, develop appropriate mitigation measures in consultation with Kern County and the Native American Heritage Commission (NAHC). In addition, should archaeological/paleontological resources be discovered, Permittee shall provide the District a written report in relation to the nature of the find. [Public Resources Code 21000-21177: California Environmental Quality Act]*

To ensure compliance with existing Native American Heritage Commission (NAHC) requirements, the following condition will be included in the ATC:

- **CUL-2** – *In the event that human remains are discovered during ground-disturbing activities, all work within 100 feet of the find shall cease and the discovery shall immediately be reported to the County Coroner (CC) and Native American Heritage Commission (NAHC) for further assessment. Permittee shall identify appropriate measures for treatment or disposition of the remains in consultation with the CC and NAHC. In addition, should human remains be discovered during ground-disturbing activities, Permittee shall provide the District a written report in relation to the nature of the find. [Public Resources Code 21000-21177: California Environmental Quality Act]*



**References**

CERES. *State Historical Landmarks*. Website:  
[http://ceres.ca.gov/geo\\_area/counties/lists/landmarks\\_county.html](http://ceres.ca.gov/geo_area/counties/lists/landmarks_county.html).

California Code of Resources §15064.5

California Health and Safety Code §7050.5

California Native American Heritage Commission. *Professional Guide for the Preservation and Protection of Native American Remains and Associated Grave Goods*. Website: <http://www.nahc.ca.gov/profguide.html>.

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

National Register of Historic Places. *State Listings*. Website:  
<http://www.nationalregisterofhistoricplaces.com/ca/state.html>.

<b>VI. Geology / Soils</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			<b>X</b>	
ii) Strong seismic ground shaking?			<b>X</b>	
iii) Seismic-related ground failure, including liquefaction?				<b>X</b>
iv) Landslides?				<b>X</b>
b) Result in substantial soil erosion or the loss of topsoil?			<b>X</b>	





VI. Geology / Soils (continued) Would the Project:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?				X

## VI. GEOLOGY/SOILS

### Seismic Activity (a)

**Conclusion:** Potential risks of loss, injury or death resulting from strong seismic activity, unstable or expansive soils, and ground failure are less than significant.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses, which have historically been used for oil production.

Four (4) major fault systems are located in Kern County. The Buena Vista fault system is located in western Kern County; White Wolf and Lost Hills fault systems are located in central Kern County; and the Pleito-Wheeler Ridge fault system is located in south/southwestern Kern County. The nearest fault zones to the project sites as identified in the Alquist-Priolo Earthquake Fault Zoning Map are located in the Pond and Orchard Peak Quadrangles. Minor fault lines exist approximately 22 miles to the west and 26 miles to the east of the project sites. As such, there is potential for surface rupture and strong ground shaking in the project sites. However, the project consists of the installation and operation of nine (9) steam generators, which is consistent with current oilfield land uses, and would not place a substantial number of people in the project area. The project is designed in accordance with all building code requirements



including those pertaining to excavations, grading, and foundations. Adherence to California Buildings Standards Code (CBSC) requirements and compliance with California seismic design requirements would ensure that the project would not expose persons or property to substantial risk of loss, injury or death resulting from seismic activity.

The project sites are not located within a shallow ground water, liquefaction or landslide hazard area. As such, the project will not be located on unstable or expansive soil. Therefore, the potential risk of loss, injury, or death resulting from liquefaction and landslides due to extensive surface rupture and strong ground shaking is considered to be minimal. The District concludes that there is no substantial evidence of record to support a conclusion that the project would result in significant risks to life and property as a result of impacts to geologic and soil resources.

**Mitigation:** None required.

### **Geological and Soil Stability (b-e)**

**Conclusion:** The project will not result in substantial soil erosion, landslides, lateral spreading, subsidence, liquefaction or collapse due to unstable soils.

**Discussion:** The project sites are not located within an existing fault zone. The project is located in an area with stable soils with little potential for ground failure. Kern County has designated the project sites as having no land constraints due to shallow ground water, steep slopes, landslide hazards, or seismic hazards. The project includes the construction and operation of nine (9) steam generators and does not include or require the use of septic tanks or wastewater systems. The construction of the steam generators would involve ground-disturbing activities, including pad preparation and installation of piping and electrical systems, which could potentially create erosion. Construction of the steam generators is consistent with the current land use and oilfield operations and will occur in areas that have been previously disturbed by similar activities. The steam generators will be built on soil with ratings of low susceptibility to erosion. Potential impacts to soil erosion will be reduced through compliance with Kern County Planning and Building Department requirements. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would result in substantial soil erosion, landslides, lateral spreading, subsidence, liquefaction or collapse due to unstable soils.

**Mitigation:** None required.

### **References**

California Department of Conservation, California Geological Survey. *Fault Parameters-Alquist Priolo Earthquake Fault Zones*. Website:  
<http://www.conservation.ca.gov/cgs/rghm/ap/Pages/Index.aspx>



California Department of Conservation, California Geological Survey. *Seismic Shaking Hazards in California*. Website:

<http://redirect.conservation.ca.gov/cgs/rghm/pshamap/pshamain.html>

California Department of Conservation, California Geological Survey. *Special Publication 42 Interim Revision 2007: Fault –Rupture Hazard Zones in California*.

Website: <ftp://ftp.consrv.ca.gov/pub/dmg/pubs/sp/Sp42.pdf>

County of Kern. *Engineering, Surveying and Permit Services*. Website:

<http://esps.kernds.com/gis>.

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

Natural Resources Conservation Service (NRCS) *Web Soil Survey*. Website:

<http://websoilsurvey.nrcs.usda.gov/app/>

United States Geological Survey (USGS). *Earthquake Hazards Program*. Website:

<http://earthquake.usgs.gov/hazards/>.

<b>VII. Greenhouse Gas Emissions</b>  Would the Project:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			<b>X</b>	
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			<b>X</b>	

## VII. GREENHOUSE GAS EMISSIONS

### Greenhouse Gas Emissions (a, b)

**Conclusion:** Project related greenhouse gas (GHG) emissions will not conflict with any applicable plans or policies to reduce GHG emissions and will have a less than significant impact on global climate change.

**Discussion:** GHGs are gases that absorb and emit radiation within the thermal infrared range, trapping heat in the earth's atmosphere. There are no "attainment" concentration standards established by the Federal or State government for GHGs. In fact, GHGs are not generally thought of as traditional air pollutants because GHGs, and their impacts, are global in nature, while traditional "criteria" air pollutants affect the health of people



and other living things at ground level, in the general region of their release to the atmosphere. Some GHGs occur naturally and are emitted into the atmosphere through natural processes. Other GHGs are created and emitted solely through human activities. The principal GHGs that enter the atmosphere because of human activities are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and fluorinated carbons. Additional information on GHG and global climate change can be found in the District staff report titled: *Addressing Greenhouse Gas Emissions Impacts Under the California Environmental Quality Act*.

### Assembly Bill 32 (AB 32)

Assembly Bill 32 (California Global Warming Solutions Act of 2006) is a key piece of California's effort to reduce its GHG emissions. AB 32 was adopted establishing a cap on statewide greenhouse gas emissions and sets forth the regulatory framework to achieve the corresponding reduction in statewide emissions levels. AB 32 requires the ARB to establish regulations designed to reduce California's GHG emissions to 1990 levels by 2020. In executing its legislative mandate under AB 32, the ARB developed a Scoping Plan that contains the main strategies California will use to reduce GHG from Business-as-Usual (BAU) emissions projected from 2020 levels back down to 1990 levels. BAU is the projected emissions caused by growth, without any GHG reduction measures. ARB determined that a 29% reduction from BAU is necessary to achieve the 1990 GHG emissions level. On December 11, 2008, ARB adopted its AB 32 Scoping Plan, setting forth a framework for future regulatory action on how California will achieve the goal of reducing GHG emissions to 1990 levels.

### Cap & Trade

The AB 32 Scoping Plan identifies a Cap and Trade program as one of the strategies California will employ to reduce the GHG emissions that cause climate change. The Cap and Trade program is implemented by the ARB and caps GHG emissions from the industrial, utility, and transportation fuels sectors – which account for roughly 85% of the state's GHG emissions.

The program works by establishing a hard cap on about 85% of total statewide GHG emissions. The cap starts at expected BAU emissions levels in 2012, and declines 2-3% per year through 2020. Fewer and fewer GHG emissions allowances are available each year, requiring covered sources to reduce their emissions or pay increasingly higher prices for those allowances. The cap level is set in 2020 to ensure California complies with AB 32's emission reduction target of returning to 1990 GHG emission levels.

The scope of GHG emission sources subject to Cap and Trade in the first compliance period (2013-2014), includes:



- 
- All electricity generated and imported into California. The first deliverer of electricity into the state is the capped entity (the one that will have to purchase and surrender allowances).
  - Large industrial facilities emitting more than 25,000 metric tons of GHG pollution/year. Examples include oil refineries and cement manufacturers.

The scope of GHG emission sources subject to Cap and Trade during the second compliance period (2015-2017), expands to include distributors of transportation fuels (including gasoline and diesel), natural gas, and other fuels. The regulated entity will be the fuel provider that distributes the fuel upstream (not the gas station). In total, the Cap and Trade program is expected to include roughly 350 large businesses, representing about 600 facilities. Individuals and small businesses will not be regulated.

Under the program, companies do not have individual or facility-specific reduction requirements. Rather, all companies covered by the regulation are required to turn in allowances in an amount equal to their total greenhouse gas emissions during each phase of the program. The program gives companies the flexibility to either trade allowances with others or take steps to cost-effectively reduce emissions at their own facilities. Companies that emit more will have to turn in more allowances. Companies that can cut their emissions will have to turn in fewer allowances. Furthermore, as the cap declines, total emissions are reduced.

On October 20, 2011, ARB's Board adopted the final Cap and Trade regulation and Resolution 11-32. As part of finalizing the regulation, the Board considered the related environmental analysis and, consistent with CEQA requirements, approved ARB's functionally equivalent document (FED).

### CEQA Requirements

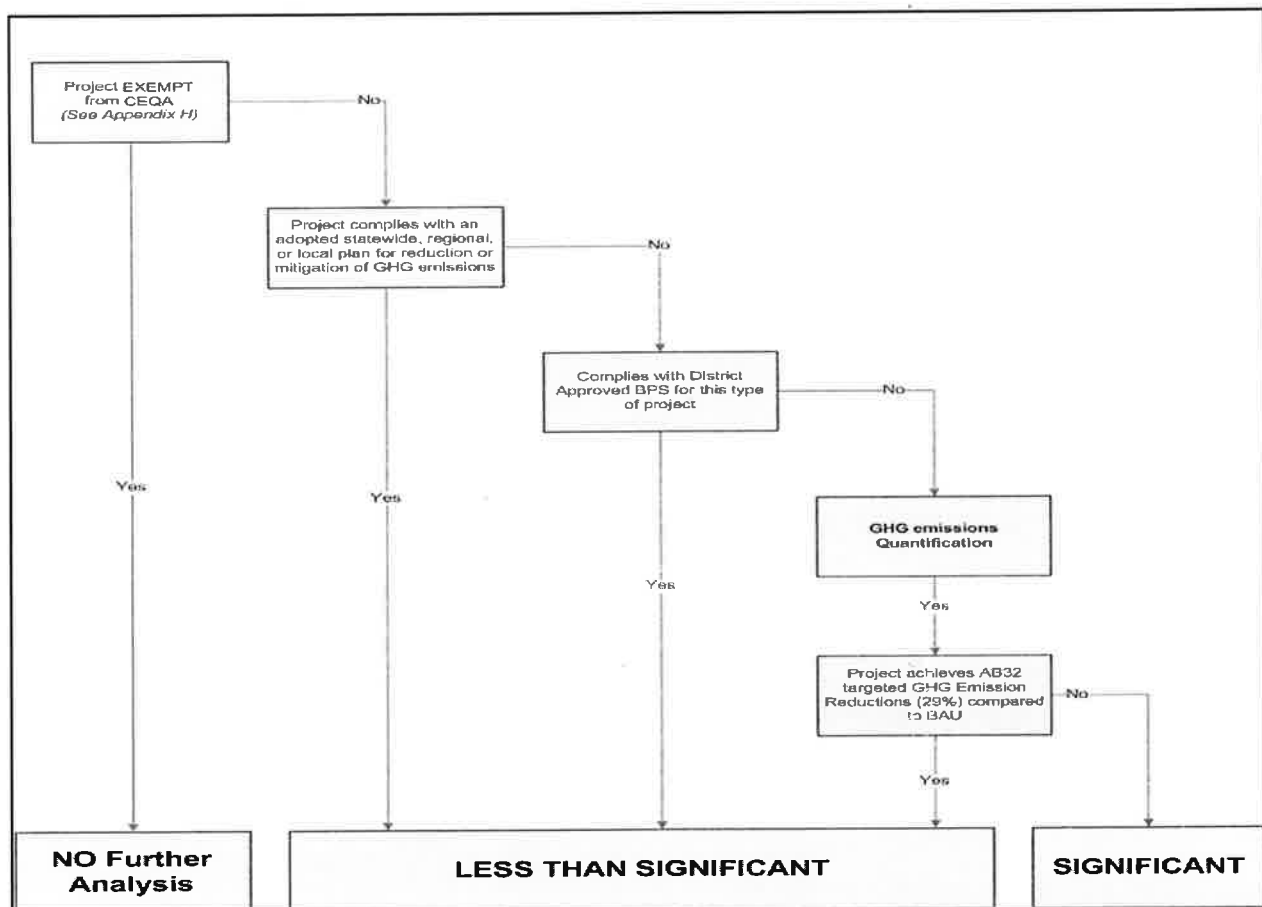
In December, 2009, the California Natural Resources Agency (NRA) amended the CEQA Guidelines to include Global Climate Change, which is now generally accepted by the scientific community to be occurring and caused by GHG emissions. The amendments address analysis and mitigation of the potential effects of GHG emissions in CEQA documents. In their *Final Statement of Reasons for Regulatory Action*, NRA recognizes that the analysis of GHG emissions in a CEQA document presents unique challenges to lead agencies. NRA amended section 15064(h)(3) of the CEQA guidelines to add compliance with plans or regulations for the reduction of GHG emissions to the list of plans and programs that may be considered in a cumulative impacts analysis. In their *Final Statement of Reasons for Regulatory Action*, NRA discusses that AB 32 requires ARB to adopt regulations that achieve the maximum technologically feasible and cost effective GHG reductions to reach the adopted state-wide emissions limit. NRA goes on to state that a lead agency may consider whether ARB's GHG reduction regulations satisfy the criteria in existing subdivision (h)(3).



### District CEQA Policy

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. On December 17, 2009, the District adopted the policy “District Policy (APR 2005) – Addressing GHG Emissions Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency” and approved the District’s guidance document for use by other agencies when addressing GHG impacts as lead agencies under CEQA. The policy applies to all District permitting projects that have an increase in GHG emissions, regardless of the magnitude of the increase. Under this policy, the District’s determination of significance of project-specific GHG emissions is founded on the principal that projects with GHG emission reductions consistent with AB 32 emission reduction targets are considered to have a less than significant impact on global climate change.

**Figure 8: Determination of Significance for Stationary Source Projects**





As illustrated in Figure 8, the District's board-adopted policy for determining significance of project-specific GHG emissions employs a tiered approach. Of specific relevance to Cap and Trade is the provision that: "Projects complying with an approved GHG emission reduction plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, would be determined to have a less than significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the lead agency. Projects complying with an approved GHG emission reduction plan or GHG mitigation program would not be required to implement [best performance standards] BPS." Projects that do not comply with such a plan or program must incorporate BPS or undergo a project-specific analysis demonstrating that GHG emissions would be reduced by at least 29%, as compared to BAU.

#### Determination of Significance of GHG Emissions for Projects Subject to an Approved GHG Emissions Reduction Plan

The NRA amended the CEQA Guidelines to include Global Climate Change and added compliance with plans or regulations to reduce GHG emissions to the list of plans and programs that should be considered in a cumulative impacts analysis. In their *Final Statement of Reasons for Regulatory Action*, NRA discusses that AB32 requires the ARB to adopt regulations that achieve the maximum technologically feasible and cost effective GHG reductions to reach the adopted state-wide emissions limit. NRA goes on to state that a lead agency may consider whether ARB's GHG reduction regulations satisfy the criteria in section 15064(h)(3).

The District's board-adopted policy determines that: "Projects complying with an approved GHG emission reduction plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located would be determined to have a less than significant individual and cumulative impact for GHG emissions. Such plans or programs must be specified in law or approved by the lead agency with jurisdiction over the affected resource and supported by a CEQA compliant environmental review document adopted by the lead agency."

AB32, and the AB32 scoping plan adopted by ARB, is a GHG reduction plan for CEQA purposes. It is directly and wholly responsible for meeting the GHG reduction targets of the State of California and is supported by an environmental review process that has been successfully defended in court as equivalent to, and compliant with, CEQA requirements. However, there are some sources of GHG emissions that are discussed in the AB32 scoping plan that are not required to mitigate emissions via implementation of the plan, and some of the plan is devoted to implementing regulations that address existing emissions, and will have only minimal impact on increases in emissions. Since it is these increases that must be addressed under CEQA, the District conducts its own analysis to determine whether compliance with AB32 and its scoping plan are adequate to conclude that a particular GHG emissions increase is less than significant.



---

### Determination of Significance of GHG Emissions for Projects Subject to ARB's GHG Cap and Trade Regulation

One regulation proposed in the AB32 scoping plan that does address increases in GHG emissions is the Cap and Trade regulation discussed above. Facilities subject to the Cap and Trade regulation are subject to an industry-wide cap on overall GHG emissions, and any growth in emissions must be accounted for under that cap, so that a corresponding and equivalent reduction in emissions must occur to allow any increase. Further, the cap decreases over time, resulting in an overall decrease in GHG emissions. It is therefore reasonable to conclude that facilities subject to and in compliance with ARB's Cap and Trade requirements will not, and in fact, cannot, contribute significantly towards any global GHG emissions growth. While this inherent mitigation process is not a necessary component of a finding that compliance with a plan for the reduction of greenhouse gas emissions may be considered in a cumulative impacts analysis [(CCR §15064(h)(3))], the fact that all growth in emissions at covered sources is mitigated provides a certainty that compliance with the Cap and Trade program eliminates any potential for significant impacts from those GHG emissions.

### Determination of Significance of GHG Emissions for Projects Implementing BPS

BPS for stationary source projects is – for a specific class and category source of GHG emissions – the most effective, District approved, achieved-in-practice means of reducing or limiting GHG emissions from that source, which is also economically feasible per the definition of achieved-in-practice. BPS includes equipment type, equipment design, and operational and maintenance practices for the identified service, operation, or emissions unit class and category, and is developed by the District in a public process that considers and addresses input from all interested parties. Consistent with the District's adopted policy for assessing significance of project-specific GHG emission increases when serving as Lead Agency, projects implementing BPS will be determined to have a less than significant impact on global climate change.

### Project Details and Significance Determination

#### Compliance with an Approved GHG Emission Reduction Plan

As an independent energy company engaged in the production, development, and exploration of crude oil and natural gas within the State of California, VPC and its facilities are subject to ARB's Cap and Trade regulation. As discussed above, ARB's Cap and Trade regulation is an adopted statewide plan for reducing or mitigating GHG emissions from targeted industries and is supported by an environmental review process that has been successfully defended in court as equivalent to, and compliant with, CEQA requirements.

Consistent with CCR §15064(h)(3), the District finds that compliance with ARB's Cap and Trade regulation would avoid or substantially lessen the impact of project-specific





GHG emissions on global climate change. The District therefore concludes that the project would have a less than significant individual and cumulative impact on global climate change.

#### Mitigation of GHG Increases under the Cap and Trade Regulation

As outlined above, facilities subject to the Cap and Trade regulation are subject to an industry-wide cap on overall GHG emissions. As such, any growth in emissions must be accounted for under that cap, such that a corresponding and equivalent reduction in emissions must occur to allow any increase. Therefore, it is reasonable to conclude that implementation of the Cap and Trade program would fully mitigate project-specific GHG emissions.

Regardless of, and independent to, the above determination that the project is subject to a state-wide GHG emissions reduction plan, the District finds that, through compliance with the Cap and Trade regulation, project-specific GHG emissions would be fully mitigated. Thus, the District concludes that the project would have a less than significant individual and cumulative impact on global climate change.

#### Implementation of BPS

VPC has voluntarily proposed to implement BPS for each class and category of greenhouse gas emissions unit involved in the project (see the District's EE, incorporated herein by reference).

Therefore, consistent with the District's adopted policy for assessing significance of project-specific GHG emission increases when serving as Lead Agency, the District concludes that the project has a less than significant individual and cumulative impact on global climate change due to its implementation of BPS.

**Mitigation:** To ensure compliance with District BPS for steam generators, the following measures will be made conditions of project approval and will be included in the project ATCs:

For units -141 through -145, and -186:

- **GHG-1** – *Steam generator shall be equipped with variable frequency drive electrical motors driving the blower and water pump and a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer) or a manufacturer's overall thermal efficiency rating of 88%. [Public Resources Code 21000-21177: California Environmental Quality Act]*



---

For units -162 through -164:

- **GHG-2** – *Steam generator shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump, split flow dual pass water feed configuration, a convection section having at least 128 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer), and at least six inches of castable refractory or a manufacturer's overall thermal efficiency rating of at least 85%. [Public Resources Code 21000-21177: California Environmental Quality Act]*

### **References**

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

San Joaquin Valley Unified Air Pollution Control District. December 2009. *Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency (APR 2005)*. Website:  
[http://www.valleyair.org/policies\\_per/policies/apr2005.pdf](http://www.valleyair.org/policies_per/policies/apr2005.pdf)

San Joaquin Valley Unified Air Pollution Control District. March 2013. *Authority to Construct: Application Review*, Applicant No. S-1327, Project No. S-1123645. Available at San Joaquin Valley Air Pollution Control District. 34946 Flyover Court, Bakersfield, CA 93308-9725.

San Joaquin Valley Unified Air Pollution Control District. *Best Performance Standards (BPS) for Stationary Sources*. Website:  
[http://www.valleyair.org/Programs/CCAP/bps/BPS\\_idx.htm](http://www.valleyair.org/Programs/CCAP/bps/BPS_idx.htm)

San Joaquin Valley Unified Air Pollution Control District. December 2009. *Final Draft Staff Report: Addressing Greenhouse Gas Emissions Impacts Under The California Environmental Quality Act*. Website:  
[http://www.valleyair.org/Programs/CCAP/CCAP\\_idx.htm](http://www.valleyair.org/Programs/CCAP/CCAP_idx.htm)

San Joaquin Valley Unified Air Pollution Control District. March 2010. *Zero Equivalency Policy for Addressing Greenhouse Gases (APR-2015)*. Website:  
[http://www.valleyair.org/policies\\_per/policies/apr2015.pdf](http://www.valleyair.org/policies_per/policies/apr2015.pdf)



VIII. Hazards and Hazardous Materials Would the Project:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?				X
f) For a Project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?			X	

**VIII. HAZARDS & HAZARDOUS MATERIALS**

**Hazardous Materials and Exposure to the Public (a-d)**

**Conclusion:** The project will not expose the public to hazardous materials, and impacts are less than significant.



**Discussion:** The project is located on property currently occupied by VPC, within the existing Lost Hills Oilfield boundaries as designated by DOGGR. The project sites are consistent with current land use which has historically been used for oil production. The areas immediately surrounding the project sites are currently zoned Exclusive Agriculture (Zone A). Various land uses surround the project sites. Depending on location, these uses include agriculture, solid waste disposal (composting), and oilfield operations.

The project is not located on a site which meets this definition of Government Code Section 65962.5, which requires specific hazardous waste facilities to submit required information to the Department of Toxic Substances Control (DTSC). Human receptors nearest the project are located at distances sufficient to reduce potential impacts from hazardous materials. The nearest business receptors are located approximately 0.25 miles southwest of the outer boundary of Project Site 1 and 0.8 miles west of the outer boundary of Project Site 2 (San Joaquin Composting). The nearest residential receptors and schools, Lost Hills Elementary School and A.M. Thomas Middle School, are located approximately six (6) miles southeast of Project Site 3 in the unincorporated community of Lost Hills.

Potentially hazardous materials are not expected to be associated with the steam generator sites at this time. However, in the event that hazardous materials are needed or result from the operations of the steam generators, the materials and waste will be transported in placarded vehicles in packaging or containers as required by CFR Title 49. The District has conducted a risk screening analysis indicating that the operation of the steam generators would not pose a significant risk to the public. Therefore, the risk of exposure from the transport, use, and disposal of hazardous materials is minimal.

Development of the project consistent with DOGGR's Well Review Program (WRP) will further minimize potential hazards to the public, VPC's employees and contractors, and the environment. DOGGR's WRP is available to developers to assist them in identifying potentially dangerous impacts resulting from construction operations near existing and abandoned oil and natural gas wells and the measures necessary to reduce those impacts. VPC is familiar with this program and prior to construction will implement the elements pertinent to this project. VPC will obtain permits as needed for abandonment, reabandonment or modifications to the wells. Mitigation measures, consistent with DOGGR's recommendations in the Well Review Program, have been incorporated into the project to ensure the development would have no impacts resulting from abandoned wells.

Compliance with existing safety standards in the construction and long-term operation of the steam generators will minimize any potential hazard to the public, VPC's employees and contractors, and the environment. Occupational safety standards exist in Federal and State laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Department of Industrial Relations Division of Occupational Safety and Health (Cal/OSHA) is responsible for developing and enforcing safety standards and assuring worker safety in the handling and use of



hazardous materials. Among other requirements, Cal/OSHA obligates many businesses to prepare Injury and Illness Prevention Plans and Chemical Hygiene Plans. The Hazard Communication Standard requires that workers be informed of the hazards associated with the materials they handle, if need be. Therefore, impacts resulting from the accidental release of hazardous materials are expected to be less than significant.

There is no substantial evidence of record to support a conclusion that the transportation, use, or disposal of hazardous materials would pose a hazard to the public.

**Mitigation:** See below.

To ensure compliance with DOGGR's WRP, the following conditions will be included in the ATC:

- **HAZ-1** – *Prior to ground disturbance activities, Permittee shall provide the District documentation identifying all wells in the vicinity of the project site have been submitted to the Division of Oil, Gas, and Geothermal Resources (DOGGR) for compliance with DOGGR's "Well Review Program". [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **HAZ-2** – *Permittee shall retain written records on-site and notify DOGGR in the event unknown, unrecorded, abandoned, or damaged wells are discovered. [Public Resources Code 21000-21177: California Environmental Quality Act]*
- **HAZ-3** – *Any wells discovered or exposed during construction activities will be tested for flammable vapors. Permittee shall retain these records onsite and the records shall be made available to the District upon inspection. [Public Resources Code 21000-21177: California Environmental Quality Act]*

To ensure compliance with DTSC requirements, the following condition will be included in the ATC:

- **HAZ-4** – *Permittee shall retain written records on-site demonstrating compliance with all applicable Department of Toxic Substances Control (DTSC) regulations, including biennial hazardous waste reports for the use, discharge, and transport of potentially hazardous materials if necessary. [Public Resources Code 21000-21177: California Environmental Quality Act]*

### **Airports and Airstrips (e, f)**

**Conclusion:** The project is not located near active airports or airstrips; therefore, the project will not have an impact on the safety of people residing or working in the project area.



**Discussion:** The project is located on property currently occupied by VPC, within the existing Lost Hills Oilfield boundaries as designated by DOGGR. The project site is consistent with current land use which has historically been used for oil production. The project site is not within two (2) miles of a private airport, public airport or public use airport. The nearest private airport is owned by Paramount Farms/West Hills Co Op (2CN4) and is located at their facility approximately 5 miles west of the Project Site 1. The nearest public airport is the Lost Hill Kern County Airport (L84), located approximately six (6) miles southeast of the Project Site 1. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the location of the project near airports or airstrips would pose a risk to people residing or working in or near the project area.

**Mitigation:** None required.

### **Emergency Response and Fire Hazards (g, h)**

**Conclusion:** The project will not interfere with emergency response or evacuation plans; nor will it expose people or structures to risks from wildland fires.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. The project area is serviced by the Kern County Sheriff Department for police protection services. The nearest sheriff station to the project site is located in the unincorporated community of Buttonwillow, approximately 25 miles southeast of the project.

The project area is located within a Local Responsible Area (LRA) and is serviced by the Kern County Fire Department for fire protection services. The nearest Kern County Fire Department station (Station 26) is located approximately 6 miles southeast of the project in the unincorporated community of Lost Hills. No wildlands are within close proximity of the project. Although there is potential for occasional brush fires within the Lost Hills oilfield, the project is located in an area designated as having a low/moderate Fire Hazard Severity Zone (FHSZ -1) by Kern County and moderate FHSZ by CAL FIRE.

The project is consistent with current land use which has historically been used for oil production. The nearest receptors are located approximately 0.25 miles southwest of Project Site 2 and the nearest community, Lost Hills, is approximately six (6) miles southeast of the project sites. The project would not require any physical alterations to existing public roadways that would impair or interfere with emergency response or evacuation. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would interfere with emergency response or expose people or structures to risks from fires.



---

**Mitigation:** None required.

**References**

California Department of Forestry and Fire Protection. *Fire Hazard Severity Zones Map*. Website: [http://www.fire.ca.gov/fire\\_prevention/fire\\_prevention\\_wildland\\_zones.php](http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones.php)

California Department of Forestry and Fire Protection. *Cooperative Efforts*. Website: [http://www.fire.ca.gov/fire\\_protection/fire\\_protection\\_coop\\_efforts\\_contractcounties.php](http://www.fire.ca.gov/fire_protection/fire_protection_coop_efforts_contractcounties.php)

California Department of Toxic Substances Control. *DTSC's Hazardous Waste and Substances Site List - Site Cleanup (Cortese List)*. Website: [http://www.dtsc.ca.gov/SiteCleanup/Cortese\\_List.cfm](http://www.dtsc.ca.gov/SiteCleanup/Cortese_List.cfm)

California Department of Toxic Substances Control. *Envirostor*. Website: <http://www.envirostor.dtsc.ca.gov/public/>

California Environmental Protection Agency. *Cortese List: Section 65962.5(a)*. Website: <http://www.calepa.ca.gov/sitecleanup/corteselist/SectionA.htm>

County of Kern. *Engineering, Surveying and Permit Services*. Website: <http://esps.kerndsa.com/gis>.

Kern County Fire Department. *Fire Stations*. Website: <http://www.kerncountyfire.org/>

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

Google Earth. September, 2012.

Kern County Public and Private Airports. January 2013. Website: <http://www.tollfreeairline.com/california/kern.htm>



<b>IX. Hydrology / Water Quality</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Violate any water quality standards or waste discharge requirements?			<b>X</b>	
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			<b>X</b>	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site?				<b>X</b>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				<b>X</b>
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?			<b>X</b>	
f) Otherwise substantially degrade water quality?			<b>X</b>	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				<b>X</b>
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				<b>X</b>
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				<b>X</b>
j) Inundation by seiche, tsunami, or mudflow				<b>X</b>





---

## IX. HYDROLOGY / WATER QUALITY

### **Water Quality, Waste Discharge, and Groundwater Supplies (a, b, e, f)**

**Conclusion:** The project will not violate any water quality standards or waste discharge requirements and will not substantially deplete or degrade groundwater supplies or interfere with groundwater recharge; therefore, impacts are less than significant.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses.

The proposed steam generators will be sited in areas where there will be minimal “new” disturbance of soil, native vegetation, and habitat. Soil will be compacted and/or excavated and replaced with better-compacted soil to ensure adequate footing for new steam generator foundations. Approximately 6.4 acres of soil are expected to be disturbed in connection with the construction. All of the surface area disturbed by construction is to remain as part of the plant site after construction is complete. Temporary equipment staging areas will become part of the plant site and/or be set aside for employee and visitor vehicle parking.

The steam generators will provide steam for TEOR well operations within the Lost Hills Oil Field. The DOGGR’s Well Review Program (WRP) requires consistency with the Underground Injection Control (UIC) regulations of the Safe Drinking Water Act and with the Basin Water Quality Control Plan adopted by the RWQCB for the Central Valley Region. The WRP, which covers each discrete cyclic steam oil well and each brine injection well, ensures that the project will not have a significant impact on existing water resources. Water produced by wells will be recycled to the extent possible (i.e. reinjected into the producing formation). Wastes will not be discharged to land; therefore, the project will not result in a violation of water quality standards or waste discharge requirements.

The project does not utilize groundwater recharge. DOGGR regulations require well construction to seal from encroachment any aquifers that may exist in or beneath the project area. Make-up water will be pumped from the Tulare Formation for use in the steam generators. The water from the Tulare Formation is of poor quality due to high total dissolved solids (TDS) and the quantity of water required is not anticipated to create a significant shortfall for existing uses. Therefore, the increase in groundwater usage from the Tulare Formation is not substantial and would have a less than significant impact on groundwater supply.

Potentially hazardous materials are not expected to be associated with the steam generator sites. Precipitation at the project sites is rarely sufficient to cause runoff and any runoff from the steam generator sites would either percolate near the sites or runs



to natural drainage channels. The lack of water bodies on the project sites precludes the possibility of potential adverse impacts on water quality.

The District concludes that there is no substantial evidence of record to support a conclusion that the project would violate water quality standards or waste water discharge requirements or have a negative impact on groundwater supplies.

**Mitigation:** To ensure compliance with DOGGR and RWQCB requirements, the following conditions will be included in the ATC:

- **HYD-1** – *Permittee shall comply with all applicable Division of Oil, Gas, and Geothermal Resources (DOGGR) Underground Injection Control (UIC) requirements. Permittee shall retain any records deemed necessary by DOGGR onsite and the records shall be made available to the District upon inspection. [Public Resources Code 21000-21177: California Environmental Quality Act]*

The following mitigation measure will be required to ensure compliance with RWQCB requirements:

- **HYD-2** – *Permittee shall comply with all applicable Regional Water Quality Control Board (RWQCB) water quality standard and waste discharge regulations. Permittee shall retain any permits/records deemed necessary by the RWQCB on-site and shall make these permits/records available to the District upon inspection. [Public Resources Code 21000-21177: California Environmental Quality Act]*

### **Drainage Systems (c, d)**

**Conclusion:** The project will not have an impact resulting from the alteration of existing drainage patterns or contribution to runoff water exceeding the capacity of storm water drainage systems.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities, consistent with current and surrounding land uses. The project does not alter any streams, rivers, or any other waterways. As discussed above, project construction requires minimal soil disturbance, and, therefore, is expected to neither have an impact on existing drainage patterns nor contribute to excessive runoff water.

The existing project sites will not be altered enough to have a negative effect on surface runoff or increase flooding potential. Precipitation at the project site is rarely sufficient to cause runoff. Any runoff from the steam generator sites would either percolate near the sites or runs to natural drainage channels. The project would not introduce a new flood



hazard and would not necessitate any new flood control projects. Therefore, there will be no impacts on any public drainage systems.

**Mitigation:** None required.

### **Flooding and Inundation (g - j)**

**Conclusion:** The project will not expose people or structures to a significant risk of loss or injury resulting from floods, seiche, tsunami, or mudflow.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. The project does not include construction of any housing units. The project sites are not located within the 100-year flood zone as mapped on Flood Insurance Rate Maps. The project sites are in a county not identified in the Tsunami Inundation maps by the California Geological Survey as a county with inundation risk. The steam generator sites are open areas and would not impede or redirect flood flows. The existing sites will not be altered enough to have a negative effect on surface runoff or increase flooding potential. Precipitation at the project site is rarely sufficient to cause runoff (5-10 inches per year). Any runoff from the steam generator sites would either percolate near the sites or runs to natural drainage channels. The project would not introduce a new flood hazard and would not necessitate any new flood control projects. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would expose persons or structures to negative impacts resulting from flooding, tsunamis, or mudflow.

**Mitigation:** None required.

### **References**

California Department of Conservation, Division of Oil, Gas and Geothermal Resources. *DOGGR Online Mapping System (DOMS)*. Website:  
<http://maps.conservation.ca.gov/doms/index.html>

California Department of Conservation, California Geological Survey. *Tsunami Information*. Website:  
[http://www.conservation.ca.gov/cgs/geologic\\_hazards/Tsunami/Pages/Index.aspx](http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Pages/Index.aspx)

California Department of Conservation. *Farmland Mapping & Monitoring Program. FMMP Map Products*. Website:  
[ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/ker10\\_west.pdf](ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/ker10_west.pdf)



County of Kern. *Engineering, Surveying and Permit Services. Website:*  
<http://esps.kerndsa.com/gis>.

Federal Emergency Management Agency. Website: <http://www.msc.fema.gov/>

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

Western Regional Climate Center. *PRISM Precipitation Maps: 1961-90. Website:*  
<http://www.wrcc.dri.edu/precip.html>

<b>X. Land Use / Planning</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Physically divide an established community?				<b>X</b>
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				<b>X</b>
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				<b>X</b>

**X. LAND USE/PLANNING**

**Land Use and Planning (a, b)**

**Conclusion:** The project will not divide an established community or conflict with applicable land use plans, policies, or regulations.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses.

The nearest community to the project sites is Lost Hills, which is approximately six (6) miles southeast of Project Site 3. Therefore, the project will not divide an established community.



---

The project sites are currently designated in the Kern County 2009 General Plan as Intensive Agriculture (Code 8.1) and Mineral and Petroleum (Code 8.4) and are currently zoned as Exclusive Agriculture (Zone A). Pursuant to Section 19.14.020(E) of the Zoning Ordinance of Kern County, steam generators (excluding coal fired), are a permitted use, by right, in Zone A. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would conflict with applicable land use plans, policies, or regulation.

**Mitigation:** None required.

### **Habitat and Natural Community Conservation Plans (c)**

**Conclusion:** The project will not conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. The project is within the Draft Valley Floor Habitat Conservation Plan (VFHCP) area. The Draft VFHCP identifies three (3) zones representing the importance of conservation in that area. The project is located in a "Productive Oil Area" that is designated as having "Green Zone" habitat quality in the VFHCP. Although the VFHCP has not currently been adopted, the project does not propose actions or plans which would conflict with those considered in the Draft VFHCP. The project is not located within the boundaries of a Natural Community Conservation Plans (NCCP) or any other USFWS designated critical habitat. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would conflict with any applicable HCP or NCCP.

**Mitigation:** None required.

### **References**

California Department of Fish and Wildlife. *Conservation and Mitigation Banks in California Approved by the Department of Fish and Game*. Website:  
<http://www.dfg.ca.gov/habcon/conplan/mitbank/catalogue/catalogue.html>

California Department of Fish and Wildlife. *Natural Community Conservation Planning*. Website: <http://www.dfg.ca.gov/habcon/nccp/>.

County of Kern. *2009 General Plan*. Website:  
<http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGP.pdf>.

County of Kern. *Valley Floor Habitat Conservation Plan*. Website:  
[http://www.co.kern.ca.us/planning/pdfs/vfhcp\\_dec06.pdf](http://www.co.kern.ca.us/planning/pdfs/vfhcp_dec06.pdf)



County of Kern. *Engineering, Surveying and Permit Services*. Website:  
<http://esps.kerndsa.com/gis>.

County of Kern. *Metro Bakersfield Habitat Conservation Plan*. Website:  
<http://pcd.kerndsa.com/faq/metropolitan-bakersfield-habitat-conservation-plan>.

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

United States Fish and Wildlife Service. *Conservation Plans and Agreements Database*. Website: [http://ecos.fws.gov/conserv\\_plans/public.jsp](http://ecos.fws.gov/conserv_plans/public.jsp)

United States Fish and Wildlife Service. *Habitat Conservation Plans*. Website: <http://www.fws.gov/endangered/what-we-do/hcp-overview.html>

<b>XI. Mineral Resources</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

## XI. MINERAL RESOURCES

### Mineral Resources (a, b)

**Conclusion:** The project will not have an impact on mineral resources.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. The project sites are currently designated in the Kern County 2009 General Plan as Intensive Agriculture (Code 8.1) and Mineral and Petroleum (Code 8.4) and are currently zoned as Exclusive Agriculture (Zone A). Pursuant to Section 19.14.020(E) of the Zoning Ordinance of Kern Count, steam generators (excluding coal fired), are a permitted use, by right, in Zone A. Although an active gypsum mine is located to the southwest of Project Site 2, the project sites themselves are not located in an area known to contain a mineral resource that is of



value to the region or state. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would result in the loss of a known mineral resource or the availability of a locally important mineral resource recovery site.

**Mitigation:** None required.

**References**

California Department of Conservation, Division of Oil, Gas and Geothermal Resources. *DOGGR Online Mapping System (DOMS)*. Website:  
<http://maps.conservation.ca.gov/doms/index.html>

California Department of Conservation, California Geological Survey. *Mineral Resources*. Website:  
[http://www.conservation.ca.gov/cgs/geologic\\_resources/mineral\\_resource\\_mapping/Pages/Index.aspx](http://www.conservation.ca.gov/cgs/geologic_resources/mineral_resource_mapping/Pages/Index.aspx)

County of Kern. *2009 General Plan*. Website:  
<http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGP.pdf>.

County of Kern. *Engineering, Surveying and Permit Services*. Website:  
<http://esps.kerndsa.com/gis>.

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

<b>XII. Noise</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			<b>X</b>	
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?			<b>X</b>	
c) A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?			<b>X</b>	
d) A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?			<b>X</b>	



<b>XII. Noise (continued)</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
e) For a Project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?				<b>X</b>
f) For a Project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?				<b>X</b>

## XII. NOISE

### Exposure of Persons to Noise and Vibration and Ambient Noise Levels (a-d)

**Conclusion:** The project may result in the exposure of persons to increased noise or vibrations and may increase ambient noise levels in the project vicinity; however, the potential impacts are considered less than significant.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. The nearest business receptors are located approximately 0.25 miles southwest of Project Site 1. The nearest schools and residential receptors are located approximately six (6) miles southeast of Project Site 3 in the unincorporated community of Lost Hills.

Sound pressure decreases as distance between the source and the receptor increases. A sound level of 85 decibels (dB) measured at 50 feet from the source would decrease to about 63 dB at a distance of 600 feet. As such, the project will not exceed any standards set forth in the Kern County General Plan or Noise Ordinance at the nearest public receptor.

During construction activities, noise levels will be elevated. However, the increase in noise is temporary and will subside once construction of the project is completed. The nearest receptor is located approximately 0.45 mile from the project site. As such, construction activities would not cause a distinguishable change in noise levels to the general public.

The steam generators in this project will result in a permanent increase in ambient noise levels. Ambient noise levels are not expected to increase to above 90 db except in





areas immediately near the discharge headers. Future noise types and volumes will be consistent with current land use and existing operations. The nearest receptor is located approximately 0.45 mile from the project site. As such, the project would not cause a distinguishable change in noise levels to the general public.

State and federal standards set by the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) regulate the amount of time workers may be exposed to sound levels above 90 decibels. The project may result in noise exceeding 90 dB and a slight increase in ground vibration within 50 feet of the proposed steam generators. If the project results in noise exceeding 85 dB, VPC will comply with all OSHA regulations for the protection against the effects of noise exposure (CCR §5095-5100).

The District concludes that there is no substantial evidence of record to support a conclusion that the project would expose the public or VPC employees to significant increases in noise or vibrations.

**Mitigation:** None required.

#### **Increased Noise Exposure Near Airfields (e, f)**

**Conclusion:** The project will not expose people residing or working in the project area to excessive noise levels.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. The project is not located within two (2) miles of a private or public airport. The nearest private airport is owned by Paramount Farms/West Hills Co Op (2CN4) and is located at their facility approximately 5 miles west of the Project Site 1. The nearest public airport is the Lost Hill Kern County Airport (L84), located approximately six (6) miles southeast of the Project Site 1. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the Project would expose people residing or working in the project area to excessive noise levels.

**Mitigation:** None required.

#### **References**

California Department of Industrial Relations. *General Industry Safety Orders, Group 15. Occupational Noise*. Website: <http://www.dir.ca.gov/title8/sb7g15.html>

County of Kern. *2009 General Plan. Chapter 3 Noise Element*. Website: <http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGP.pdf>.



Google Earth. September 2012.

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

Sengpiel Audio. *Damping of Sound Level with Distance*. Website:  
<http://www.sengpielaudio.com/calculator-distance.htm>

United States Department of Labor. *Occupational Safety and Health Administration. Regulations (Standards - 29 CFR.)* Website:  
[http://www.osha.gov/pls/oshaweb/owadisp.show\\_document?p\\_id=9735&p\\_table=STANDARDS](http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=9735&p_table=STANDARDS)

<b>XIII. Population / Housing</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				<b>X</b>
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				<b>X</b>
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				<b>X</b>

### **XIII. POPULATION AND HOUSING**

#### **Population and Housing (a, b, c)**

**Conclusion:** The project will not result in a substantial growth in population growth or the displacement of people or housing units.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oilfield. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. The project will not increase substantial population growth in the area because the project is expected to be maintained and manned by existing VPC personnel and contractors. The project sites are located at or very near existing steam generator sites and are developed for current operations, which does not include on-site housing. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project



would induce substantial population growth or displace substantial numbers of people or housing.

**Mitigation:** None needed.

**References**

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

<b>XIV. Public Services</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?				<b>X</b>
ii) Police protection?				<b>X</b>
iii) Schools?				<b>X</b>
iv) Parks?				<b>X</b>
v) Other public facilities?				<b>X</b>

**XIV. PUBLIC SERVICES**

**Fire Protection and Police Protection (a.i, a.ii)**

**Conclusion:** The project will not require additional fire or police protection facilities and will not negatively impact the County's ability to provide services.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oil Field. The Lost Hills Oil Field covers approximately 31.25 square miles, which historically has been allowed for the exploration and production of oil. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses.

The project is located in an area designated by CAL FIRE as a Moderate Fire Hazard Severity Zones within a Local Responsible Area (LRA), and as such is serviced by the



Kern County Fire Department for fire protection services. The project is located in an area designated by Kern County as having a low/moderate Fire Hazard Severity Zone (FHSZ -1). The nearest Kern County Fire Department station (Station 26) is located approximately 6 miles southeast of the project in the unincorporated community of Lost Hills. The project will be designed to meet the standards of the current California Fire Code and Federal safety standards. Installation and operation of the project in accordance with these standards will minimize the potential for fire. No new or altered fire protection facility would be necessary. Therefore, the District concludes that construction and operation of the project would have a less than significant impact on fire protection capabilities in the project area.

The project area is serviced by the Kern County Sheriff Department for police protection services. The nearest sheriff station is located in the unincorporated community of Buttonwillow, approximately 25 miles southwest of the project. No new or altered police protection facility would be necessary. Therefore, the District concludes that construction and operation of the project would have a less than significant impact on police protection capabilities in the project area.

#### **Schools, Parks and Other Public Facilities (a.iii –a.v)**

**Conclusion:** The project will not require additional schools, parks, or other public facilities, nor will it negatively impact existing facilities.

**Discussion:** The project is located on property currently occupied by VPC which historically has allowed for the exploration and production of oil. The project is located within the existing boundaries of the Lost Hills Oilfield as designated by DOGGR, and is consistent with current operations. The project is expected to be maintained and manned by existing VPC personnel and contractors and, therefore, will not increase the population in the surrounding area. A lack of substantial increase in population precludes the possibility of the project having a negative impact on local schools and parks, or any other public facility. Therefore the District concludes that there is no substantial evidence of record to support a conclusion that the project would have a significant impact on public facilities.

#### **References**

California Department of Forestry and Fire Protection. *Fire Hazard Severity Zones Map*. Website: [http://www.fire.ca.gov/fire\\_prevention/fire\\_prevention\\_wildland\\_zones.php](http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_zones.php)

County of Kern. *Engineering, Surveying and Permit Services*. Website: <http://esps.kerndsa.com/gis>.

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.



<b>XV. Recreation</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				<b>X</b>
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				<b>X</b>

**XV. RECREATION**

**Recreational Facilities (a, b)**

**Conclusion:** The project will not have an impact on neighborhood or regional parks, or any other local recreational facilities.

**Discussion:** The project is within the existing boundaries of the Lost Hills Oilfield. The project is located on property currently occupied by VPC for oil production activities consistent with current and surrounding land uses. The project consists solely of the construction and operation of steam generators and is located on property currently occupied by VPC which historically has allowed for the exploration and production of oil. The project is expected to be maintained and manned by existing VPC personnel and contractors and, therefore, will not increase the population in the surrounding area. The project does not include new recreational facilities, and a lack of substantial increase in population precludes the possibility of the project having a negative impact on neighborhood and regional parks. The District concludes that there is no substantial evidence of record to support a conclusion that the project would have a significant impact on or resulting from recreational facilities.

**Mitigation:** None required.

**References**

County of Kern. *Engineering, Surveying and Permit Services. Website:*  
<http://esps.kerndsa.com/gis>.

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.



<b>XVI. Transportation / Traffic</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation systems, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				<b>X</b>
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				<b>X</b>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				<b>X</b>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				<b>X</b>
<b>XVI. Transportation / Traffic (continued)</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
e) Result in inadequate emergency access?				<b>X</b>
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				<b>X</b>



---

## XVI. TRANSPORTATION / TRAFFIC

### **Conflict with Transportation and Transit Plans and Facilities (a, b, f)**

**Conclusion:** The project will not conflict with any circulation plans, congestion management programs, or alternative transportation facilities.

**Discussion:** The project is located on property currently occupied by VPC which historically has allowed for the exploration and production of oil. The project is located within the existing boundaries of the Lost Hills Oilfield as designated by DOGGR, and is consistent with current operations. The project consists of the construction and operation of steam generators which are used in the oil recovery process. The project is expected to be maintained and manned by existing VPC personnel and contractors. As the project will not yield finished product, there will be no additional off-site vehicle trips associated with the operation of the project except for the occasional maintenance supplies.

The project is expected to be maintained and manned by existing VPC personnel and contractors. It is expected that approximately 26 workers will be needed during peak construction activities. It is expected that approximately 70 heavy-duty truck trips (35 trucks) are needed to transport construction materials. The trucks are expected to utilize one (1) of the following routes to access the project sites:

- From State Route 99: to Route 46 to Holloway Road; or
- From Interstate 5 (I-5) to Route 46 to Holloway Road

Project construction related traffic is short-term and will not be sufficient to impede the flow of traffic or decrease the level of service (LOS) on these roads.

Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would conflict with transportation and transit plans or would result in negative impacts to existing circulation systems.

**Mitigation:** None required.

### **Potential Safety Risks (c, d, e)**

**Conclusion:** Project related traffic will not change air traffic patterns or include hazardous design features and, therefore, will not pose a safety risk.

**Discussion:** The project is located on property currently occupied by VPC which historically has allowed for the exploration and production of oil. The project is located within the existing boundaries of the Lost Hills Oilfield as designated by DOGGR, and is consistent with current operations. The project consists solely of the construction and operation of steam generators. The project is not located within two (2) miles of a



private or public airport. The nearest private airport is owned by Paramount Farms/West Hills Co Op (2CN4) and is located at their facility approximately 5 miles west of the Project Site 1. The nearest public airport is the Lost Hill Kern County Airport (L84), located approximately six (6) miles southeast of the Project Site 1. Therefore, the project will not present any safety risks resulting from a change in air traffic patterns.

The project does not include the construction of new public roads or alterations to existing public roads or intersections. As such, the project will not result in increased road hazards. The project sites anticipate approximately two (2) vehicle access points during and after construction. Temporary equipment staging areas will become part of the plant site and be set aside for employee and visitor vehicle parking. Therefore, the project will be designed in such a manner that there are no potential impacts on emergency access.

**Mitigation:** None required.

**References**

Google Maps. September 2012.

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

<b>XVII. Utilities / Service Systems</b>		<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
Would the Project:	<b>Potentially Significant Impact</b>			
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				<b>X</b>
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				<b>X</b>
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				<b>X</b>
d) Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?			<b>X</b>	





<b>XVII. Utilities / Service Systems</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
e) Result in a determination by the wastewater treatment provider that serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?				<b>X</b>
f) Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?				<b>X</b>
g) Comply with federal, state, and local statutes and regulations related to solid waste?				<b>X</b>

**XVII. UTILITIES / SERVICE SYSTEMS**

**Wastewater Treatment and Facilities (a-b, e)**

**Conclusion:** The project would not exceed wastewater treatment requirements or require the construction of new wastewater facilities.

**Discussion:** The project is located on property currently occupied by VPC which historically has allowed for the exploration and production of oil. The project is located within the existing boundaries of the Lost Hills Oilfield as designated by DOGGR, and is consistent with current operations. The steam generators will provide steam for TEOR well operations within the Lost Hills Oil Field. The DOGGR's Well Review Program (WRP) requires consistency with the Underground Injection Control (UIC) regulations of the Safe Drinking Water Act and with the Basin Water Quality Control Plan adopted by the RWQCB for the Central Valley Region. The WRP, which covers each discrete cyclic steam oil well and each brine injection well, ensures that the project will not have a significant impact on existing water resources. Water produced by TEOR wells will be recycled to the extent possible (i.e. reinjected into the producing formation). Therefore, the project will not exceed wastewater treatment requirements or require the construction of new wastewater treatment facilities.

**Mitigation:** See Mitigation Measures HYD-1 and HYD-2.

**Storm Water Drainage and Facilities (c)**

**Conclusion:** The project would not require the construction of new storm water drainage facilities.



---

**Discussion:** The proposed steam generators will be sited in areas where there will be minimal “new” disturbance of soil. Approximately 6.4 acres of soil is expected to be disturbed in connection with the construction. All of the surface area disturbed by construction is to remain as part of the plant site after construction is complete. Precipitation at the project sites is rarely sufficient to cause runoff. Any runoff from the steam generator sites would either percolate near the project sites or runs to natural drainage channels. As such, the existing project sites will not be altered enough to have a negative effect on surface runoff or storm water drainage and new drainage facilities will not be required.

**Mitigation:** None required.

#### **Water Supply (d)**

**Conclusion:** The project will have sufficient water supplies and new or expanded entitlements are not required.

**Discussion:** The project is located on property currently occupied by VPC which historically has allowed for the exploration and production of oil. The project is located within the existing boundaries of the Lost Hills Oilfield as designated by DOGGR, and is consistent with current operations. The project will use water allowed under existing water entitlements held by VPC located within the Lost Hills Water District that has been purchased from Paramount Land Company LLC and Ugo Antongiovanni Farms. Existing on-site water wells pump water from the Tulare Formation, which is not a source of irrigation or drinking water due to total dissolved solids (TDS) levels which are above water quality standards for potable water. As such, the District concludes that the project will have sufficient water supplies available and will not result in any new or expanded entitlements.

**Mitigation:** None required.

#### **Solid Waste (f, g)**

**Conclusion:** The project will comply with all solid waste regulations and will not have an impact on the landfill that currently serves VPC’s Lost Hills operations.

**Discussion:** The project is located on property currently occupied by VPC which historically has allowed for the exploration and production of oil. The project is located within the existing boundaries of the Lost Hills Oilfield as designated by DOGGR, and is consistent with current operations. VPC’s Lost Hills operations are currently served by the Taft Sanitary Landfill. The project will result in only minimal amounts of solid waste and VPC has detailed guidelines for employees to ensure solid wastes are handled in accordance with all applicable laws. Therefore, the District concludes that there is no substantial evidence of record to support a conclusion that the project would have a significant impact resulting from the disposal of solid waste.



**Mitigation:** None required.

**References**

California Department of Conservation, Division of Oil, Gas and Geothermal Resources. *DOGGR Online Mapping System (DOMS)*. Website: <http://maps.conservation.ca.gov/doms/index.html>

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

<b>XVIII. Mandatory Findings of Significance</b>  Would the Project:	<b>Potentially Significant Impact</b>	<b>Potentially Significant Impact Unless Mitigated</b>	<b>Less Than Significant Impact</b>	<b>No Impact</b>
a) Does the Project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?		<b>X</b>		
b) Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively Considerable" means that the incremental effects of a Project are considerable when viewed in connection with the effects of past Projects, the effects of other current Projects, and the effects of probable future Projects)?		<b>X</b>		
c) Does the Project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?			<b>X</b>	



---

## **XVIII. MANDATORY FINDINGS OF SIGNIFICANCE**

### **Impacts on the Environment and Special Status Species (a)**

**Conclusion:** The project, with the incorporation of mitigation measures, will not result in significant impacts on the environment or special status plant and animal species.

**Discussion:** With the incorporation of required permit conditions, the surrender of ERCs, and the incorporation of mitigation measures as outlined in the Initial Study, the project will have a less than significant impact on the environment and special status species.

**Mitigation:** See Mitigation Measures: AIR-1 through AIR-4 and BIO-1 through BIO-16; GHG-1 and GHG-2; HAZ-1 through HAZ-4; and HYD-1 and HYD-2.

### **Cumulative Impacts (b)**

**Conclusion:** The project, with the incorporation of mitigation measures, will not have cumulatively significant impacts on the environment, plant and animal species, or the human population.

**Discussion:** CEQA Guidelines state that a Lead Agency shall consider whether the cumulative impact of a project is significant and whether the effects of the project are cumulatively considerable (CCR §15065). The assessment of the significance of the cumulative effects of the project must, therefore, be conducted in connection with the effects of past projects, other current projects, and probable future projects. Due to the nature and location of the project and consistency with environmental policies, incremental contributions to impacts are considered less than cumulatively considerable. The project is not a part of any larger, planned developments. Therefore, the project would not contribute substantially to adverse cumulative conditions, or create any substantial indirect impacts (i.e., an increase in population that could lead to an increase need to housing, increase in traffic, air pollutants, etc.).

**Mitigation:** See Mitigation Measures: AIR-1 through AIR-4; BIO-1 through BIO-16; CUL-1 and CUL-2; GHG-1 and GHG-2; HAZ-1 through HAZ-4; and HYD-1 and HYD-2.

### **Impacts on Humans (c)**

**Conclusion:** The project, with the incorporation of mitigation measures, will not result in significant environmental impacts that would cause substantial adverse effects on human beings.

**Discussion:** The analyses of environmental issues contained in this Initial Study indicate that the project is not expected to have a substantial impact on human beings, either directly or indirectly. Project design elements and mitigation measures have been



---

incorporated into the project to reduce all potentially significant impacts to less than significant.

**Mitigation:** See Mitigation Measures: AIR-1 through AIR-4; CUL-1 and CUL-2; GHG-1 and GHG-2; HAZ-1 through HAZ-4; and HYD-1 and HYD-2.

### **References**

County of Kern. *Engineering, Surveying and Permit Services*. Website:  
<http://esps.kerndsa.com/gis>.

Frost, Jerry, HES Advisor. Vintage Production California, LLC. Electronic and Telephone Communication.

Google Earth. September 2012.

San Joaquin Valley Unified Air Pollution Control District. March 2013. *Authority to Construct: Application Review*, Applicant No. S-1327, Project No. S-1123645. Available at San Joaquin Valley Air Pollution Control District. 34946 Flyover Court, Bakersfield, CA 93308-9725.

San Joaquin Valley Unified Air Pollution Control District. March 2012. *Risk Management Review* Applicant No. S-1327, Project No. S-1123645. Available at San Joaquin Valley Air Pollution Control District. 1990 East Gettysburg Avenue, Fresno, CA 93726.

## **H. Appendices**

- Appendix A. Acronyms and Abbreviations
- Appendix B. Mitigation Monitoring and Reporting Program
- Appendix C. Construction Emissions
- Appendix D. Engineering Evaluation
- Appendix E. Risk Management Review
- Appendix F. Reconnaissance-Level Biological Survey



---

## Appendix A. Acronyms and Abbreviations

AAQS	Ambient Air Quality Standards
AB 2588	Assembly Bill 2588 – Air Toxics “Hot Spots” Information and Assessment Act
ARB	California Air Resources Board
ATC	Authority to Construct
BACT	Best Available Control Technology
dB	Decibel
BPS	Best Performance Standards
CAL FIRE	California Department of Forestry and Fire Prevention
Cal/OSHA	California Department of Industrial Relations - Division of Occupational Safety and Health
CBSC	California Building Standards Code
CCR	California Code of Regulations
CFR	Code of Federal Regulation
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
District	San Joaquin Valley Unified Air Pollution Control District
DOGGR	California Division of Oil, Gas, and Geothermal Resources
DTSC	California Department of Toxic Substances Control
ERC	Emission Reduction Credit
ERG	Environmental Review Guidelines
ESA	Endangered Species Act
FGR	Flue Gas Recirculation
HAP	Hazardous Air Pollutant
HRA	Health Risk Assessment
LRA	Local Responsible Agency
MBHCP	Metropolitan Bakersfield Habitat Conservation Plan
MEI	Maximally Exposed Individual
MMBtu/hr	Million British Thermal Units Per Hour
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NOx	Oxides of Nitrogen
NRA	California Natural Resources Agency
NSR	New Source Review
O <sub>2</sub>	Oxygen
OSHA	US Department of Labor - Occupational Safety and Health Administration

---



---

PM <sub>10</sub>	Particulate Matter 10 microns in diameter
PM <sub>2.5</sub>	Particulate Matter 2.5 microns in diameter
ppmv	Parts Per Million, Volumetric
PRC	Public Resources Code
psia	Pounds Per Square Inch Absolute
PSD	Prevention of Significant Deterioration
RMR	Risk Management Review
ROG	Reactive Organic Gases
RWQCB	Regional Water Quality Control Board
SIP	State Implementation Plan
SO <sub>x</sub>	Sulfur Oxides
T-BACT	Toxics Best Available Control Technology
TAC	Toxic Air Contaminant
TEOR	Thermally Enhanced Oil Recovery
tpy	Tons Per Year
US EPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
VFHCP	Valley Floor Habitat Conservation Plan
VOC	Volatile Organic Compound
VPC	Vintage Production California, LLC

---



### Appendix B. Mitigation Monitoring and Reporting Program

Impact	Significance Prior to Mitigation	Measure Number	Mitigation Measure	Enforcement Agency	Significance After Mitigation
Operational emissions may exceed the District's thresholds of significance.	Potentially Significant	AIR-1	<p>For Units -141-2 through -145-2 (Option 1) the following condition will be included in the ATC:</p> <p>Prior to operating equipment under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,353 lb/quarter; PM10: 619 lb/quarter; and VOC: 144 lb/quarter. Offsets include the applicable offset ratio specified in Section 4.8 Rule 2201 (as amended 4/21/11). PM10 may be offset using SOx at an interpollutant offset ratio of 1.0 tons SOx/ton PM10. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act]</p> <p>For Units -141-3 through -145-3 (Option 2) the following condition will be included in the ATC:</p> <p>Prior to operating equipment under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 490 lb/quarter and PM10: 255 lb/quarter. Offsets include the applicable offset ratio specified in Section 4.8 Rule 2201 (as amended 4/21/11). PM10 may be offset using SOx at an interpollutant offset ratio of 1.0 tons SOx/ton PM10. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act]</p>	San Joaquin Valley Air Pollution Control District	Less than Significant
		AIR-2	<p>For Units -162-1 through -164-1, the following condition will be included in the ATC:</p> <p>Prior to operating equipment under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 2,256 lb/quarter and PM10: 255 lb/quarter. Offsets include the applicable offset ratio specified in Section 4.8 Rule 2201 (as amended 4/21/11). PM10 may be offset using SOx at an interpollutant offset ratio of 1.0 tons SOx/ton PM10. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act]</p>		
		AIR-3	<p>For Units -162-1 through -164-1, the following condition will be included in the ATC:</p> <p>Prior to operating equipment under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 2,256</p>		





Impact	Significance Prior to Mitigation	Measure Number	Mitigation Measure	Enforcement Agency	Significance After Mitigation
The project could result in take of a candidate, sensitive, or special status species.	Potentially Significant	AIR-4	<p>lb/quarter; PM10: 1,560 lb/quarter; and VOC: 1,129 lb/quarter. Offsets include the applicable offset ratio specified in Section 4.8 Rule 2201 (as amended 4/21/11). PM10 may be offset using SOx at an interpollutant offset ratio of 1.0 tons SOx/ton PM10. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act]</p> <p>For Unit -186-0 the following condition will be included in the ATC:</p> <p>Prior to operating equipment under this Authority to Construct, permittee shall surrender emission reduction credits for the following quantities of emissions: NOx: 1,943 lb/quarter; PM10: 692 lb/quarter; and VOC: 1,336 lb/quarter. Offsets include the applicable offset ratio specified in Section 4.8 Rule 2201 (as amended 4/21/11). PM10 may be offset using SOx at an interpollutant offset ratio of 1.0 tons SOx/ton PM10. [District Rule 2201 and Public Resources Code 21000-21177: California Environmental Quality Act]</p>	San Joaquin Valley Air Pollution Control District	Less than Significant



Impact	Significance Prior to Mitigation	Measure Number	Mitigation Measure	Enforcement Agency	Significance After Mitigation
		BIO-2	<p>During construction activities, standardized avoidance measures shall be implemented to preclude take of special status species. If standardized avoidance measures cannot be achieved Permittee will consult with the California Department of Fish and Wildlife (CDFW) and U.S. Fish and Wildlife Service (USFWS) to develop alternative compliance measures and/or obtain an Incidental Take Permit. If standardized avoidance measures fail and there is a take of a threatened or endangered species Permittee will notify USFWS, CDFW, and District immediately. Permittee shall make available to the District any documentation required by USFWS and CDFW.</p>		
		BIO-3	<p>Project-related vehicles should observe a daytime speed limit of 20-mph throughout the site in all project areas, except on county roads and State and Federal highways. In the event that construction activities should occur during night time, a 10-mph speed limit shall be observed from dusk until dawn. Off-road traffic outside of designated project areas should be prohibited.</p>		
		BIO-4	<p>During construction activities, all excavated, steep-walled holes or trenches more than two (2) feet deep shall be covered at the close of each working day by plywood or similar materials. If the holes or trenches cannot be closed, one or more escape ramps constructed of earthen-fill or wooden planks shall be installed. Before such holes or trenches are filled, they shall be thoroughly inspected for trapped animals. If at any time a trapped or injured kit fox is discovered, the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) shall be contacted as noted in Measure BIO-15.</p>		
		BIO-5	<p>All construction pipes, culverts, or similar structures with a diameter of four (4) inches or greater that are stored at a</p>		



San Joaquin Valley Unified Air Pollution Control District  
Initial Study and Draft Mitigated Negative Declaration  
Lost Hills Oil Field Expansion Project (S-1123645)

March 20, 2013

Impact	Significance Prior to Mitigation	Measure Number	Mitigation Measure	Enforcement Agency	Significance After Mitigation
		BIO-6	<p>construction site for one (1) or more overnight periods should be thoroughly inspected for kit foxes before the pipe is subsequently buried, capped, or otherwise used or moved in any way. If a kit fox is discovered inside a pipe, that section of pipe should not be moved until the U.S. Fish and Wildlife Service (USFWS) has been consulted. If necessary, and under the direct supervision of the biologist, the pipe may be moved only once to remove it from the path of construction activity, until the fox has escaped.</p> <p>All food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of in securely closed containers and removed at least once a week from the construction sites.</p>		
		BIO-7	<p>No firearms shall be allowed on the project sites.</p>		
		BIO-8	<p>No pets, such as dogs or cats, shall be permitted on the project sites.</p>		
		BIO-9	<p>Use of rodenticides and herbicides in the project sites shall be restricted. If use of these compounds is deemed necessary, Permittee shall observe label and other restrictions mandated by the U.S. Environmental Protection Agency (USEPA), California Department of Food and Agriculture (CDFA), and other State and Federal legislation, as well as additional project-related restrictions deemed necessary by the U.S. Fish and Wildlife Service (USFWS). If rodent control must be conducted, zinc phosphide shall be used.</p>		
		BIO-10	<p>Permittee shall appoint a representative to be the contact source for any employee or contractor who might inadvertently kill or injure a kit fox or who finds a dead, injured or entrapped kit fox. The representative will be identified during the employee education program and their name and telephone</p>		



San Joaquin Valley Unified Air Pollution Control District  
Initial Study and Draft Mitigated Negative Declaration  
Lost Hills Oil Field Expansion Project (S-1123645)

March 20, 2013

Impact	Significance Prior to Mitigation	Measure Number	Mitigation Measure	Enforcement Agency	Significance After Mitigation
		BIO-11	<p>number shall be provided to the U.S. Fish and Wildlife Service (USFWS).</p> <p>An employee education program shall be conducted for any project that has anticipated impacts to kit fox or other endangered species. The program should consist of a brief presentation by persons knowledgeable in kit fox biology and legislative protection to explain endangered species concerns to contractors, their employees, and military and/or agency personnel involved in the project. The program should include the following: a description of the San Joaquin kit fox and its habitat needs; a report of the occurrence of kit fox in the project area; an explanation of the status of the species and its protection under the Endangered Species Act; and a list of measures being taken to reduce impacts to the species during project construction and implementation. A fact sheet conveying this information should be prepared for distribution to the previously referenced people and anyone else who may enter the project site.</p>		
		BIO-12	<p>Upon completion of the project, all areas subject to temporary ground disturbances, including storage and staging areas, temporary roads, pipeline corridors, etc. should be re-contoured if necessary, and revegetated to promote restoration of the area to pre-project conditions. An area subject to "temporary" disturbance means any area that is disturbed during the project, but after project completion will not be subject to further disturbance and has the potential to be revegetated. Appropriate methods and plant species used to revegetate such areas should be determined on a site-specific basis in consultation with the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Wildlife (CDFW), and revegetation experts.</p>		



Impact	Significance Prior to Mitigation	Measure Number	Mitigation Measure	Enforcement Agency	Significance After Mitigation
		BIO-13	<p>In the case of trapped animals, escape ramps or structures shall be installed immediately to allow the animal(s) to escape, or the Service should be contacted for guidance.</p>		
		BIO-14	<p>Any contractor, employee, or agency personnel who are responsible for inadvertently killing or injuring a San Joaquin kit fox shall immediately report the incident to their representative identified in Measure BIO-10 above. This representative shall contact the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) immediately in the case of a dead, injured or entrapped kit fox. The CDFW contact for immediate assistance is State Dispatch at (916) 445-0045. They will contact the local warden or, Mr. Paul Hoffman, Wildlife Biologist. Contact information for CDFW and USFWS is provided below in Measure BIO-15.</p>		
		BIO-15	<p>The Sacramento Fish and Wildlife Office and California Department of Fish and Wildlife (CDFW) shall be notified in writing within three (3) working days of the accidental death or injury to a San Joaquin kit fox during project related activities. Notification must include the date, time, and location of the incident or of the finding of a dead or injured animal and any other pertinent information. Contact information is provided below.</p> <p>CDFW: Ms. Reagen O'Leary, Environmental Scientist 1234 E. Shaw Avenue Fresno, CA 93710 Phone: (559) 243-4014</p> <p>CDFW: Mr. Paul Hoffman, Wildlife Biologist 1701 Nimbus Road, Suite A Rancho Cordova, CA 95670 (530) 934-9309</p>		



San Joaquin Valley Unified Air Pollution Control District  
Initial Study and Draft Mitigated Negative Declaration  
Lost Hills Oil Field Expansion Project (S-1123645)

March 20, 2013

Impact	Significance Prior to Mitigation	Measure Number	Mitigation Measure	Enforcement Agency	Significance After Mitigation
		BIO-16	<p>USFWS: Chief of the Division of Endangered Species 2800 Cottage Way, Suite W2605 Sacramento, CA 95825-1846 (916) 414-6620 or (916) 414-6600.</p> <p>New sightings of kit fox shall be reported to the California Natural Diversity Database (CNDDB). A copy of the reporting form and a topographic map clearly marked with the location of where the kit fox was observed should also be provided to the U.S. Fish and Wildlife Service (USFWS) at the following address: Endangered Species Division, 2800 Cottage Way, Suite W2605, Sacramento, CA 95825-1846.</p>		
<p>The project could have an impact on archaeological or paleontological resources.</p>	<p>Less than Significant.</p>	<p>CUL-1</p>	<p>In the event that archaeological/paleontological resources are discovered during ground-disturbing activities, all work within 100 feet of the find shall cease and Permittee shall notify and retain a qualified archaeologist/paleontologist to assess and provide an evaluation of the significance of the find. A qualified archaeologist/paleontologist shall determine whether avoidance is necessary and feasible in light of the factors such as the nature of the find, project design, costs, and other considerations, and, if necessary, develop appropriate mitigation measures in consultation with Merced County and the Native American Heritage Commission (NAHC). In addition, should archaeological/paleontological resources be discovered, Permittee shall provide the District a written report in relation to the nature of the find.</p> <p>In the event that human remains are discovered during ground-disturbing activities, all work within 100 feet of the find shall cease and the discovery shall immediately be reported to the County Coroner (CC) and Native American Heritage Commission (NAHC) for further assessment. Permittee shall</p>	<p>San Joaquin Valley Air Pollution Control District</p>	<p>Less than Significant</p>



Impact	Significance Prior to Mitigation	Measure Number	Mitigation Measure	Enforcement Agency	Significance After Mitigation
Operational emissions may exceed the District's thresholds of significance.	Potentially Significant	GHG-1	<p>identify appropriate measures for treatment or disposition of the remains in consultation with the CC and NAHC. In addition, should human remains be discovered during ground-disturbing activities, Permittee shall provide the District a written report in relation to the nature of the find.</p> <p>For Units -141 through -145 and -186 the following condition will be included in the ATC:</p> <p>Steam generator shall be equipped with variable frequency drive electrical motors driving the blower and water pump and a convection section with at least 235 square feet of heat transfer surface area per MMBtu/hr of maximum rated heat input (verified by manufacturer) or a manufacturer's overall thermal efficiency rating of 88%.</p> <p>For Units -162 through -164 the following condition will be included in the ATC:</p> <p>Steam generator shall be equipped with variable frequency drive high efficiency electrical motors driving the blower and water pump, split flow dual pass water feed configuration, a convection section having at least 128 square feet of heater transfer surface area per MMBtu/hr of maximum rated heat input (verified by the manufacturer) and at least six inches of castable refractory or a manufacturer's overall thermal efficiency rating of at least 85% [Public Resources Code 21000-21177: California Environmental Quality Act]</p>	San Joaquin Valley Air Pollution Control District	Less than Significant



Impact	Significance Prior to Mitigation	Measure Number	Mitigation Measure	Enforcement Agency	Significance After Mitigation
<p>The project could expose employees and the public to hazardous materials.</p>	<p>Less than Significant</p>	<p>HAZ-1  HAZ-2  HAZ-3  HAZ-4</p>	<p>Prior to ground disturbance activities, Permittee shall provide the District documentation identifying all wells in the vicinity of the project site have been submitted to the Division of Oil, Gas, and Geothermal Resources (DOGGR) for compliance with DOGGR's "Well Review Program"</p> <p>Permittee shall retain written records on-site and notify DOGGR in the event unknown, unrecorded, abandoned, or damaged wells are discovered.</p> <p>Any wells discovered or exposed during construction activities will be tested for flammable vapors. Permittee shall retain these records onsite and the records shall be made available to the District upon inspection.</p> <p>Permittee shall retain written records on-site demonstrating compliance with all applicable Department of Toxic Substances Control (DTSC) regulations, including biennial hazardous waste reports for the use, discharge, and transport of potentially hazardous materials if necessary.</p>	<p>San Joaquin Valley Air Pollution Control District</p>	<p>Less than Significant</p>
<p>Project related waste water could have an impact on water quality.</p>	<p>Less than Significant</p>	<p>HYD-1  HYD-2</p>	<p>Permittee shall comply with all applicable Division of Oil, Gas, and Geothermal Resources (DOGGR) Underground Injection Control (UIC) requirements. Permittee shall retain any records deemed necessary by DOGGR onsite and the records shall be made available to the District upon inspection.</p> <p>Permittee shall comply with all applicable Regional Water Quality Control Board (RWQCB) water quality standard and waste discharge regulations. Permittee shall retain any permits/records deemed necessary by the RWQCB on-site and shall make these permits/records available to the District upon inspection.</p>	<p>San Joaquin Valley Air Pollution Control District</p>	<p>Less than Significant</p>





## **Appendix C. Construction Emissions**

## Road Construction Emissions Model, Version 7.1.2

Emission Estimates for ->										
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	4.4	40.1	57.5	22.2	2.2	20.0	6.1	2.0	4.2	9,538.5
Grading/Excavation	6.6	48.6	79.5	23.4	3.4	20.0	7.3	3.1	4.2	11,194.7
Drainage/Utilities/Sub-Grade	6.8	47.8	67.5	13.3	3.3	10.0	5.1	3.1	2.1	10,375.0
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (pounds/day)	6.8	48.6	79.5	23.4	3.4	20.0	7.3	3.1	4.2	11,194.7
Total (tons/construction project)	0.4	3.1	4.8	1.2	0.2	1.0	0.4	0.2	0.2	705.9

Notes: Project Start Year -> 2013

Project Length (months) -> 6

Total Project Area (acres) -> 6

Maximum Area Disturbed/Day (acres) -> 2

Total Soil Imported/Exported (yd<sup>3</sup>/day) -> 0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for ->										
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	2.0	18.2	26.1	10.1	1.0	9.1	2.8	0.9	1.9	4,335.7
Grading/Excavation	3.0	22.1	36.1	10.6	1.6	9.1	3.3	1.4	1.9	5,088.5
Drainage/Utilities/Sub-Grade	3.1	21.7	30.7	6.1	1.5	4.5	2.3	1.4	0.9	4,715.9
Paving	-	-	-	-	-	-	-	-	-	-
Maximum (kilograms/day)	3.1	22.1	36.1	10.6	1.6	9.1	3.3	1.4	1.9	5,088.5
Total (megagrams/construction project)	0.4	2.8	4.3	1.1	0.2	0.9	0.4	0.2	0.2	640.3

Notes: Project Start Year -> 2013

Project Length (months) -> 6

Total Project Area (hectares) -> 3

Maximum Area Disturbed/Day (hectares) -> 1

Total Soil Imported/Exported (meters<sup>3</sup>/day) -> 0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

# Road Construction Emissions Model Data Entry Worksheet

Version 7.1.2



Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background. The user is required to enter information in cells C10 through C25.

<b>Input Type</b>	
Project Name	2013
Construction Start Year	Enter a Year between 2009 and 2025 (inclusive)
Project Type	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	6.0 months
Predominant Soil/Site Type: Enter 1, 2, or 3	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
Project Length	0.2 miles
Total Project Area	6.4 acres
Maximum Area Disturbed/Day	2.0 acres
Water Trucks Used?	1. Yes 2. No
Soil Imported	0.0 yd <sup>3</sup> /day
Soil Exported	0.0 yd <sup>3</sup> /day
Average Truck Capacity	20.0 yd <sup>3</sup> (assume 20 if unknown)

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells C34 through C37.

Construction Periods	User Override of		Program Calculated
	Construction Months	Months	
Grubbing/Land Clearing	1.00	0.60	
Grading/Excavation	3.00	2.40	
Drainage/Utilities/Sub-Grade	2.00	2.10	
Paving		0.90	
<b>Totals</b>	<b>6.00</b>	<b>6.00</b>	

	2005	2006	2007
%	0.00	0.00	0.00
%	0.00	0.00	0.00
%	0.00	0.00	0.00
%	0.00	0.00	0.00

Hauling emission default values can be overridden in cells C45 through C46.

Soil Hauling Emissions		User Override of Soil Hauling Defaults		Default Values		
User Input						
Miles/round trip			30			
Round trips/day			0			
Vehicle miles traveled/day (calculated)					0	
Hauling Emissions						
Emission rate (grams/mile)	ROG	NOx	CO	PM10	PM2.5	CO2
Emission rate (grams/trip)	0.40	11.32	1.78	0.35	0.26	1716.84
Pounds per day	0.00	0.00	0.00	0.00	0.00	0.00
Tons per construction period	0.00	0.00	0.00	0.00	0.00	0.00

Worker commute default values can be overridden in cells C60 through C65.

Worker Commute Emissions		User Override of Worker Commute Default Values		Default Values		
Miles/ one-way trip			20			
One-way trips/day			2			
No. of employees: Grubbing/Land Clearing	8.00					
No. of employees: Grading/Excavation	11.00					
No. of employees: Drainage/Utilities/Sub-Grade	7.00					
No. of employees: Paving			4			
Emissions						
Emission rate - Grubbing/Land Clearing (grams/mile)	ROG	NOx	CO	PM10	PM2.5	CO2
Emission rate - Grading/Excavation (grams/mile)	0.204	0.283	2.490	0.047	0.020	443.262
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.204	0.283	2.490	0.045	0.020	443.262
Emission rate - Paving (grams/mile)	0.000	0.000	0.000	0.000	0.000	0.000
Emission rate - Grubbing/Land Clearing (grams/trip)	0.678	0.455	5.753	0.004	0.004	95.442
Emission rate - Grading/Excavation (grams/trip)	0.678	0.455	5.753	0.004	0.004	95.442
Emission rate - Draining/Utilities/Sub-Grade (gr/trip)	0.678	0.455	5.753	0.004	0.004	95.442
Emission rate - Paving (grams/trip)	0.000	0.000	0.000	0.000	0.000	0.000
Pounds per day - Grubbing/Land Clearing	0.191	0.231	2.161	0.034	0.015	319.159
Tons per const. Period - Grub/Land Clear	0.002	0.003	0.024	0.000	0.000	3.511
Pounds per day - Grading/Excavation	0.191	0.231	2.161	0.034	0.015	319.159
Tons per const. Period - Grading/Excavation	0.006	0.008	0.071	0.001	0.000	10.532
Pounds per day - Drainage/Utilities/Sub-Grade	0.191	0.231	2.161	0.032	0.015	319.159
Tons per const. Period - Drain/Util/Sub-Grade	0.004	0.005	0.048	0.001	0.000	7.021
Pounds per day - Paving	0.000	0.000	0.000	0.000	0.000	0.000
Tons per const. Period - Paving	0.000	0.000	0.000	0.000	0.000	0.000
tons per construction period	0.013	0.015	0.143	0.002	0.001	21.064

Water truck default values can be overridden in cells C93 through C99 and E91 through E99.

<b>Water Truck Emissions</b>		User Override of Default # Water Trucks	Program Estimate of Number of Water Trucks	User Override of Truck Miles Traveled/Day	Default Values Miles Traveled/Day	CO	NOx	PM10	PM2.5	CO2
Grubbing/Land Clearing - Exhaust	2.00	1	20.00	40						
Grading/Excavation - Exhaust	2.00	1	20.00	40						
Drainage/Utilities/Subgrade	1.00	1	20.00	40						
Emission rate - Grubbing/Land Clearing (grams/mile)	0.40		11.32	1.78	0.35	1716.84	0.26	1716.84		
Emission rate - Grading/Excavation (grams/mile)	0.40		11.32	1.78	0.35	1716.84	0.26	1716.84		
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.40		11.32	1.78	0.35	1716.84	0.26	1716.84		
Pounds per day - Grubbing/Land Clearing	0.04		1.00	0.16	0.03	151.26	0.02	151.26		
Tons per const. Period - Grub/Land Clear	0.00		0.03	0.01	0.00	4.99	0.00	4.99		
Pound per day - Grading/Excavation	0.04		1.00	0.16	0.03	151.26	0.02	151.26		
Tons per const. Period - Grading/Excavation	0.00		0.03	0.01	0.00	4.99	0.00	4.99		
Pound per day - Drainage/Utilities/Subgrade	0.02		0.50	0.08	0.02	75.63	0.01	75.63		
Tons per const. Period - Drainage/Utilities/Subgrade	0.00		0.01	0.00	0.00	1.66	0.00	1.66		

Fugitive dust default values can be overridden in cells C110 through C112.

<b>Fugitive Dust</b>		User Override of Max Acreage Disturbed/Day	Default Maximum Acreage/Day	PM10 pounds/day	PM10 tons/per period	PM2.5 pounds/day	PM2.5 tons/per period	PM2.5
Fugitive Dust - Grubbing/Land Clearing			2	20.0	0.2	4.2	0.0	
Fugitive Dust - Grading/Excavation			2	20.0	0.5	4.2	0.1	
Fugitive Dust - Drainage/Utilities/Subgrade	1.00		2	10.0	0.2	2.1	0.0	

### Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles Program-estimate	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	CO2 pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
	1.00	Bore/Drill Rigs	2.25	28.36	34.22	1.17	1.07	7059.32
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00	0.00	0.00
		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Excavators	0.00	0.00	0.00	0.00	0.00	0.00
		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
		Graders	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00	0.00
		Rollers	0.00	0.00	0.00	0.00	0.00	0.00
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
	1.00	Scrapers	1.60	7.26	20.03	0.81	0.75	1609.94
		Signal Boards	0.20	0.60	0.59	0.05	0.05	62.97
	0	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
	1.00	Tractors/Loaders/Backhoes	0.15	1.57	1.45	0.07	0.06	335.80
		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00	0.00
		Grubbing/Land Clearing	4.2	37.8	56.3	2.1	1.9	9068.0
		Grubbing/Land Clearing	0.0	0.4	0.6	0.0	0.0	99.7

Grading/Excavation		Default		CO2	PM2.5	PM10	NOx	CO	ROG	CO	NOx	PM10	PM2.5	CO2
Override of Default	Number of Vehicles	Program-estimate	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Bore/Drill Rigs	2.25	28.36	34.22	34.22	28.36	2.25	28.36	34.22	1.17	1.07	7059.32
			Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0		Cranes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Excavators	0.49	2.79	5.57	5.57	2.79	0.49	2.79	5.57	0.28	0.26	572.73
			Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Graders	1.13	3.49	11.12	11.12	3.49	1.13	3.49	11.12	0.62	0.57	672.89
			Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0		Other Construction Equipment	0.16	0.72	1.68	1.68	0.72	0.16	0.72	1.68	0.09	0.08	130.83
			Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Pavers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Pumps	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Rollers	0.41	1.51	3.59	3.59	1.51	0.41	1.51	3.59	0.27	0.25	279.78
			Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00			Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1		Scrapers	1.60	7.26	20.03	20.03	7.26	1.60	7.26	20.03	0.81	0.75	1609.94
			Signal Boards	0.20	0.60	0.59	0.59	0.60	0.20	0.60	0.59	0.05	0.05	62.97
	0		Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00			Tractors/Loaders/Backhoes	0.15	1.57	1.45	1.45	1.57	0.15	1.57	1.45	0.07	0.06	335.80
			Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Welders	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			Grading/Excavation	6.4	46.3	78.3	78.3	46.3	6.4	46.3	78.3	3.4	3.1	10724.3
			Grading	0.2	1.5	2.6	2.6	1.5	0.2	1.5	2.6	0.1	0.1	353.9

Drainage/Utilities/Subgrade	Override of Default Number of Vehicles	Default		ROG	CO	NOX	PM10	PM2.5	CO2
		Number of Vehicles	Program-estimate						
	1.00		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
	1.00		Air Compressors	0.87	3.50	5.33	0.48	0.44	507.95
	1.00		Bore/Drill Rigs	2.25	28.36	34.22	1.17	1.07	7059.32
	1.00		Cement and Mortar Mixers	0.07	0.35	0.43	0.02	0.02	57.88
	1.00		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
	1.00		Cranes	0.82	3.01	9.37	0.43	0.40	601.80
	1.00		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
	1.00		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
	1.00		Excavators	0.49	2.79	5.57	0.28	0.26	572.73
	1.00		Forklifts	0.28	0.90	2.29	0.19	0.18	165.47
	0.00	1	Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
			Graders	0.00	0.00	0.00	0.00	0.00	0.00
			Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
			Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
			Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Pavers	0.00	0.00	0.00	0.00	0.00	0.00
			Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		1	Plate Compactors	0.04	0.21	0.25	0.01	0.01	34.45
			Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
			Pumps	0.00	0.00	0.00	0.00	0.00	0.00
			Rollers	0.00	0.00	0.00	0.00	0.00	0.00
			Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
			Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
			Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	1	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
		0	Signal Boards	0.20	0.60	0.59	0.05	0.05	62.97
			Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
			Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
	1.00		Tractors/Loaders/Backhoes	0.15	1.57	1.45	0.07	0.06	335.80
	1.00	1	Trenchers	0.64	2.10	5.33	0.42	0.38	377.08
			Welders	0.75	2.14	1.99	0.19	0.17	204.74
			pounds per day	6.6	45.5	66.8	3.3	3.0	9980.2
			tons per phase	0.1	1.0	1.5	0.1	0.1	219.6



Paving	Override of Default Number of Vehicles	Default		Type	ROG	CO	NOx	PM10	PM2.5	CO2
		Number of Vehicles	Program-estimate							
				Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
				Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
				Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
				Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
				Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
				Cranes	0.00	0.00	0.00	0.00	0.00	0.00
				Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
				Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Excavators	0.00	0.00	0.00	0.00	0.00	0.00
				Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
				Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
				Graders	0.00	0.00	0.00	0.00	0.00	0.00
	1.00			Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
				Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
				Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		1	Pavers	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		1	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
				Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
				Pumps	0.00	0.00	0.00	0.00	0.00	0.00
				Rollers	0.00	0.00	0.00	0.00	0.00	0.00
			1	Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
				Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
				Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
				Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
			0	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00
				Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
				Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
	1.00			Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00
				Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
				Welders	0.00	0.00	0.00	0.00	0.00	0.00
				Paving	0.0	0.0	0.0	0.0	0.0	0.0
				Paving	0.0	0.0	0.0	0.0	0.0	0.0
				<b>Total Emissions all Phases (tons per construction period) =&gt;</b>	<b>0.4</b>	<b>2.9</b>	<b>4.7</b>	<b>0.2</b>	<b>0.2</b>	<b>673.2</b>

Equipment default values for horsepower and hours/day can be overridden in cells C289 through C322 and E289 through E322.

Equipment	Default Values Horsepower	Default Values Hours/day
Aerial Lifts	63	8
Air Compressors	106	8
Bore/Drill Rigs	206	8
Cement and Mortar Mixers	10	8
Concrete/Industrial Saws	64	8
Cranes	226	8
Crawler Tractors	208	8
Crushing/Proc. Equipment	142	8
Excavators	163	8
Forklifts	89	8
Generator Sets	66	8
Graders	175	8
Off-Highway Tractors	123	8
Off-Highway Trucks	400	8
Other Construction Equipment	172	8
Other General Industrial Equipment	88	8
Other Material Handling Equipment	167	8
Pavers	126	8
Paving Equipment	131	8
Plate Compactors	8	8
Pressure Washers	26	8
Pumps	53	8
Rollers	81	8
Rough Terrain Forklifts	100	8
Rubber Tired Dozers	255	8
Rubber Tired Loaders	200	8
Scrapers	362	8
Signal Boards	20	8
Skid Steer Loaders	65	8
Surfacing Equipment	254	8
Sweepers/Scrubbers	64	8
Tractors/Loaders/Backhoes	98	8
Trenchers	81	8
Welders	45	8

## Road Construction Emissions Model, Version 7.1.12

<b>Emission Estimates for -&gt;</b>											
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)	
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-	
Grading/Excavation	-	-	-	-	-	-	-	-	-	-	
Drainage/Utilities/Sub-Grade	8.5	74.6	94.5	14.2	4.2	10.0	5.9	3.8	2.1	17,239.8	
Paving	1.9	7.9	16.3	1.0	1.0	-	0.9	0.9	-	1,519.5	
<b>Maximum (pounds/day)</b>	<b>8.5</b>	<b>74.6</b>	<b>94.5</b>	<b>14.2</b>	<b>4.2</b>	<b>10.0</b>	<b>5.9</b>	<b>3.8</b>	<b>2.1</b>	<b>17,239.8</b>	
<b>Total (tons/construction project)</b>	<b>0.6</b>	<b>5.0</b>	<b>6.4</b>	<b>0.6</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.1</b>	<b>1,154.5</b>	

Notes: Project Start Year -> 2014

- Project Length (months) -> 7
- Total Project Area (acres) -> 6
- Maximum Area Disturbed/Day (acres) -> 2
- Total Soil Imported/Exported (yd<sup>3</sup>/day) -> 0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

<b>Emission Estimates for -&gt;</b>											
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)	
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-	
Grading/Excavation	-	-	-	-	-	-	-	-	-	-	
Drainage/Utilities/Sub-Grade	3.8	33.9	43.0	6.4	1.9	4.5	2.7	1.7	0.9	7,836.3	
Paving	0.9	3.6	7.4	0.4	0.4	-	0.4	0.4	-	690.7	
<b>Maximum (kilograms/day)</b>	<b>3.8</b>	<b>33.9</b>	<b>43.0</b>	<b>6.4</b>	<b>1.9</b>	<b>4.5</b>	<b>2.7</b>	<b>1.7</b>	<b>0.9</b>	<b>7,836.3</b>	
<b>Total (megagrams/construction project)</b>	<b>0.5</b>	<b>4.5</b>	<b>5.8</b>	<b>0.5</b>	<b>0.3</b>	<b>0.2</b>	<b>0.3</b>	<b>0.2</b>	<b>0.1</b>	<b>1,047.2</b>	

Notes: Project Start Year -> 2014

- Project Length (months) -> 7
- Total Project Area (hectares) -> 3
- Maximum Area Disturbed/Day (hectares) -> 1
- Total Soil Imported/Exported (meters<sup>3</sup>/day) -> 0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

# Road Construction Emissions Model Data Entry Worksheet

Version 7.1.2



Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background. The user is required to enter information in cells C10 through C25.

Input Type	
Project Name	2014
Construction Start Year	Enter a Year between 2009 and 2025 (inclusive)
Project Type	1 New Road Construction 2 Road Widening 3 Bridge/Overpass Construction
Project Construction Time	months 7.0
Predominant Soil/Site Type: Enter 1, 2, or 3	1. Sand Gravel 2. Weathered Rock-Earth 3. Blasted Rock
Project Length	miles 0.2
Total Project Area	acres 6.4
Maximum Area Disturbed/Day	acres 2.0
Water Trucks Used?	1. Yes 2. No 1
Soil Imported	yd <sup>3</sup> /day 0.0
Soil Exported	yd <sup>3</sup> /day 0.0
Average Truck Capacity	yd <sup>3</sup> (assume 20 if unknown) 20.0

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells C34 through C37.

Construction Periods	User Override of	Program
	Construction Months	Calculated Months
Grubbing/Clearing		0.70
Grading/Excavation		2.80
Drainage/Utilities/Sub-Grade	6.00	2.45
Paving	1.00	1.05
<b>Totals</b>	<b>7.00</b>	<b>7.00</b>

	2005	2006	2007
%	0.00	0.00	0.00
%	0.00	0.00	0.00
%	0.00	0.00	0.00
%	0.00	0.00	0.00

Hauling emission default values can be overridden in cells C46 through C46.

Soil Hauling Emissions		User Override of	
User Input	Soil Hauling Defaults	Default Values	
Miles/round trip		30	
Round trips/day		0	
Vehicle miles traveled/day (calculated)			0
Hauling Emissions			
Emission rate (grams/mile)	ROG	NOx	CO
Emission rate (grams/trip)	0.00	0.00	0.00
Pounds per day	0.00	0.00	0.00
Tons per construction period	0.00	0.00	0.00
	PM10	PM2.5	CO2
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.0	0.0	0.0
	0.00	0.00	0.00

Worker commute default values can be overridden in cells C60 through C65.

Worker Commute Emissions		User Override of Worker	
Commute Default Values	Default Values		
Miles/ one-way trip		20	
One-way trips/day		2	
No. of employees: Grubbing/Land Clearing		3	
No. of employees: Grading/Excavation		6	
No. of employees: Drainage/Utilities/Sub-Grade	10.33	6	
No. of employees: Paving		4	
Hauling Emissions			
Emission rate - Grubbing/Land Clearing (grams/mile)	ROG	NOx	CO
Emission rate - Grading/Excavation (grams/mile)	0.000	0.000	0.000
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.182	0.249	2.208
Emission rate - Paving (grams/mile)	0.182	0.249	2.208
Emission rate - Grubbing/Land Clearing (grams/trip)	0.000	0.000	0.000
Emission rate - Grading/Excavation (grams/trip)	0.616	0.407	5.187
Emission rate - Draining/Utilities/Sub-Grade (gr/trip)	0.616	0.407	5.187
Pounds per day - Paving (grams/trip)	0.000	0.000	0.000
Tons per const. Period - Grub/Land Clear	0.000	0.000	0.000
Pounds per day - Grading/Excavation	0.000	0.000	0.000
Tons per const. Period - Grading/Excavation	0.064	0.077	0.721
Pounds per day - Drainage/Utilities/Sub-Grade	0.004	0.005	0.048
Tons per const. Period - Drain/Util/Sub-Grade	0.084	0.077	0.721
Pounds per day - Paving	0.001	0.001	0.008
Tons per const. Period - Paving	0.005	0.006	0.055
tons per construction period			
	PM10	PM2.5	CO2
	0.000	0.000	0.000
	0.000	0.000	0.000
	0.047	0.020	443.370
	0.047	0.020	443.370
	0.000	0.000	0.000
	0.000	0.000	0.000
	0.004	0.003	95.481
	0.004	0.003	95.481
	0.000	0.000	0.000
	0.000	0.000	0.000
	0.000	0.000	0.000
	0.000	0.000	0.000
	0.013	0.005	119.714
	0.001	0.000	7.901
	0.013	0.005	168.543
	0.000	0.000	1.854
	0.001	0.000	9.755

Water truck default values can be overridden in cells C91 through C93 and E91 through E93.

Water Truck Emissions	User Override of Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Day		Default Values Miles Traveled/Day		
	Default # Water Trucks	2.00	1	1	Miles Traveled/Day	20.00	Miles Traveled/Day	40	
Grubbing/Land Clearing - Exhaust	2.00		1		20.00		40		
Grading/Excavation - Exhaust	1.00		1		20.00		40		
Drainage/Utilities/Subgrade									
	<b>ROG</b>		<b>NOX</b>		<b>CO</b>		<b>PM10</b>	<b>PM2.5</b>	<b>CO2</b>
Emission rate - Grubbing/Land Clearing (grams/mile)	0.00		0.00		0.00		0.00	0.00	0.00
Emission rate - Grading/Excavation (grams/mile)	0.00		0.00		0.00		0.00	0.00	0.00
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.28		10.43		1.26		0.25	0.18	1713.35
Pounds per day - Grubbing/Land Clearing	0.00		0.00		0.00		0.00	0.00	0.00
Tons per const. Period - Grub/Land Clear	0.00		0.00		0.00		0.00	0.00	0.00
Pound per day - Grading/Excavation	0.00		0.00		0.00		0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00		0.00		0.00		0.00	0.00	0.00
Pound per day - Drainage/Utilities/Subgrade	0.01		0.46		0.06		0.01	0.01	75.48
Tons per const. Period - Drainage/Utilities/Subgrade	0.00		0.03		0.00		0.00	0.00	4.98

Fugitive dust default values can be overridden in cells C:110 through C:112.

Fugitive Dust	User Override of Max Acreage Disturbed/Day		Default Maximum Acreage/Day		PM10 pounds/day		PM2.5 pounds/day		PM2.5 tons/per period	
	Default	0	0	0	tons/per period	tons/per period	tons/per period	tons/per period	tons/per period	
Fugitive Dust - Grubbing/Land Clearing					0.0	0.0	0.0	0.0	0.0	0.0
Fugitive Dust - Grading/Excavation					0.0	0.0	0.0	0.0	0.0	0.0
Fugitive Dust - Drainage/Utilities/Subgrade	1.00		2		10.0	0.3	2.1	2.1	0.1	0.1

### Off-Road Equipment Emissions

Grubbing/Land Clearing Override of Default Number of Vehicles	Default Number of Vehicles Program-estimate	Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	CO2 pounds/day
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
		Cranes	0.00	0.00	0.00	0.00	0.00	0.00
		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Excavators	0.00	0.00	0.00	0.00	0.00	0.00
		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
		Graders	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Pavers	0.00	0.00	0.00	0.00	0.00	0.00
		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
		Pumps	0.00	0.00	0.00	0.00	0.00	0.00
		Rollers	0.00	0.00	0.00	0.00	0.00	0.00
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
	1.00	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
		Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00
	0	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
	1.00	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00
		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
		Welders	0.00	0.00	0.00	0.00	0.00	0.00
		Grubbing/Land Clearing	0.0	0.0	0.0	0.0	0.0	0.0
		Grubbing/Land Clearing	0.0	0.0	0.0	0.0	0.0	0.0

Grading/Excavation	Default		Type	ROG	CO	NOx	PM10	PM2.5	CO2
	Override of Default	Number of Vehicles							
	Program-estimate			pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day
			Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
			Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
			Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
			Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
			Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
	0		Cranes	0.00	0.00	0.00	0.00	0.00	0.00
			Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
			Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
	1		Excavators	0.00	0.00	0.00	0.00	0.00	0.00
			Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
			Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
	1		Graders	0.00	0.00	0.00	0.00	0.00	0.00
			Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
			Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
	0		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Pavers	0.00	0.00	0.00	0.00	0.00	0.00
			Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
			Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
			Pumps	0.00	0.00	0.00	0.00	0.00	0.00
	1.00		Rollers	0.00	0.00	0.00	0.00	0.00	0.00
			Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
			Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
	1		Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
	0		Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00
			Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
			Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Sweepers/Scrubbbers	0.00	0.00	0.00	0.00	0.00	0.00
	1.00		Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00
			Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
			Welders	0.00	0.00	0.00	0.00	0.00	0.00
			Grading/Excavation	0.0	0.0	0.0	0.0	0.0	0.0
			Grading	0.0	0.0	0.0	0.0	0.0	0.0



Drainage/Utilities/Subgrade	Override of Default Number of Vehicles	Default		ROG	CO	NOx	PM10	PM2.5	CO2
		Number of Vehicles	Program-estimate						
				0.00	0.00	0.00	0.00	0.00	0.00
	1.00		Aerial Lifts	0.80	3.47	5.00	0.44	0.41	507.95
	2.00		Air Compressors	4.36	56.74	63.04	2.14	1.97	14123.38
	1.00		Bore/Drill Rigs	0.07	0.35	0.43	0.02	0.02	57.88
			Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
	1.00		Concrete/Industrial Saws	0.79	3.00	9.03	0.41	0.38	601.76
			Cranes	0.00	0.00	0.00	0.00	0.00	0.00
			Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
			Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
	1.00		Excavators	0.45	2.79	5.10	0.25	0.23	572.77
	1.00		Forklifts	0.26	0.90	2.17	0.18	0.17	165.47
	0.00		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	1	Graders	0.00	0.00	0.00	0.00	0.00	0.00
			Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
			Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
			Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Pavers	0.00	0.00	0.00	0.00	0.00	0.00
			Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		1	Plate Compactors	0.04	0.21	0.25	0.01	0.01	34.45
			Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
			Pumps	0.00	0.00	0.00	0.00	0.00	0.00
			Rollers	0.00	0.00	0.00	0.00	0.00	0.00
			Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
			Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
			Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	1	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
		0	Signal Boards	0.18	0.58	0.57	0.05	0.04	62.97
			Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
			Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
	1.00		Tractors/Loaders/Backhoes	0.14	1.57	1.34	0.05	0.05	336.13
		1	Trenchers	0.61	2.10	5.16	0.40	0.37	377.07
	1.00		Welders	0.68	2.06	1.91	0.17	0.16	204.74
				8.4	73.8	94.0	4.1	3.8	17044.6
Drainage			pounds per day	0.6	4.9	6.2	0.3	0.3	1124.9
Drainage			tons per phase						

Paving	Override of Default Number of Vehicles	Default		Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	CO2 pounds/day
		Number of Vehicles	Program-estimate							
				Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
				Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
				Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
				Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
				Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
				Cranes	0.00	0.00	0.00	0.00	0.00	0.00
				Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
				Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Excavators	0.00	0.00	0.00	0.00	0.00	0.00
				Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
				Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
	1.00			Graders	1.12	3.49	10.95	0.61	0.57	672.31
				Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
				Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
				Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		1	Pavers	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		1	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
				Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
				Pumps	0.00	0.00	0.00	0.00	0.00	0.00
			1	Rollers	0.39	1.51	3.40	0.25	0.23	279.56
				Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
				Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
				Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
				Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
			0	Signal Boards	0.18	0.58	0.57	0.05	0.04	62.97
				Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
				Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
	1.00			Tractors/Loaders/Backhoes	0.14	1.57	1.34	0.05	0.05	336.13
				Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
				Welders	0.00	0.00	0.00	0.00	0.00	0.00
				Paving	1.8	7.2	16.3	1.0	0.9	1351.0
				Paving	0.0	0.1	0.2	0.0	0.0	14.9
				<b>Total Emissions all Phases (tons per construction period) =&gt;</b>	<b>0.6</b>	<b>4.9</b>	<b>6.4</b>	<b>0.3</b>	<b>0.3</b>	<b>1139.8</b>

Equipment default values for horsepower and hours/day can be overridden in cells C289 through C322 and E289 through E322.

Equipment	Default Values Horsepower	Default Values Hours/day
Aerial Lifts	63	8
Air Compressors	106	8
Bore/Drill Rigs	206	8
Cement and Mortar Mixers	500.00	8
Concrete/Industrial Saws	10	8
Cranes	64	8
Crawler Tractors	226	8
Crushing/Proc. Equipment	208	8
Excavators	142	8
Forklifts	163	8
Generator Sets	89	8
Graders	66	8
Off-Highway Tractors	175	8
Off-Highway Trucks	123	8
Other Construction Equipment	400	8
Other General Industrial Equipment	172	8
Other Material Handling Equipment	88	8
Pavers	167	8
Paving Equipment	126	8
Plate Compactors	131	8
Pressure Washers	8	8
Pumps	26	8
Rollers	53	8
Rough Terrain Forklifts	81	8
Rubber Tired Dozers	100	8
Rubber Tired Loaders	255	8
Scrapers	200	8
Signal Boards	362	8
Skid Steer Loaders	20	8
Surfacing Equipment	65	8
Sweepers/Scrubbers	254	8
Tractors/Loaders/Backhoes	64	8
Trenchers	98	8
Welders	81	8
	45	8

## Road Construction Emissions Model, Version 7.1.1

Emission Estimates for ->										
Project Phases (English Units)	ROG (lbs/day)	CO (lbs/day)	NOx (lbs/day)	Total PM10 (lbs/day)	Exhaust PM10 (lbs/day)	Fugitive Dust PM10 (lbs/day)	Total PM2.5 (lbs/day)	Exhaust PM2.5 (lbs/day)	Fugitive Dust PM2.5 (lbs/day)	CO2 (lbs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	-	-	-	-	-	-	-	-	-	-
Drainage/Utilities/Sub-Grade	8.6	74.4	95.6	14.3	4.3	10.0	6.0	3.9	2.1	17,254.6
Paving	-	-	-	-	-	-	-	-	-	-
<b>Maximum (pounds/day)</b>	8.6	74.4	95.6	14.3	4.3	10.0	6.0	3.9	2.1	17,254.6
<b>Total (tons/construction project)</b>	0.4	3.3	4.2	0.3	0.2	0.2	0.2	0.2	0.0	759.2

Notes: Project Start Year -> 2015

Project Length (months) -> 4

Total Project Area (acres) -> 6

Maximum Area Disturbed/Day (acres) -> 2

Total Soil Imported/Exported (yd<sup>3</sup>/day) -> 0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

Emission Estimates for ->										
Project Phases (Metric Units)	ROG (kgs/day)	CO (kgs/day)	NOx (kgs/day)	Total PM10 (kgs/day)	Exhaust PM10 (kgs/day)	Fugitive Dust PM10 (kgs/day)	Total PM2.5 (kgs/day)	Exhaust PM2.5 (kgs/day)	Fugitive Dust PM2.5 (kgs/day)	CO2 (kgs/day)
Grubbing/Land Clearing	-	-	-	-	-	-	-	-	-	-
Grading/Excavation	-	-	-	-	-	-	-	-	-	-
Drainage/Utilities/Sub-Grade	3.9	33.8	43.5	6.5	1.9	4.5	2.7	1.8	0.9	7,843.0
Paving	-	-	-	-	-	-	-	-	-	-
<b>Maximum (kilograms/day)</b>	3.9	33.8	43.5	6.5	1.9	4.5	2.7	1.8	0.9	7,843.0
<b>Total (megagrams/construction project)</b>	0.3	3.0	3.8	0.3	0.2	0.1	0.2	0.2	0.0	688.6

Notes: Project Start Year -> 2015

Project Length (months) -> 4

Total Project Area (hectares) -> 3

Maximum Area Disturbed/Day (hectares) -> 1

Total Soil Imported/Exported (meters<sup>3</sup>/day) -> 0

PM10 and PM2.5 estimates assume 50% control of fugitive dust from watering and associated dust control measures if a minimum number of water trucks are specified.

Total PM10 emissions shown in column F are the sum of exhaust and fugitive dust emissions shown in columns H and I. Total PM2.5 emissions shown in Column J are the sum of exhaust and fugitive dust emissions shown in columns K and L.

# Road Construction Emissions Model Data Entry Worksheet

Version 7.1.2



Note: Required data input sections have a yellow background. Optional data input sections have a blue background. Only areas with a yellow or blue background can be modified. Program defaults have a white background. The user is required to enter information in cells C10 through C25.

<b>Input Type</b>	
<b>Project Name</b>	
<b>Construction Start Year</b>	2015
<b>Project Type</b>	1
<b>Project Construction Time</b>	4.0
<b>Predominant Soil/Site Type: Enter 1, 2, or 3</b>	1
<b>Project Length</b>	0.2
<b>Total Project Area</b>	6.4
<b>Maximum Area Disturbed/Day</b>	2.0
<b>Water Trucks Used?</b>	1
<b>Soil Imported</b>	0.0
<b>Soil Exported</b>	0.0
<b>Average Truck Capacity</b>	20.0

Enter a Year between 2009 and 2025 (Inclusive)

1 New Road Construction  
2 Road Widening  
3 Bridge/Overpass Construction

months

1. Sand Gravel  
2. Weathered Rock-Earth  
3. Blasted Rock

miles  
acres  
acres  
1. Yes  
2. No  
yd<sup>3</sup>/day  
yd<sup>3</sup>/day  
yd<sup>3</sup> (assume 20 if unknown)

To begin a new project, click this button to clear data previously entered. This button will only work if you opted not to disable macros when loading this spreadsheet.

The remaining sections of this sheet contain areas that can be modified by the user, although those modifications are optional.

Note: The program's estimates of construction period phase length can be overridden in cells C34 through C37.

Construction Periods	User Override of	Program
	Construction Months	Calculated Months
Grubbing/Land Clearing	0.40	0.40
Grading/Excavation	1.60	1.60
Drainage/Utilities/Sub-Grade	4.00	4.00
Paving	0.60	0.60
<b>Totals</b>	<b>4.00</b>	<b>4.00</b>

	2005	2006	2007
%	0.00	0.00	0.00
%	0.00	0.00	0.00
%	0.00	0.00	0.00
%	0.00	0.00	0.00

Hauling emission default values can be overridden in cells C45 through C46.

### Soil Hauling Emissions

User Input	User Override of		ROG	NOX	CO	PM10	PM2.5	CO2
	Soil Hauling Defaults	Default Values						
Miles/round trip		30	0.00	0.00	0.00	0.00	0.00	0.00
Round trips/day		0	0.00	0.00	0.00	0.00	0.00	0.00
Vehicle miles traveled/day (calculated)		0	0.00	0.00	0.00	0.00	0.00	0.00

Hauling Emissions	ROG	NOX	CO	PM10	PM2.5	CO2
Emission rate (grams/mile)	0.00	0.00	0.00	0.00	0.00	0.00
Emission rate (grams/trip)	0.00	0.00	0.00	0.00	0.00	0.00
Pounds per day	0.00	0.00	0.00	0.00	0.00	0.00
Tons per construction period	0.00	0.00	0.00	0.00	0.00	0.00

Worker commute default values can be overridden in cells C60 through C65.

### Worker Commute Emissions

User Input	User Override of Worker		ROG	NOX	CO	PM10	PM2.5	CO2
	Commute Default Values	Default Values						
Miles/ one-way trip		20	0.000	0.000	0.000	0.000	0.000	0.000
One-way trips/day		2	0.000	0.000	0.000	0.000	0.000	0.000
No. of employees: Grubbing/Land Clearing		3	0.164	0.219	1.956	0.045	0.020	443.518
No. of employees: Grading/Excavation		6	0.000	0.000	0.000	0.000	0.000	0.000
No. of employees: Drainage/Utilities/Sub-Grade	12.00	6	0.000	0.000	0.000	0.000	0.000	0.000
No. of employees: Paving		4	0.658	0.363	4.666	0.004	0.003	95.528

Worker Commute Emissions	ROG	NOX	CO	PM10	PM2.5	CO2
Emission rate - Grubbing/Land Clearing (grams/mile)	0.000	0.000	0.000	0.000	0.000	0.000
Emission rate - Grading/Excavation (grams/mile)	0.000	0.000	0.000	0.000	0.000	0.000
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.164	0.219	1.956	0.045	0.020	443.518
Emission rate - Paving (grams/mile)	0.000	0.000	0.000	0.000	0.000	0.000
Emission rate - Grubbing/Land Clearing (grams/trip)	0.000	0.000	0.000	0.000	0.000	0.000
Emission rate - Grading/Excavation (grams/trip)	0.000	0.000	0.000	0.000	0.000	0.000
Emission rate - Draining/Utilities/Sub-Grade (gr/trip)	0.658	0.363	4.666	0.004	0.003	95.528
Emission rate - Paving (grams/trip)	0.000	0.000	0.000	0.000	0.000	0.000
Pounds per day - Grubbing/Land Clearing	0.000	0.000	0.000	0.000	0.000	0.000
Tons per const. Period - Grub/Land Clear	0.000	0.000	0.000	0.000	0.000	0.000
Pounds per day - Grading/Excavation	0.000	0.000	0.000	0.000	0.000	0.000
Tons per const. Period - Grading/Excavation	0.000	0.000	0.000	0.000	0.000	0.000
Pounds per day - Drainage/Utilities/Sub-Grade	0.058	0.068	0.640	0.012	0.005	119.754
Tons per const. Period - Drain/Util/Sub-Grade	0.003	0.003	0.028	0.001	0.000	5.269
Pounds per day - Paving	0.000	0.000	0.000	0.000	0.000	0.000
Tons per const. Period - Paving	0.000	0.000	0.000	0.000	0.000	0.000
Tons per construction period	0.003	0.003	0.028	0.001	0.000	5.269

Water truck default values can be overridden in cells C91 through C93 and E91 through E93.

Water Truck Emissions	User Override of Default # Water Trucks		Program Estimate of Number of Water Trucks		User Override of Truck Miles Traveled/Day		Default Values Miles Traveled/Day	
	Default #	Water Trucks	Number of Water Trucks	Water Trucks	Miles Traveled/Day	Miles Traveled/Day	PM10	CO2
Grubbing/Land Clearing - Exhaust	2.00		1		20.00	40	0.00	0.00
Grading/Excavation - Exhaust	2.00		1		20.00	40	0.00	0.00
Drainage/Utilities/Subgrade	1.00		1		20.00	40	0.00	0.00
Emission rate - Grubbing/Land Clearing (grams/mile)	ROG		0.00	NOx	0.00	CO	0.00	0.00
Emission rate - Grading/Excavation (grams/mile)	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Emission rate - Draining/Utilities/Sub-Grade (gr/mile)	0.25		9.41	0.22	1.09	0.15	1694.67	0.00
Pounds per day - Grubbing/Land Clearing	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grub/Land Clear	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Pound per day - Grading/Excavation	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Tons per const. Period - Grading/Excavation	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Pound per day - Drainage/Utilities/Subgrade	0.01		0.41	0.01	0.05	0.01	74.66	0.00
Tons per const. Period - Drainage/Utilities/Subgrade	0.00		0.02	0.00	0.00	0.00	0.00	3.28

Fugitive dust default values can be overridden in cells C110 through C112.

Fugitive Dust	User Override of Max Acreage Disturbed/Day		Default Maximum Acreage/Day		PM10 pounds/day		PM2.5 pounds/day	
	Acreage Disturbed/Day	Maximum Acreage/Day	PM10 tons/per period	PM2.5 tons/per period	PM10 pounds/day	PM2.5 pounds/day	PM10 tons/per period	PM2.5 tons/per period
Fugitive Dust - Grubbing/Land Clearing		0	0.0	0.0	0.0	0.0	0.0	0.0
Fugitive Dust - Grading/Excavation		0	0.0	0.0	0.0	0.0	0.0	0.0
Fugitive Dust - Drainage/Utilities/Subgrade	1.00	2	10.0	0.2	2.1	0.0	0.0	0.0

# Off-Road Equipment Emissions

Grubbing/Land Clearing		Default	Emissions						
Override of Default	Number of Vehicles	Number of Vehicles	ROG	CO	NOx	PM10	PM2.5	CO2	
	Program-estimate	Type	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	pounds/day	
		Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00	
		Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00	
		Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00	
		Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00	
		Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00	
		Cranes	0.00	0.00	0.00	0.00	0.00	0.00	
		Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00	
		Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00	
		Excavators	0.00	0.00	0.00	0.00	0.00	0.00	
		Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	
		Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00	
		Graders	0.00	0.00	0.00	0.00	0.00	0.00	
		Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00	
		Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00	
		Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00	
		Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00	
		Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00	
		Pavers	0.00	0.00	0.00	0.00	0.00	0.00	
		Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00	
		Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00	
		Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00	
		Pumps	0.00	0.00	0.00	0.00	0.00	0.00	
		Rollers	0.00	0.00	0.00	0.00	0.00	0.00	
		Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00	
	0.00	Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00	
	1.00	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00	
		Scrapers	0.00	0.00	0.00	0.00	0.00	0.00	
		Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00	
	0	Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00	
		Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00	
		Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00	
	1.00	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00	
		Trenchers	0.00	0.00	0.00	0.00	0.00	0.00	
		Welders	0.00	0.00	0.00	0.00	0.00	0.00	
		Grubbing/Land Clearing	0.0	0.0	0.0	0.0	0.0	0.0	
		Grubbing/Land Clearing	0.0	0.0	0.0	0.0	0.0	0.0	



Grading/Excavation Override of Default Number of Vehicles	Default		Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	CO2 pounds/day
	Number of Vehicles	Program-estimate							
			Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
			Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
			Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
			Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
			Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
		0	Cranes	0.00	0.00	0.00	0.00	0.00	0.00
			Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
			Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
		1	Excavators	0.00	0.00	0.00	0.00	0.00	0.00
			Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
			Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
		1	Graders	0.00	0.00	0.00	0.00	0.00	0.00
			Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
			Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
		0	Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Pavers	0.00	0.00	0.00	0.00	0.00	0.00
			Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
			Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
			Pumps	0.00	0.00	0.00	0.00	0.00	0.00
		1.00	Rollers	0.00	0.00	0.00	0.00	0.00	0.00
			Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
			Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
		0.00	Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
		1	Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
		0	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00
			Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
			Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
			Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
		1.00	Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00
			Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
			Welders	0.00	0.00	0.00	0.00	0.00	0.00
			Grading/Excavation	0.0	0.0	0.0	0.0	0.0	0.0
			Grading	0.0	0.0	0.0	0.0	0.0	0.0



Paving	Override of Default Number of Vehicles	Default		Type	ROG pounds/day	CO pounds/day	NOx pounds/day	PM10 pounds/day	PM2.5 pounds/day	CO2 pounds/day
		Number of Vehicles	Program-estimate							
				Aerial Lifts	0.00	0.00	0.00	0.00	0.00	0.00
				Air Compressors	0.00	0.00	0.00	0.00	0.00	0.00
				Bore/Drill Rigs	0.00	0.00	0.00	0.00	0.00	0.00
				Cement and Mortar Mixers	0.00	0.00	0.00	0.00	0.00	0.00
				Concrete/Industrial Saws	0.00	0.00	0.00	0.00	0.00	0.00
				Cranes	0.00	0.00	0.00	0.00	0.00	0.00
				Crawler Tractors	0.00	0.00	0.00	0.00	0.00	0.00
				Crushing/Proc. Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Excavators	0.00	0.00	0.00	0.00	0.00	0.00
				Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
				Generator Sets	0.00	0.00	0.00	0.00	0.00	0.00
				Graders	0.00	0.00	0.00	0.00	0.00	0.00
	1.00			Off-Highway Tractors	0.00	0.00	0.00	0.00	0.00	0.00
				Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00	0.00
				Other Construction Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Other General Industrial Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Other Material Handling Equipment	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		1	Pavers	0.00	0.00	0.00	0.00	0.00	0.00
	0.00		1	Paving Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Plate Compactors	0.00	0.00	0.00	0.00	0.00	0.00
				Pressure Washers	0.00	0.00	0.00	0.00	0.00	0.00
				Pumps	0.00	0.00	0.00	0.00	0.00	0.00
			1	Rollers	0.00	0.00	0.00	0.00	0.00	0.00
				Rough Terrain Forklifts	0.00	0.00	0.00	0.00	0.00	0.00
				Rubber Tired Dozers	0.00	0.00	0.00	0.00	0.00	0.00
				Rubber Tired Loaders	0.00	0.00	0.00	0.00	0.00	0.00
				Scrapers	0.00	0.00	0.00	0.00	0.00	0.00
			0	Signal Boards	0.00	0.00	0.00	0.00	0.00	0.00
				Skid Steer Loaders	0.00	0.00	0.00	0.00	0.00	0.00
				Surfacing Equipment	0.00	0.00	0.00	0.00	0.00	0.00
				Sweepers/Scrubbers	0.00	0.00	0.00	0.00	0.00	0.00
	1.00			Tractors/Loaders/Backhoes	0.00	0.00	0.00	0.00	0.00	0.00
				Trenchers	0.00	0.00	0.00	0.00	0.00	0.00
				Welders	0.00	0.00	0.00	0.00	0.00	0.00
				pounds per day	0.0	0.0	0.0	0.0	0.0	0.0
				tons per phase	0.0	0.0	0.0	0.0	0.0	0.0
				<b>Total Emissions all Phases (tons per construction period) =&gt;</b>	<b>0.4</b>	<b>3.2</b>	<b>4.2</b>	<b>0.2</b>	<b>0.2</b>	<b>750.6</b>

Equipment default values for horsepower and hours/day can be overridden in cells C289 through C322 and E289 through E322.

Equipment	Default Values Horsepower	Default Values Hours/day
Aerial Lifts	63	8
Air Compressors	106	8
Bore/Drill Rigs	206	8
Cement and Mortar Mixers	10	8
Concrete/Industrial Saws	64	8
Cranes	226	8
Crawler Tractors	208	8
Crushing/Proc. Equipment	142	8
Excavators	163	8
Forklifts	89	8
Generator Sets	66	8
Graders	175	8
Off-Highway Tractors	123	8
Off-Highway Trucks	400	8
Other Construction Equipment	172	8
Other General Industrial Equipment	88	8
Other Material Handling Equipment	167	8
Pavers	126	8
Paving Equipment	131	8
Plate Compactors	8	8
Pressure Washers	26	8
Pumps	53	8
Rollers	81	8
Rough Terrain Forklifts	100	8
Rubber Tired Dozers	255	8
Rubber Tired Loaders	200	8
Scrapers	362	8
Signal Boards	20	8
Skid Steer Loaders	65	8
Surfacing Equipment	254	8
Sweepers/Scrubbers	64	8
Tractors/Loaders/Backhoes	98	8
Tramcars	91	8
Welders	45	8



## **Appendix D. Engineering Evaluation**

Available Upon Request at District Office:

San Joaquin Valley Air Pollution Control District  
Southern Region  
34946 Flyover Court  
Bakersfield, CA 93308  
(661) 392-5500

---



## **Appendix E. Risk Management Review**

Available Upon Request at District Office:

San Joaquin Valley Air Pollution Control District  
Central Region  
1990 E. Gettysburg Avenue  
Fresno, CA 93726  
(559) 230-6000

---



## **Appendix F. Reconnaissance-Level Biological Survey**

**ROBERT A. BOOHER CONSULTING**  
**Environmental Planning & Management**  
**3221 Quail Hollow Drive**  
**Fairfield, California 94534**  
**Telephone (707) 399-7835**

December 6, 2012

Mr. Jim Robinson  
Vintage Production California, LLC.  
9600 Ming Avenue, Suite 300  
Bakersfield, California 93311

**RE:    Reconnaissance-Level Biological Survey Results**  
**Vintage Production California, LLC. Lost Hills Steam Generation Facilities Project**

Dear Mr. Robinson,

Vintage Production California, LLC. (Vintage) proposes to construct three (3) steam generation facilities within the boundaries of the designated Lost Hills Oil Field in Kern County of California. The location of the proposed project sites are as follows:

- North Steam Generation Facility Alternative # 1 - Section 34, Township 25 South, Range 20 East, in the Antelope Plain USGS 7.5-minute quadrangle
- North Steam Generation Facility Alternative # 2 - Section 34, Township 25 South, Range 20 East, in the Antelope Plain USGS 7.5-minute quadrangle
- Central Steam Generation Facility - Section 2, Township 26 South, Range 20 East, in the Antelope Plain USGS 7.5-minute quadrangle
- South Steam Generation Facility - Section 11, Township 26 South, Range 20 East, in the Antelope Plain USGS 7.5-minute quadrangle

The proposed project sites are depicted on the attached Project Location Map (see Figure 1). In the case of the proposed North Steam Generation Facility, two (2) alternatives were surveyed, but only one (1) of the locations will be utilized. The South Steam Generation Facility measures approximately 330 feet (east to west) by 550 feet (north to south), or 4.17 acres in size. The Central Steam Generation Facility measures approximately 140 feet (east to west) by 200 feet (north to south), or 0.64 acres in size. The North Steam Generation Facility Alternative # 1 measures approximately 800 feet (east to west) by 350 feet (north to south), or 6.43 acres in size. The North Steam Generation Facility Alternative # 1 measures approximately 500 feet (east to west) by 500 feet (north to south), or 5.74 acres in size. Vintage retained the services of Robert A. Booher Consulting (RAB Consulting) to conduct a reconnaissance-level biological survey of the proposed project sites and a 500-foot buffer area around the proposed project sites.

On December 3, 2012, RAB Consulting conducted the requested surveys over the proposed project sites and a 500-foot buffer area around the proposed project sites. The surveys were conducted to identify special-status plant and wildlife species including sign i.e., nests, dens, burrows, scat, tracks, prey remains, etc. of special-status wildlife species including, but not limited to, San Joaquin antelope squirrel



(*Ammospermophilus nelsoni*), San Joaquin kit fox (*Vulpes macrotis mutica*), Western burrowing owl (*Athene cunicularia*), giant kangaroo rat (*Dipodomys ingens*), and blunt-nosed leopard lizard (*Gambelia sila*). This report presents the results of the reconnaissance-level biological surveys.

The proposed South Steam Generation Facility project site is located in an active oilfield setting. The project site is disturbed and contained no vegetation at the time of our biological survey on December 4, 2012. The proposed project site is located immediately adjacent to existing oilfield access roads to the south and east. As such, no new access roads will be required for the proposed project. The site is accessed by traveling 0.88 miles northeast, east, and southeast on existing oilfield access roads from Holloway Road (see Figure 1).

The proposed Central Steam Generation Facility project site is located in an active oilfield setting. The project site is disturbed and contained no vegetation at the time of our biological survey on December 4, 2012. The proposed project site is located immediately adjacent to existing oilfield access roads to the north. As such, no new access roads will be required for the proposed project. The site is accessed by traveling 1.62 miles northeast, north, and west on existing oilfield access roads from Holloway Road (see Figure 1).

The proposed North Steam Generation Facility Alternative # 1 project site is located in an active oilfield setting. The project site is disturbed and contained very little ruderal vegetation on the western 1/3 of the project site at the time of our biological survey on December 4, 2012. The proposed project site is located immediately adjacent to existing oilfield access roads to the south and east. As such, no new access roads will be required for the proposed project. The site is accessed by traveling 2.44 miles northeast, north, and west on existing oilfield access roads from Holloway Road (see Figure 1).

The proposed North Steam Generation Facility Alternative # 2 project site is located in an active oilfield setting. The project site is disturbed and contains no vegetation at the time of our biological survey on December 4, 2012. The proposed project site is located immediately adjacent to existing oilfield access roads to the south and east. As such, no new access roads will be required for the proposed project. The site is accessed by traveling 2.78 miles northeast, north, and west on existing oilfield access roads from Holloway Road (see Figure 1).

Prior to the reconnaissance-level biological surveys of the project area, a query of the California Natural Diversity Database (CNDDDB 2012) was conducted to identify the historical observations of threatened and endangered plant and animal species in the vicinity of the proposed project. As illustrated in Figure 2, several listed species have been recorded in the proximity of the proposed project sites including San Joaquin kit fox, blunt-nosed leopard lizard, San Joaquin antelope squirrel, San Joaquin pocket mouse (*Perognathus inornatus*), and San Joaquin whipsnake (*Masticophis flagellum ruddocki*). However, as detailed below, no observations were made within 0.2 miles of the proposed project sites. Additionally, no observation has been recorded since 2004.

The closest sighting of San Joaquin kit fox to a proposed project sites is in the immediate vicinity of the proposed Central Steam Generation Facility and the proposed North Steam Generation Facility Alternative # 1. This CNDDDB observance record dates from 2004 and the observation point was located in non-native annual grassland habitat. The observation point is now an active oil field and contains no vegetative coverage. The closest sighting of blunt-nosed leopard lizard to the proposed project sites is in the immediate vicinity of the proposed Central Steam Generation Facility. This CNDDDB observance record dates from 1981 and the observation point was vegetated by non-native annual grassland habitat. The observation point is now utilized for intensive agriculture, and no native habitat remains. The closest sighting of San Joaquin antelope squirrel to the proposed project sites is approximately 0.2 miles to the

south of the proposed South Steam Generation Facility project site. This CNDDDB observance record dates from 1962 and the observation point was vegetated by non-native annual grassland habitat with scattered saltbush shrubs. The observation point is still vegetated by this native habitat. The closest sighting of San Joaquin pocket mouse to the proposed project sites is approximately 1.2 miles to the northeast of the proposed North Steam Generation Facility Alternative # 2 project site. This CNDDDB observance record dates from 2004 and the observation point was vegetated with by non-native annual grassland habitat. The observation point is now utilized for intensive agriculture, and no native habitat remains. The closest sighting of San Joaquin whipsnake to the proposed project sites is approximately 1.2 miles to the northeast of the proposed South Steam Generation Facility project site. This CNDDDB observance record dates from 1999 and the observation point was vegetated by non-native annual grassland habitat with saltbush shrubs. The observation point is still vegetated by this native habitat.

The proposed South Steam Generation Facility project site is located in an active oilfield setting. The project site is disturbed and contained no vegetation at the time of our biological survey on December 4, 2012. The proposed project site is located immediately adjacent to existing oilfield access roads to the south and east. Existing oilfield infrastructure is found to the north, south, east, and west of the proposed project site, and no vegetation was observed in the buffer area of this project site.

The proposed Central Steam Generation Facility project site is located in an active oilfield setting. The project site is disturbed and contained no vegetation at the time of our biological survey on December 4, 2012. The proposed project site is located immediately adjacent to existing oilfield access roads to the north. Existing oilfield infrastructure is found to the north, south, east, and west of the proposed project site, and no vegetation was observed in the buffer area of this project site.

The proposed North Steam Generation Facility Alternative # 1 project site is located in an active oilfield setting. The project site is disturbed and contained very little ruderal vegetation on the western 1/3 of the project site at the time of our biological survey on December 4, 2012. The proposed project site is located immediately adjacent to existing oilfield access roads to the south and east. Existing oilfield infrastructure is found to the north, south, east, and west of the proposed project site, and no vegetation was observed in the buffer area of this project site with the exception of areas to the west and south of the project site, which were vegetated with scattered ruderal vegetation.

The proposed North Steam Generation Facility Alternative # 2 project site is located in an active oilfield setting. The project site is disturbed and contains no vegetation at the time of our biological survey on December 4, 2012. The proposed project site is used for the storage of pipe and other equipment used in the oil field. The proposed project site is located immediately adjacent to existing oilfield access roads to the south and east. Existing oilfield infrastructure is found to the east of the proposed project site, and ruderal vegetation was observed in the buffer area of this project site with the exception of areas to the east of the project site, which was disturbed and contained no vegetation. Buffer areas to the north, south, and west of the project site appear to have been plowed in the past, and have set idle for an extended amount of time.

### **Summary of Survey Results**

No special-status wildlife species or signs of their presence (i.e., nests, dens, burrows, scat, tracks, prey remains, etc.) were observed within the boundaries of the proposed project sites. No burrows or dens that support special-status wildlife species were observed within the boundaries of the proposed project sites. No special-status wildlife species or signs of their presence (i.e., nests, dens, burrows, scat, tracks, prey remains, etc.) were observed in the buffer areas of the proposed project sites with the exception of

scattered small mammal burrows that could support special-status small mammal species and blunt-nosed leopard lizards in the buffer area of the proposed North Steam Generation facility Alternate # 2. No formal surveys utilizing agency approved survey methodologies were conducted as part of biological surveys.

CNDDDB records suggest that the general area surrounding the proposed project sites previously supported San Joaquin kit fox. However, it is still possible that the proposed project sites may accommodate the occasional transient foraging kit fox. No sign (scat, tracks, dens, prey remains etc.) of San Joaquin kit fox were observed in the project area. A list of plant and animal species observed within the project area is presented below in Table 1.

**Table 1**  
List of Animal and Plant Species Observed within Biological Survey Area

Scientific name	Common name
<b>Animals</b>	
<i>Corvus corax</i>	common raven
<i>Lepus californicus</i>	black-tailed jackrabbit
<i>Zenaidura macroura</i>	mourning dove
<b>Plants</b>	
<i>Amsinckia menziesii</i> var. <i>intermedia</i>	fiddleneck
<i>Atriplex polycarpa</i>	saltbush
<i>Avena barbata</i>	slender wild oat
<i>Brassica nigra</i>	black mustard
<i>Bromus diandrus</i>	ripgut brome
<i>Bromus madritensis</i> ssp. <i>rubens</i>	red brome
<i>Erodium botrys</i>	broadleaf filaree
<i>Erodium cicutarium</i>	redstem filaree
<i>Lactuca serriola</i>	wire lettuce
<i>Malva neglecta</i> Wallr.	common mallow
<i>Salsola tragus</i>	Russian thistle
<i>Sonchus asper</i>	sow thistle

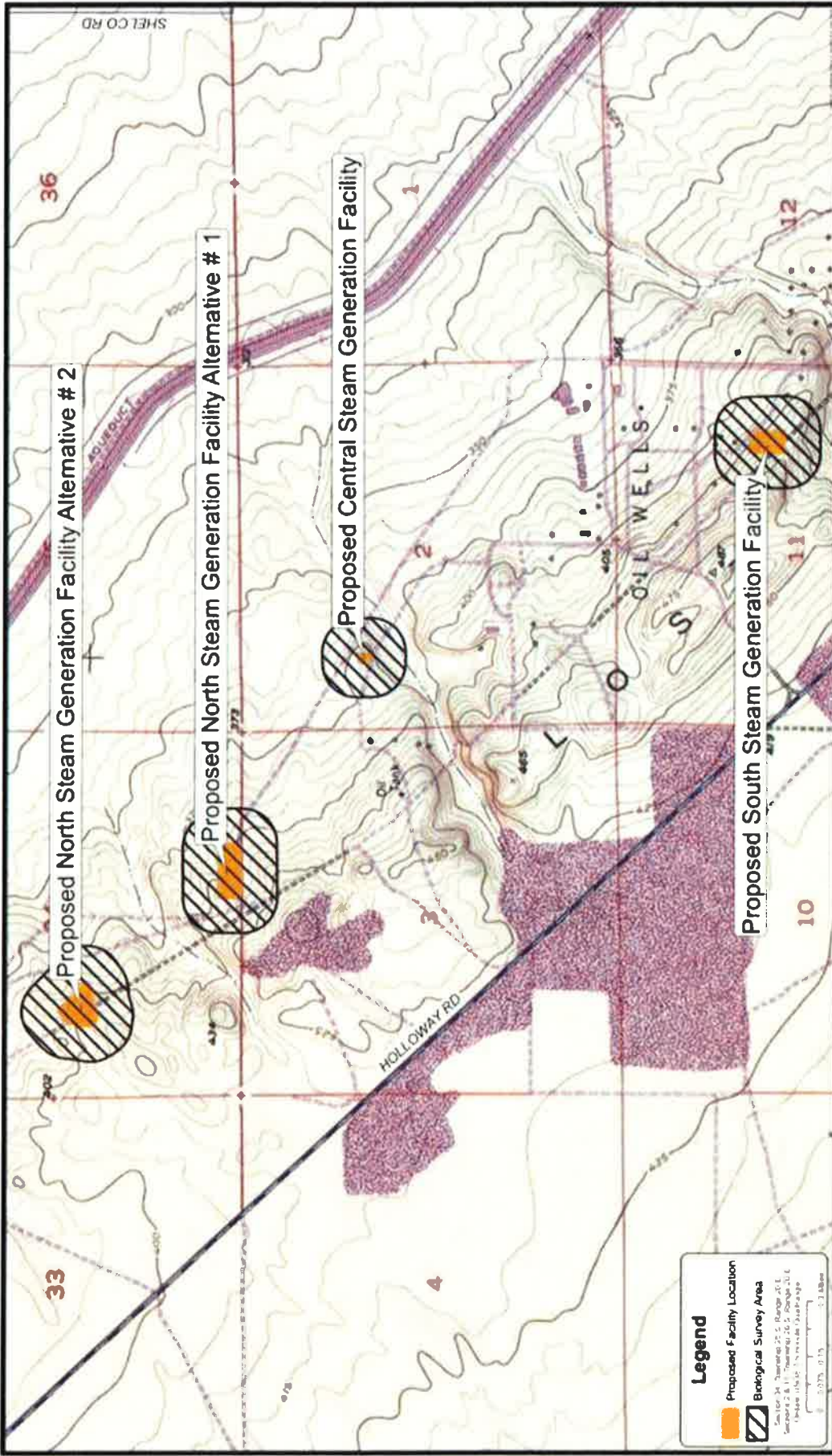
If you have any questions or require any additional information, please call me at (707) 399-7835.

Sincerely,  
**Robert A. Booher Consulting**



Robert A. Booher  
Principal Environmental Scientist

## **Figures**



Proposed North Steam Generation Facility Alternative # 2

Proposed North Steam Generation Facility Alternative # 1

Proposed Central Steam Generation Facility

Proposed South Steam Generation Facility

**Legend**

- Proposed Facility Location
- Biological Survey Area

Section 34, Township 25 S, Range 25 E  
 Section 2, 8, 11, Township 26 S, Range 25 E  
 (Shaded in blue) - Private Ownership

0 50 FT 100 FT 150 FT 200 FT 250 FT 300 FT 350 FT 400 FT 450 FT 500 FT

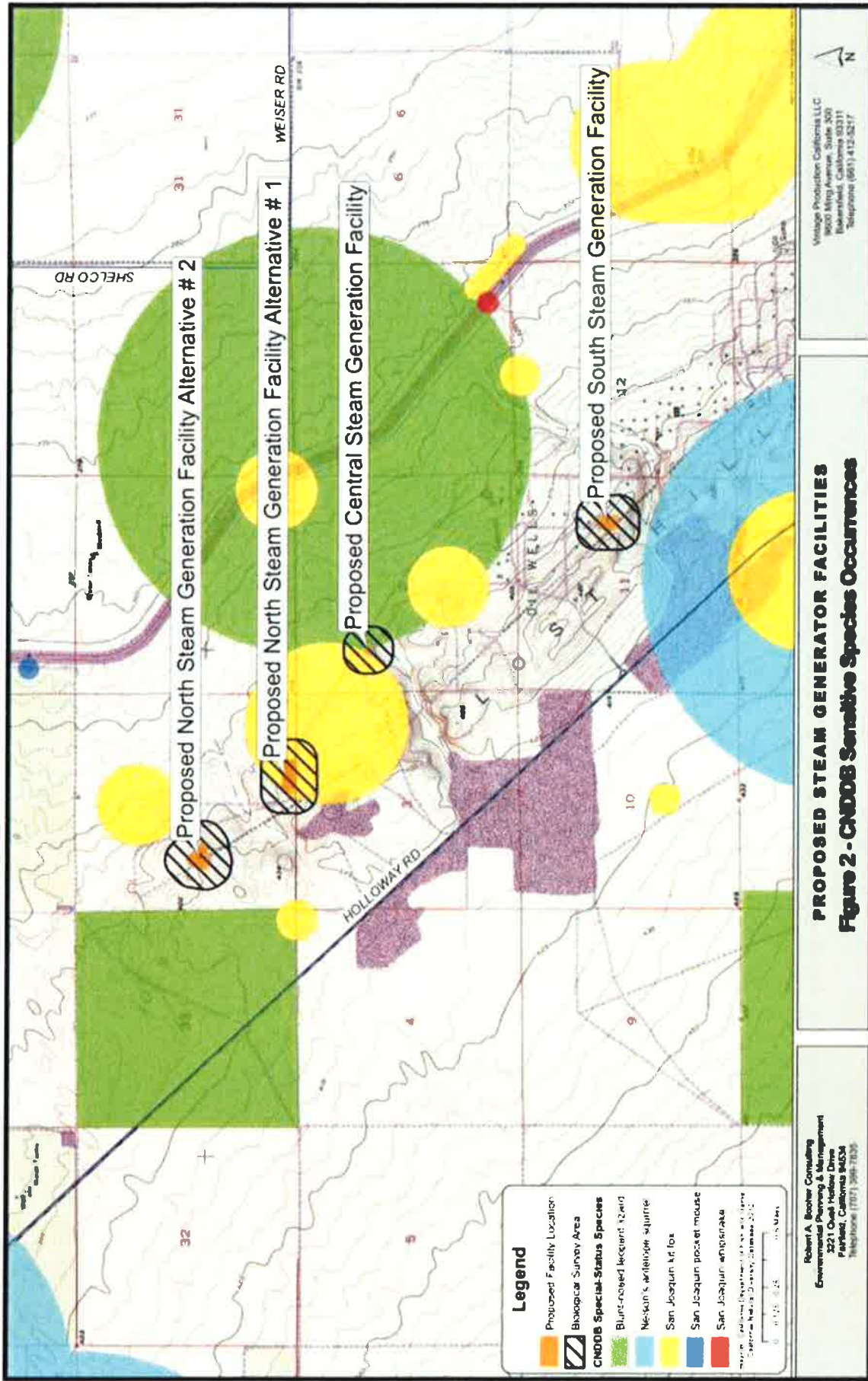
1:25,000

Robert A. Boyler Consulting  
 Environmental Planning & Mitigation  
 3221 Quail Hollow Drive  
 Fortuit, California 94504  
 Telephone (925) 298-7835

Valley Production Controls LLC  
 1800 Main Street, Suite 200  
 Berkeley, California 94711  
 Telephone (818) 412-5217

**PROPOSED STEAM GENERATOR FACILITIES**  
**Figure 1 - Project Location Map**





**Attachment A**  
**Representative Photographs**



**Photograph 1**  
View to the east from the western edge of proposed North Steam Generation  
Facility Alternative # 1 location.



**Photograph 2**  
View to the east from the western edge of proposed North Steam Generation  
Facility Alternative # 2 location.





**Photograph 3**  
View to the south from the northern edge of proposed Central Steam Generation Facility location.



**Photograph 4**  
View to the north from the southern edge of proposed South Steam Generation Facility location.