



FINAL

**PERMIT TO OPERATE 11405-R1
and
Part 70 RENEWAL OPERATING PERMIT 11405**

**BREITBURN - ORCUTT HILL STATIONARY SOURCE
ORCUTT HILL STEAM GENERATOR**

**ORCUTT HILL OILFIELD
SANTA BARBARA COUNTY, CALIFORNIA**

OPERATOR

BreitBurn Energy Company LP

OWNERSHIP

BreitBurn Energy Company LP

**Santa Barbara County
Air Pollution Control District**

June 2, 2009

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1.	PURPOSE.....	1
1.2.	FACILITY OVERVIEW.....	1
1.3.	EMISSION SOURCES.....	4
1.4.	EMISSION CONTROL OVERVIEW.....	4
1.5.	OFFSETS/EMISSION REDUCTION CREDIT OVERVIEW.....	4
1.6.	PART 70 OPERATING PERMIT OVERVIEW.....	4
2.0	PROCESS DESCRIPTION.....	6
2.1.	PROCESS SUMMARY.....	6
2.2.	SUPPORT SYSTEMS.....	6
2.3.	MAINTENANCE/DEGREASING ACTIVITIES.....	6
2.4.	OTHER PROCESSES.....	6
2.5.	DETAILED PROCESS/EQUIPMENT LISTING.....	6
3.0	REGULATORY REVIEW.....	6
3.1.	RULE EXEMPTIONS CLAIMED.....	6
3.2.	COMPLIANCE WITH APPLICABLE FEDERAL RULES AND REGULATIONS.....	7
3.3.	COMPLIANCE WITH APPLICABLE STATE RULES AND REGULATIONS.....	8
3.4.	COMPLIANCE WITH APPLICABLE LOCAL RULES AND REGULATIONS.....	8
3.5.	COMPLIANCE HISTORY.....	10
4.0	ENGINEERING ANALYSIS.....	15
4.1.	GENERAL.....	15
4.2.	STATIONARY EXTERNAL COMBUSTION UNITS.....	15
4.3.	FUGITIVE HYDROCARBON SOURCES.....	15
4.4.	BACT/NSPS/NESHAP/MACT.....	16
4.5.	CEMS/PROCESS MONITORING/CAM.....	16
4.6.	SOURCE TESTING/SAMPLING.....	17
4.7.	PART 70 ENGINEERING REVIEW: HAZARDOUS AIR POLLUTANTS.....	17
5.0	EMISSIONS.....	19
5.1.	GENERAL.....	19
5.2.	PERMITTED EMISSION LIMITS – EMISSION UNITS.....	19
5.3.	PERMITTED EMISSION LIMITS – FACILITY TOTALS.....	20
5.4.	PART 70: FEDERAL POTENTIAL TO EMIT.....	20
5.5.	PART 70: HAZARDOUS AIR POLLUTANT EMISSIONS FOR THE FACILITY.....	20
5.6.	EXEMPT EMISSION SOURCES/PART 70 INSIGNIFICANT SOURCES.....	20
5.7.	NET EMISSIONS INCREASE CALCULATION.....	20
6.0	AIR QUALITY IMPACT ANALYSIS.....	30
6.1.	MODELING.....	30
6.2.	INCREMENTS.....	30
6.3.	MONITORING.....	30
6.4.	HEALTH RISK ASSESSMENT.....	30
7.0	CAP CONSISTENCY, OFFSET REQUIREMENTS, AND ERCS.....	31
7.1.	GENERAL.....	31
7.2.	CLEAN AIR PLAN.....	31
7.3.	OFFSET REQUIREMENTS.....	32
7.4.	EMISSION REDUCTION CREDITS.....	32
8.0	LEAD AGENCY, PERMIT CONSISTENCY.....	32

9.0	PERMIT CONDITIONS	32
9.A	STANDARD ADMINISTRATIVE CONDITIONS	32
9.B.	GENERIC CONDITIONS	35
9.C	REQUIREMENTS AND EQUIPMENT SPECIFIC CONDITIONS	36
10.0	ATTACHMENTS.....	45
10.1.	EMISSION CALCULATION DOCUMENTATION	45
10.2.	FEE CALCULATION.....	49
10.3.	FACILITY NEI	51
10.4.	EQUIPMENT LIST.....	52
10.5	APCD Response to Comments.....	51

LIST OF FIGURES AND TABLES

	Page Number
TABLE 1-1 NEW SOURCE REVIEW OVERVIEW	3
TABLE 3-1 GENERIC FEDERALLY-ENFORCEABLE APCD RULES	11
TABLE 3-2 UNIT-SPECIFIC FEDERALLY-ENFORCEABLE APCD RULES	12
TABLE 3-3 NON-FEDERALLY-ENFORCEABLE APCD RULES.....	12
TABLE 3-4 ADOPTION DATES OF APCD RULES APPLICABLE AT ISSUANCE OF PERMIT	13
TABLE 4-1 SOURCE TEST REQUIREMENTS	18
TABLE 5-1 OPERATING EQUIPMENT DESCRIPTION	23
TABLE 5-2 EQUIPMENT EMISSION FACTORS	24
TABLE 5-3 HOURLY AND DAILY EMISSION LIMITS	25
TABLE 5-4 QUARTERLY AND ANNUAL EMISSION LIMITS.....	26
TABLE 5-5 TOTAL PERMITTED FACILITY EMISSIONS	27
TABLE 5-6 FEDERAL POTENTIAL TO EMIT	28
FIGURE 1-1 LOCATION MAP FOR THE ORCUTT HILL STEAM GENERATORS.....	2

ABBREVIATIONS/ACRONYMS

AP-42	USEPA's <i>Compilation of Emission Factors</i>
APCD	Santa Barbara County Air Pollution Control District
API	American Petroleum Institute
ASTM	American Society for Testing Materials
BACT	Best Available Control Technology
bpd	barrels per day (1 barrel = 42 gallons)
CAM	compliance assurance monitoring
CEMS	continuous emissions monitoring
dscf	dry standard cubic foot
EU	emission unit
°F	degree Fahrenheit
gal	gallon
gr	grain
HAP	hazardous air pollutant (as defined by CAAA, Section 112(b))
H ₂ S	hydrogen sulfide
I&M	inspection & maintenance
k	kilo (thousand)
l	liter
lb	pound
lbs/day	pounds per day
lbs/hr	pounds per hour
LACT	Lease Automatic Custody Transfer
LPG	liquid petroleum gas
M	thousand
MACT	Maximum Achievable Control Technology
MM	million
MW	molecular weight
NEI	net emissions increase
NG	natural gas
NSPS	New Source Performance Standards
O ₂	oxygen
ppm (vd or w)	parts per million (volume dry or weight)
psia	pounds per square inch absolute
psig	pounds per square inch gauge
PRD	pressure relief device
PTO	Permit to Operate
RACT	Reasonably Available Control Technology
ROC	reactive organic compounds, same as "VOC" as used in this permit
RVP	Reid vapor pressure
scf	standard cubic foot
scfd (or scfm)	standard cubic feet per day (or per minute)
SIP	State Implementation Plan
STP	standard temperature (60°F) and pressure (29.92 inches of mercury)
THC	Total hydrocarbons
tpy, TPY	tons per year
TVP	true vapor pressure
USEPA	United States Environmental Protection Agency
VE	visible emissions
VRS	vapor recovery system

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1.0 Introduction

1.1 Purpose

General: The Santa Barbara County Air Pollution Control District (APCD) is responsible for implementing all applicable federal, state and local air pollution requirements which affect any stationary source of air pollution in Santa Barbara County. The federal requirements include regulations listed in the Code of Federal Regulations: 40 CFR Parts 50, 51, 52, 55, 61, 63, 68, 70 and 82. The State regulations may be found in the California Health & Safety Code, Division 26, Section 39000 et seq. The applicable local regulations can be found in the APCD's Rules and Regulations. This is a combined permitting action that covers both the Federal Part 70 permit (renewal of *Part 70 Operating Permit 11405*) as well as the State Operating Permit (reevaluation of *Permit to Operate 11405*).

The County is currently designated as a nonattainment area for the state ozone and PM₁₀ ambient air quality standards.

Part 70 Permitting. The initial Part 70 permit for this facility was issued on March 29, 2006 in accordance with the requirements of the APCD's Part 70 operating permit program. This is the first renewal of the Part 70 permit, and may include additional applicable requirements and associated compliance assurance conditions. The Orcutt Hill Steam Generators are a part of the BreitBurn Orcutt Hill Stationary Source, which is a major source for VOC¹, NO_x and CO. Conditions listed in this permit are based on federal, state or local rules and requirements. Sections 9.A, 9.B and 9.C of this permit are enforceable by the APCD, the USEPA and the public since these sections are federally-enforceable under Part 70. Where any reference contained in Sections 9.A, 9.B or 9.C refers to any other part of this permit, that part of the permit referred to is federally-enforceable. Conditions listed in Section 9.D are "APCD-only" enforceable.

Pursuant to the stated aims of Title V of the CAAA of 1990 (i.e., the Part 70 operating permit program), this permit has been designed to meet two objectives. First, compliance with all conditions in this permit would ensure compliance with all federally-enforceable requirements for the facility. Next, the permit would be a comprehensive document to be used as a reference by the permittee, the regulatory agencies and the public to assess compliance.

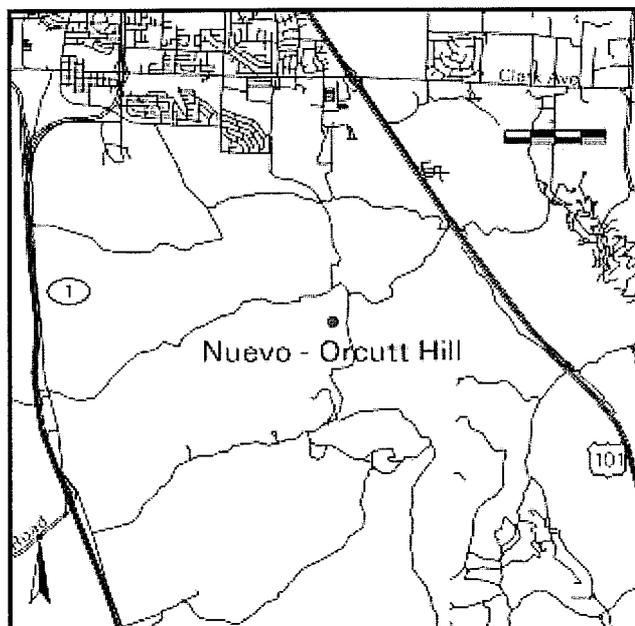
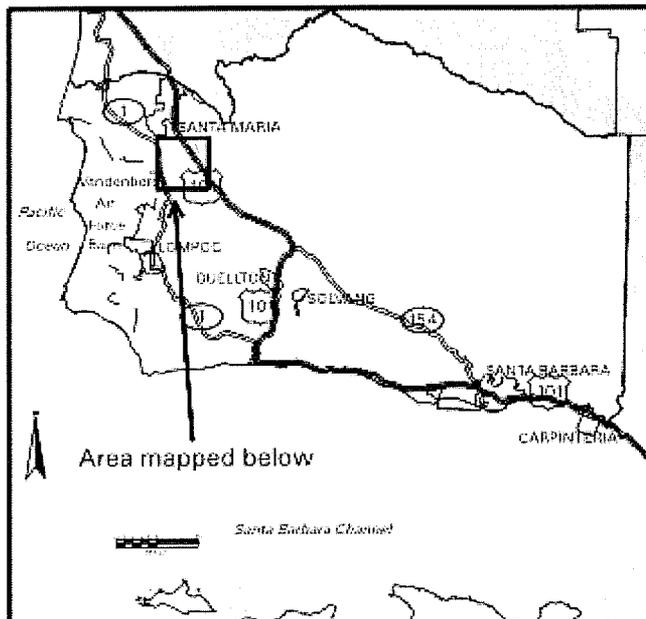
1.2 Facility Overview

1.2.1 General Overview: The Orcutt Hill steam generator is located in the Diatomite Steam Generator area west of the Orcutt Hill Field Office on the stationary source which is approximately 2.5 miles south of the city of Orcutt. For APCD regulatory purposes, the facility is located in the Northern Zone of Santa Barbara County². Figure 1.1 shows the relative location of the facility within the county.

¹ VOC as defined in Regulation XIII has the same meaning as reactive organic compounds as defined in Rule 102. The term ROC shall be used throughout the remainder of this document, but where used in the context of the Part 70 regulation, the reader shall interpret the term as VOC.

² APCD Rule 102, Definition: "Northern Zone"

Figure 1-1 Location Map for the Orcutt Hill Steam Generators



The *BreitBurn Orcutt Hill Stationary Source* (SSID 2667), which was originally developed in the 1920s by Union Oil Company, consists of the following facilities:

- California Coast Lease (FID 3206)
- Fox Lease (FID 3313)
- Dome Lease (FID 3314)
- Folsom Lease (FID 3316)
- Graciosa Lease (FID 3318)
- Hartnell Lease (FID 3319)
- Hobbs Lease (FID 3320)
- Newlove Lease (FID 3321)
- Pinal Lease (FID 3322)
- Rice Ranch Lease (FID 3323)
- Squires Lease (FID 3324)
- Getty-Hobbs Lease (FID 3495)
- Orcutt Hill Compressor Plant (FID 4104)
- Orcutt Hill Internal Combustion Engines (FID 4214)
- Orcutt Hill Steam Generators (FID 10482)
- Orcutt Hill Filed (MVFF) (FID 1904)

The Orcutt Hill steam generators consists of the following system:

- One (1) controlled, steam generator.

The steam generator may be fired on field gas, and may be located at various locations throughout the stationary source. The steam generator is used to thermally enhance oil production at various wells.

1.2.2 Facility New Source Review Overview: Since the issuance of the initial operating permit on 3/18/2005 there have been two permit actions. Table 1-1 provides a summary of the New Source Review history of the Orcutt Hill steam generators.

Table 1-1 New Source Review Overview

Permit Number	Issuance Date	Permitted Modification
ATC 11405	3/18/2005	This permit authorizes the installation of a portable steam generator for use on the Dome and Newlove leases within the BreitBurn Energy – Orcutt Hill stationary source.
ATC 11405 Mod-01	5/16/2005	This permit authorizes the steam generator identified in ATC 11405 at the bone-yard west of the Orcutt Hill Field Office, to be installed and fired on propane or natural gas fuel as defined in the SCDP. The steam generator is permitted to operate temporarily as defined in the SCDP condition on the Dome and Newlove leases within the BreitBurn Energy – Orcutt Hill stationary source.
Part 70 Minor Revision	3/29/2006	This permit authorized the operation of the steam generator identified in ATC 11405 at the bone-yard west of the Orcutt

Permit Number	Issuance Date	Permitted Modification
(ATC/PTO 11405)		Hill Field Office, fired on natural gas fuel. This permit also authorizes an increase in the rated heat input and potential to emit of the steam generator, as discovered during source testing completed for ATC 11405 Mod-01 and confirmed by the manufacturer. The steam generator is permitted to operate on the Dome and Newlove leases within the BreitBurn Energy – Orcutt Hill stationary source.
ATC/PTO 11405 Mod-02	8/27/2007	Modification to reduce NOx emission limits to 9 ppm and 0.0113 lb/MMBTU on NG fired steam generator for thermal enhanced recovery on Dome and Newlove lease wells

1.3. Emission Sources

The emissions from this facility are entirely due to combustion of field natural gas in the steam generator. Section 4 of the permit provides the APCD's engineering analysis of this emission source. Section 5 of the permit describes the steam generator and the allowable emissions from.

1.4. Emission Control Overview

The emission controls for the steam generator includes the use of a North American Low-NO_x burner and Flue-Gas Recirculation (FGR). The FGR system is installed external to the burner on the steam generator. The combustion air and the flue gas enter the burner at the discharge of the blower.

1.5. Offsets/Emission Reduction Credit Overview

There have been no offsets required to date for projects at the BreitBurn Orcutt Hill Stationary Source. If Phase 2 of the Diatomite project is pursued, then NO_x and ROC offsets will need to be provided for the entire stationary source NEI. The steam generators do not provide emission reduction credits (ERCs) to any project or ERC certificate.

1.6. Part 70 Operating Permit Overview

1.6.1 Federally-enforceable Requirements: All federally-enforceable requirements are listed in 40 CFR Part 70.2 (*Definitions*) under “applicable requirements”. These include all SIP-approved APCD Rules, all conditions in the APCD-issued Authority to Construct permits, and all conditions applicable to major sources under federally promulgated rules and regulations. All these requirements are enforceable by the public under CAAA. (*see Tables 3.1 and 3.2 for a list of federally-enforceable requirements*)

1.6.2 Insignificant Emissions Units: Insignificant emission units are defined under APCD Rule 1301 as any regulated air pollutant emitted from the unit, excluding HAPs, that are less than 2 tons per year based on the unit’s potential to emit and any HAP regulated under section 112(g) of the Clean Air Act that does not exceed 0.5 ton per year based on the unit’s potential to emit.

Insignificant activities must be listed in the Part 70 application with supporting calculations. Applicable requirements may apply to insignificant units.

- 1.6.3 Federal Potential to Emit: The federal potential to emit (PTE) of a stationary source does not include fugitive emissions of any pollutant, unless the source is: (1) subject to a federal NSPS/NESHAP requirement, or (2) included in the 29-category source list specified in 40 CFR 51.166 or 52.21. The federal PTE does include all emissions from any insignificant emissions units. *(See Section 5.4 for the federal PTE for this source)*
- 1.6.4 Permit Shield: The operator of a major source may be granted a shield: (a) specifically stipulating any federally-enforceable conditions that are no longer applicable to the source and (b) stating the reasons for such non-applicability. The permit shield must be based on a request from the source and its detailed review by the APCD. Permit shields cannot be indiscriminately granted with respect to all federal requirements. The permittee has not made a request for a permit shield.
- 1.6.5 Alternate Operating Scenarios: A major source may be permitted to operate under different operating scenarios, if appropriate descriptions of such scenarios are included in its Part 70 permit application and if such operations are allowed under federally-enforceable rules. The permittee made no request for permitted alternative operating scenarios.
- 1.6.6 Compliance Certification: Part 70 permit holders must certify compliance with all applicable federally-enforceable requirements including permit conditions. Such certification must accompany each Part 70 permit application; and, be re-submitted annually on the anniversary date of the permit or on a more frequent schedule specified in the permit. A “responsible official” of the owner/operator company whose name and address is listed prominently in the Part 70 permit signs each certification. *(see Section 1.6.9 below)*
- 1.6.7 Permit Reopening: Part 70 permits are re-opened and revised if the source becomes subject to a new rule or new permit conditions are necessary to ensure compliance with existing rules. The permits are also re-opened if they contain a material mistake or the emission limitations or other conditions are based on inaccurate permit application data.
- 1.6.8 Hazardous Air Pollutants (HAPs): Part 70 permits also regulate emission of HAPs from major sources through the imposition of maximum achievable control technology (MACT), where applicable. The federal PTE for HAP emissions from a source is computed to determine MACT or any other rule applicability. *(see Sections 4.6 and 5.5).*
- 1.6.9 Responsible Official: The designated responsible official and his mailing address is:

Chris Williamson
Vice President of Operations
BreitBurn Energy Company
515 S. Flower Street; Suite 4800
Los Angeles, CA 90071

2.0 Process Description

2.1. Process Summary

One field gas fired steam generator used to thermally enhance oil production.

2.2. Support Systems

There are no additional support systems for the Orcutt Hill steam generators.

2.3. Maintenance/Degreasing Activities

2.3.1 Paints and Coatings: The use of paints and coatings at the BreitBurn Orcutt Hill Stationary Source are discussed in the permits for individual Orcutt Hill leases and for the compressor plant.

2.3.2 Solvent Usage: The use of solvents at the BreitBurn Orcutt Hill Stationary Source is discussed in the permits for individual Orcutt Hill leases and for the compressor plant.

2.4. Other Processes

2.4.1 Unplanned Activities/Emissions: The permittee does not anticipate or foresee any circumstances that would require special equipment use and result in excess emissions.

2.5. Detailed Process/Equipment Listing

Refer to Table 5-1 for a complete listing of all permitted equipment.

3.0 Regulatory Review

This section identifies the federal, state and local rules and regulations applicable to the Orcutt Hill steam generators.

3.1. Rule Exemptions Claimed



The following exemptions apply to this facility. An exemption from permit, however, does not necessarily grant relief from any applicable prohibitory rule.

- **Section D.6 De Minimis Exemptions**: This section requires BreitBurn to maintain a record of each *de minimis* change, which shall include emission calculations demonstrating that each physical change meets the criteria listed in the Rule. This exemption applies to a project in the broadest sense. Such records shall be made available to the APCD upon request. Based on BreitBurn logs as of February 2009, the de minimis totals at the BreitBurn Orcutt Hill Stationary Source are: 12.64 lbs ROC/day. This total does not include the previously claimed emissions from the Sx Sands project (ATC 13140).
- **Section D.8 Routine Repair and Maintenance**: A permit shall not be required for routine repair or maintenance of permitted equipment, not involving structural changes.

- **Section D.14 Architectural Coatings:** Application of architectural coating in the repair and maintenance of a stationary structure is exempt from permit requirements.
- **Section U.2 Degreasing Equipment:** Single pieces of degreasing equipment, which use unheated solvent, and which: a) have a liquid surface area of less than 1.0 square foot unless the aggregate liquid surface area of all degreasers at a stationary source, covered by this exemption is greater than 10 square feet; and b) use only organic solvents with an initial boiling point of 302^o F or greater; or c) use materials with a volatile organic compound content of two-percent or less by weight as determined by EPA Method 24.
- **Section U.3 Wipe Cleaning:** Equipment used in wipe cleaning operations provided that the solvents used do not exceed 55 gallons per year. The permittee shall maintain records of the amount of solvents used for each calendar year. These records shall be kept for a minimum of 3 years and be made available to the APCD on request.

3.2 Compliance with Applicable Federal Rules and Regulations

- 3.2.1 40 CFR Parts 51/52 {New Source Review (Nonattainment Area Review and Prevention of Significant Deterioration)}: The Orcutt Hill steam generators are subject to these regulations. All modifications are subject to the APCD's New Source Review regulation. Compliance with the APCD regulation assures compliance with 40 CFR 51/52.
- 3.2.2 40 CFR Part 60 {New Source Performance Standards}: This facility is not currently subject to any NSPS. See permits of the individual Orcutt Hill leases and the compressor plant for NSPS applicability of those facilities.
- 3.2.3 40 CFR Part 61 {NESHAP}: This facility is not currently subject to the provisions of this Subpart.
- 3.2.4 40 CFR Part 63 {MACT}: On June 17, 1999, EPA promulgated Subpart HH, National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Oil and Natural Gas Production and Natural Gas Transmission and Storage. This facility currently is not subject to the provisions of this Subpart. The steam generator listed in this permit may be located at various locations throughout the Orcutt Hill stationary source. Each lease qualifies for an exemption from Subpart HH, National Emission Standards for Hazardous Air Pollutants (NESHAPS) for Oil and Natural Gas Production and Natural Gas Transmission and Storage. Exemptions are documented for each facility (lease).
- 3.2.5 40 CFR Part 64 {Compliance Assurance Monitoring}: This rule became effective on April 22, 1998. Compliance with this rule is required during the first permit renewal or the next significant permit revision for sources that had initial Part 70 applications deemed complete before April 22, 1998. This rule affects emission units at the source subject to a federally-enforceable emission limit or standard that uses a control device to comply with the emission standard, and either pre-control or post-control emissions exceed the Part 70 source emission thresholds. Compliance with this rule was evaluated and it was determined that no emission units at this facility are currently subject to CAM.

- 3.2.6 40 CFR Part 70 {Operating Permits}: This Subpart is applicable to the Orcutt Hill steam generators. Table 3.1 lists the federally-enforceable APCD promulgated rules that are “generic” and apply to the Orcutt Hill steam generators. Table 3.2 lists the federally-enforceable APCD promulgated rules that are “unit-specific” that apply to the Orcutt Hill steam generators. These tables are based on data available from the APCD’s administrative files and from the permittee’s Part 70 Operating Permit renewal application filed on October 31, 2008. Table 3.4 includes the adoption dates of these rules.

In its Part 70 permit application, the permittee certified compliance with all existing APCD rules and permit conditions. This certification is also required of the permittee semi-annually.

3.3 Compliance with Applicable State Rules and Regulations

- 3.3.1 Division 26. Air Resources {California Health & Safety Code}: The administrative provisions of the Health & Safety Code apply to this facility and will be enforced by the APCD. These provisions are APCD-enforceable only.
- 3.3.2 California Administrative Code Title 17: These sections specify the standards by which abrasive blasting activities are governed throughout the State. All abrasive blasting activities at the Orcutt Hill steam generators are required to conform to these standards. Compliance will be assessed through onsite inspections. These standards are APCD-enforceable only. However, CAC Title 17 does not preempt enforcement of any SIP-approved rule that may be applicable to abrasive blasting activities.

3.4 Compliance with Applicable Local Rules and Regulations

- 3.4.1 Applicability Tables: In addition to Tables 3-1 and 3-2, Table 3-3 lists the non-federally-enforceable APCD promulgated rules that apply to the Orcutt Hill steam generators. Table 3-4 lists the adoption date of all rules applicable to this permit at the date of this permit’s issuance.
- 3.4.2 Rules Requiring Further Discussion: The last facility inspection occurred on May 22, 2008. The inspector reported that the permitted equipment was in compliance with all APCD rules and PTO conditions. This section provides a more detailed discussion regarding the applicability and compliance of certain rules.

The following is a rule-by-rule evaluation of compliance for this facility:

Rule 301 - Circumvention: This rule prohibits the concealment of any activity that would otherwise constitute a violation of Division 26 (Air Resources) of the California H&SC and the SBCAPCD rules and regulations. To the best of the APCD’s knowledge, BreitBurn Energy is operating in compliance with this rule.

Rule 303 (Nuisance): Rule 303 prohibits any source from discharging such quantities of air contaminants or other material in violation of Section 41700 of the Health and Safety Code which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety or any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. Compliance with this rule is assessed through the APCD’s enforcement staff’s

complaint response program. Based on the source's location, the potential for public nuisance is small.

Rule 304 (Particulate Matter - Northern Zone): A person shall not discharge into the atmosphere from any source particulate matter in excess of 0.3 grain per cubic foot of gas at standard conditions. It is highly unlikely that gas fired engines will exceed these particulate matter standards.

Rule 309 - Specific Contaminants: Under Section "A", no source may discharge sulfur compounds and combustion contaminants (particulate matter) in excess of 0.2 percent as SO₂ (by volume) and 0.3 gr/scf (at 12% CO₂) respectively. It is highly unlikely that the gas fired steam generator will exceed these standards.

Rule 310 - Odorous Organic Compounds: This rule prohibits the discharge of H₂S and organic sulfides that result in a ground level impact beyond the property boundary in excess of either 0.06 ppmv averaged over 3 minutes and 0.03 ppmv averaged over 1 hour. No measured data exists to confirm compliance with this rule.

Rule 311 - Sulfur Content of Fuels: This rule limits the sulfur content of fuels combusted in the Orcutt Hill steam generators to 0.5 percent (by weight) for liquids fuels and 50 gr/100 scf (calculated as H₂S) {or 796 ppmvd} for gaseous fuels. All steam generators on this stationary source are expected to be in compliance with the fuel limit as determined by fuel analysis documentation.

Rule 317 - Organic Solvents: This rule sets specific prohibitions against the discharge of emissions of both photochemically and non-photochemically reactive organic solvents (40 lb/day and 3,000 lb/day respectively). Solvents may be used on the lease during normal operations for degreasing by wipe cleaning and for use in paints and coatings in maintenance operations. There is the potential to exceed the limits under Section B.2 during significant surface coating activities. BreitBurn Energy will be required to maintain records to ensure compliance with this rule.

Rule 322 - Metal Surface Coating Thinner and Reducer: This rule prohibits the use of photochemically reactive solvents for use as thinners or reducers in metal surface coatings. BreitBurn Energy will be required to maintain records during maintenance operations to ensure compliance with this rule.

Rule 323 - Architectural Coatings: This rule sets standards for the application of surface coatings. The primary coating standard that will apply to the lease is for Industrial Maintenance Coatings which has a limit of 340 gram ROC per liter of coating, as applied. BreitBurn Energy will be required to comply with the Administrative requirements under Section F for each container on the lease.

Rule 324 - Disposal and Evaporation of Solvents: This rule prohibits any source from disposing more than one and a half gallons of any photochemically reactive solvent per day by means that will allow the evaporation of the solvent into the atmosphere. BreitBurn Energy will be required to maintain records to ensure compliance with this rule.

Rule 330 - Surface Coating of Metal Parts and Products: This rule sets standards for many types of coatings applied to metal parts and products. In addition to the ROC standards, this rule sets operating standards for application of the coatings, labeling and recordkeeping.

Rule 342 – Control of Oxides of Nitrogen from Boilers, Steam Generators, and Process Heaters: This rule sets emission standards for external combustion units with a rated heat input greater than 5.0 MMBtu/hr. The steam generator is subject to Rule 342. D.1 emission standards, and is subject to biennial source testing. Per the engineering analysis below, the permitted emission factors are lower than required per Rule 342.

Rule 353 - Adhesives and Sealants: This rule applies to the use of adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, or any other primers. Compliance shall be based on site inspections.

Rule 505 - Breakdown Conditions: This rule describes the procedures that BreitBurn Energy must follow when a breakdown condition occurs to any emissions unit associated with the Orcutt Hill steam generator. A breakdown condition is defined as an unforeseeable failure or malfunction of (1) any air pollution control equipment or related operating equipment which causes a violation of an emission limitation or restriction prescribed in the APCD Rules and Regulations, or by State law, or (2) any in-stack continuous monitoring equipment, provided such failure or malfunction:

- a. Is not the result of neglect or disregard of any air pollution control law or rule or regulation;
- b. Is not the result of an intentional or negligent act or omission on the part of the owner or operator;
- c. Is not the result of improper maintenance;
- d. Does not constitute a nuisance as defined in Section 41700 of the Health and Safety Code;
- e. Is not a recurrent breakdown of the same equipment.

3.5 Compliance History

This section contains a summary of the compliance history for this facility and was obtained from documentation contained in the APCD's administrative file.

3.5.1 Variances: Since March 2006 no variances have been applied for or granted.

3.5.2 Violations: During the last three years, no Notices of Violation (NOVs) or AI Docs have been issued for this facility.

3.5.3 Significant Historical Hearing Board Actions/NOVs: There are no significant historical Hearing Board actions or NOVs.

Table 3-1 Generic Federally-Enforceable APCD Rules

Generic Requirements	Affected Emission Units	Basis for Applicability
<u>RULE 101</u> : Compliance by Existing Installations	All emission units	Emission of pollutants
<u>RULE 102</u> : Definitions	All emission units	Emission of pollutants
<u>RULE 103</u> : Severability	All emission units	Emission of pollutants
<u>RULE 201</u> : Permits Required	All emission units	Emission of pollutants
<u>RULE 202</u> : Exemptions to Rule 201	Applicable emission units, as listed in form 1302-H of the Part 70 application.	Insignificant activities/emissions, per size/rating/function
<u>RULE 203</u> : Transfer	All emission units	Change of ownership
<u>RULE 204</u> : Applications	All emission units	Addition of new equipment of modification to existing equipment.
<u>RULE 205</u> : Standards for Granting Permits	All emission units	Emission of pollutants
<u>RULE 206</u> : Conditional Approval of Authority to Construct or Permit to Operate	All emission units	Applicability of relevant Rules
<u>RULE 207</u> : Denial of Applications	All emission units	Applicability of relevant Rules
<u>RULE 208</u> : Action on Applications – Time Limits	All emission units. Not applicable to Part 70 permit applications.	Addition of new equipment of modification to existing equipment.
<u>RULE 212</u> : Emission Statements	All emission units	Administrative
<u>RULE 301</u> : Circumvention	All emission units	Any pollutant emission
<u>RULE 302</u> : Visible Emissions	All emission units	Particulate matter emissions
<u>RULE 303</u> : Nuisance	All emission units	Emissions that can injure, damage or offend.
<u>RULE 304</u> : Particulate matter – Northern Zone	Each PM Source	Emission of PM in effluent gas
<u>RULE 309</u> : Specific Contaminants	All emission units	Combustn.contaminant emission
<u>RULE 311</u> : Sulfur Content of Fuel	All combustion units	Use of fuel containing sulfur
<u>RULE 317</u> : Organic Solvents	Emission units using solvents	Solvent used in process operations.
<u>RULE 321</u> : Solvent Cleaning Operations	Emission units using solvents	Solvent used in process operations.
<u>RULE 322</u> : Metal Surface Coating	Emission units using solvents	Solvent used in process

Generic Requirements	Affected Emission Units	Basis for Applicability
Thinner and Reducer		operations.
<u>RULE 323</u> : Architectural Coatings	Paints used in maintenance and surface coating activities	Application of architectural coatings.
<u>RULE 324</u> : Disposal and Evaporation of Solvents	Emission units using solvents	Solvent used in process operations.
<u>RULE 353</u> : Adhesives and Sealants	Emission units using adhesives and solvents.	Adhesives and sealants used in process operations.
<u>RULE 505.A, B1, D</u> : Breakdown Conditions	All emission units	Breakdowns where permit limits are exceeded or rule requirements are not complied with.
<u>RULE 603</u> : Emergency Episode Plans	Stationary sources with PTE greater than 100 tpy	BreitBurn Orcutt Hill is a major source.
<u>REGULATION VIII</u> : New Source Review	All emission units	Addition of new equipment of modification to existing equipment. Applications to generate ERC Certificates.
<u>REGULATION XIII (RULES 1301-1305)</u> : Part 70 Operating Permits	All emission units	BreitBurn Orcutt Hill is a major source.

Table 3-2 Unit-Specific Federally-Enforceable APCD Rules

Unit-Specific Requirements	Affected Emission Units	Basis for Applicability
<u>RULE 342</u> : Control of Oxides of Nitrogen (NOx) from Boilers, Steam Generators and Process Heaters	APCD DeviceNo 104992	Boilers, steam generators, and process heaters with rated heat inputs greater than or equal to 5 million Btu per hour.

Table 3-3 Non-Federally-Enforceable APCD Rules

Requirement	Affected Emission Units	Basis for Applicability
<u>RULE 210</u> : Fees	All emission units	Administrative
<u>RULES 501-504</u> : Variance Rules	All emission units	Administrative
<u>RULE 505.B2, B3, C, E, F, G</u> : Breakdown Conditions	All emission units	Breakdowns where permit limits are exceeded or rule requirements are not complied with.
<u>RULES 506-519</u> : Variance Rules	All emission units	Administrative

Table 3-4 Adoption Dates of APCD Rules Applicable at Issuance of Permit

Rule No.	Rule Name	Adoption Date
Rule 101	Compliance by Existing Installations: Conflicts	June 1981
Rule 102	Definitions	May 20, 1999
Rule 103	Severability	October 23, 1978
Rule 201	Permits Required	April 17, 1997
Rule 202	Exemptions to Rule 201	April 17, 1997
Rule 203	Transfer	April 17, 1997
Rule 204	Applications	April 17, 1997
Rule 205	Standards for Granting Permits	April 17, 1997
Rule 206	Conditional Approval of Authority to Construct or Permit to Operate	October 15, 1991
Rule 208	Action on Applications - Time Limits	April 17, 1997
Rule 212	Emission Statements	October 20, 1992
Rule 301	Circumvention	October 23, 1978
Rule 302	Visible Emissions	June 1981
Rule 303	Nuisance	October 23, 1978
Rule 304	Particulate Matter – Northern Zone	October 23, 1978
Rule 309	Specific Contaminants	October 23, 1978
Rule 311	Sulfur Content of Fuels	October 23, 1978
Rule 317	Organic Solvents	October 23, 1978
Rule 321	Solvent Cleaning Operations	September 18, 1997
Rule 322	Metal Surface Coating Thinner and Reducer	October 23, 1978
Rule 323	Architectural Coatings	November 15, 2001
Rule 324	Disposal and Evaporation of Solvents	October 23, 1978
Rule 342	Control of Oxides of Nitrogen (NOx) from Boilers, Steam Generators, and Process Heaters	March 10, 1992
Rule 353	Adhesives and Sealants	August 19, 1999
Rule 360	Emissions of Oxides of Nitrogen from Large Water Heaters and Small Boilers	October 17, 2002
Rule 361	Small Boilers, Steam Generators and Process Heaters	January 17, 2008

Rule No.	Rule Name	Adoption Date
Rule 505	Breakdown Conditions (Section A, B1 and D)	October 23, 1978
Rule 603	Emergency Episode Plans	June 15, 1981
Rule 801	New Source Review	April 17, 1997
Rule 802	Nonattainment Review	April 17, 1997
Rule 803	Prevention of Significant Deterioration	April 17, 1997
Rule 804	Emission Offsets	April 17, 1997
Rule 805	Air Quality Impact and Modeling	April 17, 1997
Rule 806	Emission Reduction Credits	April 17, 1997
Rule 901	New Source Performance Standards (NSPS)	May 16, 1996
Rule 1001	National Emission Standards for Hazardous Air Pollutants (NESHAPS)	October 23, 1993
Rule 1301	General Information	January 18, 2001
Rule 1302	Permit Application	November 9, 1993
Rule 1303	Permits	January 18, 2001
Rule 1304	Issuance, Renewal, Modification and Reopening	January 18, 2001
Rule 1305	Enforcement	November 9, 1993

4.0 Engineering Analysis

4.1. General

The engineering analyses performed for this permit were limited to the review of:

- facility process flow diagrams
- emission factors and calculation methods for each emissions unit
- emission control equipment (including RACT, BACT, NSPS, NESHAP, MACT)
- emission source testing, sampling, CEMS, CAM
- process monitors needed to ensure compliance

Unless noted otherwise, default ROC/THC reactivity profiles from the APCD's document titled "*VOC/ROC Emission Factors and Reactivities for Common Source Types*" dated July 13, 1998 (ver 1.1) was used to determine non-methane, non-ethane fraction of THC.

4.2. Stationary External Combustion Units

4.2.1 General: The stationary combustion sources associated with the Orcutt Hill Steam Generators consists of a 23 MMBtu/hr field gas fired steam generator. The steam generator will be used to thermally enhance oil production at two idle wells and one producing well on the Dome and Newlove leases. The steam generator may be operated on any lease within the Orcutt Hill stationary source (SSID 2667). The steam generator will be fired on natural gas fuel.

4.1.2 Emission Factors: The emission factors for the 23 MMBtu/hr Smithmoon Steel steam generator are shown in Table 5.1-2. The NO_x, CO, and ROC emission factors are based on burner manufacturer guarantees for the North American Mfg Co. Model 4211-LE Low-NO_x burner equipped with FGR which meets the Rule 342 requirements for NO_x and CO. The PM/PM₁₀ emission factors are based on EPA AP-42. The SO_x emission factor is based on mass balance using a total sulfur content of 23 ppmv for natural gas. This sulfur content was approved by the APCD for use on the Diatomite Project based on sulfur analysis results of Southern California Gas Company utility grade natural gas.

4.1.3 Emission Controls: The emission controls for the steam generator includes the use of a North American Low-NO_x burner and Exhaust-Gas Recirculation. The FGR system is installed external to the burner on the steam generator. The combustion air and the flue gas enter the burner at the discharge of the blower.

4.3. Fugitive Hydrocarbon Sources

Emissions of reactive organic compounds from piping components such as valves, flanges and connections due to the installation of the steam generator, have been calculated using emission factors pursuant to APCD P&P 6100.061 (*Determination of Fugitive Hydrocarbon Emissions at Oil and Gas Facilities Through the Use of Facility Component Counts - Modified for Revised ROC Definition*) for components in gas/condensate and oil service. The component-leak path was counted consisted with P&P 6100.061. This leak path count is not the same as the

“component” count required by APCD Rule 331. Both gas/condensate and oil service components are present at this facility.

The number of component leak paths was determined by the operator and these data were verified by APCD staff by checking a representative number of P&IDs and by site checks. A total of 388 gas/condensate component-leak paths exist due to the installation of the steam generator. The calculation methodology for the fugitive emissions is:

$$ER = [(EF \times CLP \div 24) \times (1 - CE) \times (HPP)]$$

Where:

ER =	emission rate (lb/period)
EF =	ROC emission factor (lb/clp-day)
CLP =	component-leak path (clp)
CE =	control efficiency
HPP =	operating hours per time period (hrs/period)

Differing emission control efficiencies are credited to all components that are safe to monitor (as defined per Rule 331) due to the implementation of an APCD-approved Inspection and Maintenance program for leak detection and repair consistent with Rule 331 requirements. The control efficiencies vary based on component design, monitoring frequency, and leak detection threshold. This facility operates accessible valves and flanges/connections (80% control) and pressure relief devices (100% control). Ongoing compliance is determined in the field by inspection with an organic vapor analyzer and verification of operator records.

4.4. BACT/NSPS/NESHAP/MACT

The modifications authorized in ATC/PTO 11405- Modification -01 required the permitted 23 MMBTU/hr steam generator to comply with the NO_x and ROC BACT level of control required for the 62.5 MMBTU/hr steam generators permitted under ATC 12084 for the Diatomite Project. The generator burner manufacturer’s guarantee of 9 ppmv @ 3% O₂ NO_x and 8.5 ppmv @ 3% O₂ ROC meets the APCD approved BACT level of control for these steam generators. These BACT limits are specified in permit condition C.1. Compliance of the 23 MMBTU/hr steam generator with these NO_x and ROC BACT limits was confirmed at a source test conducted on February 23, 2007 with the generator fired on PUC quality natural gas and the burner combustion controlled by FGR. Generator burner NO_x emissions complied with 9 ppmv @ 3% O₂ when burner windbox oxygen readings were maintained at or below 18.8%. Test results reported negligible ROC and CO emissions. The most recent source testing, conducted on January 27, 2009, showed that the 23 MMBtu/hr steam generator meets the BACT emission limits of this permit. To date, this facility has not triggered New Source Performance Standards (NSPS) National Emission Standards For Hazardous Air Pollutants (NESHAP) or Maximum Available Control Technology (MACT).

4.5. CEMS/Process Monitoring/CAM

4.4.1 CEMS: There are no CEMS at this facility.

4.4.2 Process Monitoring: In many instances, ongoing compliance beyond a single (snap shot) source test is assessed by the use of process monitoring systems. Examples of these monitors include:

hour meters, fuel usage meters, and hydrogen sulfide analyzers. Once these process monitors are in place, it is important that they be well maintained and calibrated to ensure that the required accuracy and precision of the devices are within specifications. At a minimum the following process monitors will be required to be in good working order:

→ Fuel meter (totalizer) to measure total scf delivered to the steam generator.

4.4.3 CAM: Bretiburn – Orcutt Hill Stationary Source is a major source that is subject to the USEPA's Compliance Assurance Monitoring (CAM) rule (40 CFR 64). Any emissions unit at the facility with uncontrolled emissions potential exceeding major source emission thresholds for any pollutant is subject to CAM provisions. It was determined that CAM was not applicable to any equipment units at this facility.

4.6. Source Testing/Sampling

Source testing and sampling are required in order to ensure compliance with permitted emission limits, Rule 342 emission standards, and the assumptions that form the basis of this operating permit. Fugitive hydrocarbon components are not source tested.

The APCD may require additional source testing if problems develop or if unique circumstances occur that warrant special testing. The following emission point is required to be source tested annually (See Table 4-1):

- Steam Generator (NO_x, CO and ROC)

All sampling and analyses are required to be performed according to APCD approved procedures and methodologies. Typically, the appropriate ASTM methods are acceptable. It is important that all sampling and analysis be traceable by chain of custody procedures.

4.7. Part 70 Engineering Review: Hazardous Air Pollutants

Hazardous air pollutant emissions from the different categories of emission units at this facility are based on emission factors listed in USEPA *AP-42 (5th Ed., 11/95 and 6/97)*. Factors listed in *California Air Toxics Emission Factors (April, 1995), (CATEF)* have been used where the *AP-42* does not list the appropriate factors. If neither *AP-42* nor *CATEF* addresses the applicable HAP emission factors, the HAP emissions are computed based on USEPA's *Air Emission Species Manual, Vol.1 (VOC Species Profiles, 2nd.Ed., 2/90)*.

If no direct data from the USEPA or the CARB are available, the HAP emissions are estimated by the use of Speciation Data obtained from California Air Resources Board's *Speciation Manual: VOC and PM Species Profiles (August 1991)*. These profiles use the underlying criteria pollutant (i.e., ROC) as the basis for estimating the HAP emissions included with the ROCs.

The HAP emission factors are listed in Table 5-7. Potential HAP emissions from the facility are computed and listed in Table 5-8.

Table 4-1 Source Test Requirements

Table 4.1: Source Test Parameters
 BreitBurn Energy: Orcutt Hill Steam Generator
 Permit to Operate 11405-R1

Emission & Test Points	Pollutants/Parameters ^{(b), (e)}	Test Methods ^{(a), (c)}
Steam Generator Stack ^(b)	NO _x - ppmv & lb/hr	EPA Method 7E
	ROC - ppmv & lb/hr	EPA Method 18
	CO - ppmv & lb/hr	EPA Method 10
	Stack Gas Flow Rate	EPA Method 2
	O ₂ , CO ₂ , Dry Mole Wt	EPA Method 3
	Moisture Content	EPA Method 4
Stream Generator	Fuel Gas Flow Rate	Plant gas meter
Fuel Gas	Higher Heating Value	ASTMD 1826-88
	Total Sulfur Content ^(e)	ASTMD 5504
Burner Windbox	O ₂	Record O ₂ % values off display

Site Specific Requirements

- a) Alternative methods may be acceptable on a case-by-case basis.
- b) The emission rates shall be based on EPA Methods 2 and 4, or Method 19 along with the heat input rate.
- c) For NO_x, CO, and O₂ a minimum of three 40-minute runs shall be obtained during each test.
- d) Total sulfur content fuel samples shall be obtained using EPA Method 18 with Tedlar Bags (or equivalent) equipped with Teflon tubing and fittings. Turnaround time for laboratory analysis of these samples shall be no more than 24 hours from sampling in the field.
- e) Source testing shall be performed annually for the steam generator in an "as found" condition.

5.0 Emissions

5.1. General

The facility was analyzed to determine all air-related emission sources. Emissions calculations are divided into "permitted" and "exempt" categories. APCD Rule 202 determines permit exempt equipment. The permitted emissions for each emissions unit is based on the equipment's potential-to-emit (as defined by Rule 102).

Section 5.2 details the permitted emissions for each emissions unit. Section 5.3 details the overall permitted emissions for the facility based on reasonable worst-case scenarios using the potential-to-emit for each emissions unit. Section 5.4 provides the federal potential to emit calculation using the definition of potential to emit used in Rule 1301. Section 5.5 provides the estimated HAP emissions from the facility. Section 5.6 (if applicable) provides the estimated emissions from permit exempt equipment and also serves as the Part 70 list of insignificant emissions. Section 5.7 (if applicable) provides the net emissions increase calculation for the facility and the stationary source. The APCD uses a computer database to accurately track the emissions from a facility. Attachment 10.4 contains the APCD's documentation for the information entered into that database.

5.2. Permitted Emission Limits – Emission Units

Each emissions unit associated with the facility was analyzed to determine the potential-to-emit for the following pollutants:

- ⇒ Nitrogen Oxides (NO_x)³
- ⇒ Reactive Organic Compounds (ROC)
- ⇒ Carbon Monoxide (CO)
- ⇒ Sulfur Oxides (SO_x)⁴
- ⇒ Particulate Matter (PM)⁵
- ⇒ Particulate Matter smaller than 10 microns (PM₁₀)

Permitted emissions are calculated for both short term (daily) and long term (annual) time periods. Section 4.0 (Engineering Analysis) provides a general discussion of the basic calculation methodologies and emission factors used. The reference documentation for the specific emission calculations, as well as detailed calculation spreadsheets, may be found in Section 4 and Attachment 10.1. Table 5-1 provides the basic operating characteristics. Table 5-2 provides the specific emission factors. Tables 5-3 and 5-4 show the permitted short-term and permitted long-term emissions for each unit or operation. In the table, the last column indicates whether the emission limits are federally-enforceable. Those emissions limits that are federally-enforceable are indicated by the symbol "FE". Those emissions limits that are APCD-only enforceable are indicated by the symbol "A".

³ Calculated and reported as nitrogen dioxide (NO₂)

⁴ Calculated and reported as sulfur dioxide (SO₂)

⁵ Calculated and reported as all particulate matter smaller than 100 μm

5.3. Permitted Emission Limits – Facility Totals

The total potential-to-emit for all emission units associated with this facility were analyzed. This analysis looked at the reasonable worst-case operating scenarios for each operating period. The equipment operating in each of the scenarios are presented below. Unless otherwise specified, the operating characteristics defined in Table 5-1 for each emission unit are assumed. Table 5-5 shows the total permitted emissions for the facility.

5.4. Part 70: Federal Potential to Emit

Table 5-6 lists the federal Part 70 potential to emit.

5.5. Part 70: Hazardous Air Pollutant Emissions for the Facility

Hazardous air pollutants (HAP) emission factors, for each type of emissions unit, are listed in Table 5-7. Potential HAP emissions, based on the worst-case scenario, are shown in Table 5-8.

5.6. Exempt Emission Sources/Part 70 Insignificant Sources

Equipment/activities exempt pursuant to Rule 202 include maintenance operations involving surface coating. Under the APCD's Part 70 regulation, equipment/activities that are exempt under Rule 202 are considered insignificant units emissions. In addition, *insignificant activities* such as maintenance operations using paints and coatings, contribute to the facility emissions. There are no exempt or insignificant equipment/activities identified at this facility.

5.7. Net Emissions Increase Calculation

The net emissions increase (NEI) for the Steam Generator facility documented in ATC 11405-02 and accounted for a P2 term since the steam generator was required to conform to the Diatomite Project BACT limits. The NEI for the facility presented in Attachment 10.3. The NEI for the entire BreitBurn Orcutt Hill Stationary Source is (excluding ROC emissions increases at the Newlove lease for pending permit actions ATC 13140 and ATC 13141 and 13134) as follows:

Table below summarizes Stationary Source NEI-90 as equal to sum of each facility's (unless footnoted by an enforceable NEI scenario)

Term	NOx		ROC		CO		SOx		PM		PM10	
	lb/day	ton/yr										
SSN NEI-90	66.59	10.35	59.25	8.65	105.26	17.70	19.28	3.42	30.37	5.54	30.37	5.54
Notes: (1) Resultant SSN NEI-90 from above Section I thru IV data. (2) Totals only apply to permits for this facility ID. Totals may not appear correct due to rounding. (3) Because of rounding, values in this table shown as 0.00 are less than 0.005, but greater than zero. (4) Includes Phase 1 and 2 NEI under ATC 12084.												

Table below summarizes Stationary Source NEI-90 (adjusted)

Term	NOx		ROC		CO		SOx		PM		PM10	
	lb/day	ton/yr										
SSN NEI-90	33.59	4.33	32.54	4.42	48.26	7.30	8.17	1.39	12.37	2.25	12.37	2.25
Notes: (1) This Stationary Source NEI (adjusted) is applicable to all stationary source offset determinations until such time Phase 2 construction begins under ATC 12084. See NEI discussion in Engineering Evaluation in PTO 12273 for more details.												

Table 5.1-1: Operating Equipment Description
 BrettBunn Energy: Orcutt Hill Steam Generator
 Permit to Operate 11405-R1

Equipment Item	Description	APCD Device No	Device Specifications			Usage Data			Maximum Operating Schedule		
			Fuel Feed	%S	Size	Units	Capacity	Units	Load	hr	day
Eugitive Hydrocarbon Components - CLP Method											
Gas Condensate Service											
Valve	Accessible	105074	--	--	42 comp-tp	--	--	1.0	24	2190	8760
Connection	Accessible	105075	--	--	346 comp-tp	--	--	1.0	24	2190	8760
Sub Total:					388 comp-tp						
Combustion - External	Steam Generator	104992	FG	0.0025	25 MMBtu/hr	201,480 MMBtu/yr	--	1.0	24	2190	8760

Table 5.1-2: Equipment Emission Factors
 Breitburn Energy: Orcutt Hill Steam Generator
 Permit to Operate 11405-R1

Equipment Item	Description	APCD Device No	Emission Factors							Units	
			NOx	ROC	CO	SOx	PM	PM10			
Fugitive Hydrocarbon Components - CLP Method											
Gas Condensate Service											
Valve	Accessible	105074	--	0.0183	--	--	--	--	--	--	lb/day-clp
Connection	Accessible	105075	--	0.0043	--	--	--	--	--	--	lb/day-clp
Combustion - External											
	Steam Generator	104992	0.011	0.004	0.019	0.004	0.006	0.006	0.006	0.006	lb/MMBtu

Table 3.1-3: Hourly and Daily Emissions
 BreitBurn Energy, Orcutt Hill Steam Generator
 Permit to Operate 11405-R1

Equipment Item	Description	APCD Device No	NOx		CO		SOx		PM		PM10		Federal Enforceability	
			lb/hr	lb/day										
Fugitive Hydrocarbon Components - CLP Method														
Gas Condensate Service														
Valve	Accessible	105071	--	--	0.03	0.77	--	--	--	--	--	--	A	
Connection	Accessible	105075	--	--	0.06	1.50	--	--	--	--	--	--	A	
Sub Total:					0.09	2.27							FE	
Combustion - External	Steam Generator	104992	0.25	6.05	0.08	1.99	0.11	10.49	0.09	2.04	0.11	3.31	3.31	FE

Notes:

A – “APCD Only” Emission Limits

FE – “Federally Enforceable” Emission Limits

Table 5.1-4: Quarterly and Annual Emissions
 BreitBurn Energy, Orcutt Hill Steam Generator
 Permit to Operate 11405-R1

Equipment Category	Description	APCD Device No	NOx		ROC		CO		SOx		PM		PM10		Federal Enforceability
			IPQ	IPY											
Fugitive Hydrocarbon Components - CLP Method															
Gas Condensate Service															
	Valve	103074	--	--	0.04	0.14	--	--	--	--	--	--	--	--	A
	Connection	103075	--	--	0.07	0.27	--	--	--	--	--	--	--	--	A
	Sub Total:				0.10	0.41									FE
Combustion - External	Steam Generator	104992	0.28	1.10	0.09	0.36	0.48	1.91	0.09	0.37	0.15	0.60	0.15	0.60	FE

Notes:

A – “APCD Only” Emission Limits

FE – “Federally Enforceable” Emission Limits

Table 5.2: Total Permitted Facility Emissions
 BreitBurn Energy: Orcutt Hill Steam Generator
 Permit to Operate 11405-R1

A. Hourly							
<u>Equipment Category</u>	<u>NOx</u>	<u>ROC</u>	<u>CO</u>	<u>SOx</u>	<u>PM</u>	<u>PM10</u>	
Combustion - External	0.25	0.08	0.44	0.09	0.14	0.14	
Fugitive Components	--	0.09	--	--	--	--	
Totals (lb/hr)	0.25	0.18	0.44	0.09	0.14	0.14	
B. Daily							
<u>Equipment Category</u>	<u>NOx</u>	<u>ROC</u>	<u>CO</u>	<u>SOx</u>	<u>PM</u>	<u>PM10</u>	
Combustion - External	6.05	1.99	10.49	2.04	3.31	3.31	
Fugitive Components	--	2.27	--	--	--	--	
Totals (lb/day)	6.05	4.26	10.49	2.04	3.31	3.31	
C. Quarterly							
<u>Equipment Category</u>	<u>NOx</u>	<u>ROC</u>	<u>CO</u>	<u>SOx</u>	<u>PM</u>	<u>PM10</u>	
Combustion - External	0.28	0.09	0.48	0.09	0.15	0.15	
Fugitive Components	--	0.10	--	--	--	--	
Totals (TPQ)	0.28	0.19	0.48	0.09	0.15	0.15	
D. Annual							
<u>Equipment Category</u>	<u>NOx</u>	<u>ROC</u>	<u>CO</u>	<u>SOx</u>	<u>PM</u>	<u>PM10</u>	
Combustion - External	1.10	0.36	1.91	0.37	0.60	0.60	
Fugitive Components	--	0.41	--	--	--	--	
Totals (TPY)	1.10	0.78	1.91	0.37	0.60	0.60	

Table 5.3: Federal Potential to Emit
 BreitBurn Energy: Orcutt Hill Steam Generator
 Permit to Operate 11405-R1

A. Hourly						
Equipment Category	NOx	ROC	CO	SOx	PM	PM10
Combustion - External	0.25	0.08	0.44	0.09	0.14	0.14
Exempt Surface Coating	--	0.010	--	--	--	--
Totals (lb/hr)	0.25	0.09	0.44	0.09	0.14	0.14
B. Daily						
Equipment Category	NOx	ROC	CO	SOx	PM	PM10
Combustion - External	6.05	1.99	10.49	2.04	3.31	3.31
Exempt Surface Coating	--	0.010	--	--	--	--
Totals (lb/day)	6.05	2.00	10.49	2.04	3.31	3.31
C. Quarterly						
Equipment Category	NOx	ROC	CO	SOx	PM	PM10
Combustion - External	0.28	0.09	0.48	0.09	0.15	0.15
Exempt Surface Coating	--	0.010	--	--	--	--
Totals (TPQ)	0.28	0.10	0.48	0.09	0.15	0.15
D. Annual						
Equipment Category	NOx	ROC	CO	SOx	PM	PM10
Combustion - External	1.10	0.36	1.91	0.37	0.60	0.60
Exempt Surface Coating	--	0.010	--	--	--	--
Totals (IPY)	1.10	0.37	1.91	0.37	0.60	0.60

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6.0 Air Quality Impact Analysis

6.1. Modeling

Air quality modeling has not been required for this stationary source.

6.2. Increments

An air quality increment analysis has not been required for this stationary source.

6.3. Monitoring

Air quality monitoring is not required for this stationary source.

6.4. Health Risk Assessment

The BreitBurn Orcutt Hill Stationary Source is subject to the Air Toxics “Hot Spots” Program (AB 2588). A health risk assessment (HRA) for the Orcutt Hill facilities was prepared by the APCD on September 28, 1993 under the requirements of the AB 2588 program. The HRA is based on 1991 toxic emissions inventory data submitted to the APCD by Luft Environmental Consulting on behalf of the Unocal Corporation, the previous owners of the Orcutt Hill stationary source.

Based on the 1991 toxic emissions inventory, a cancer risk of about 5 per million at the property boundary was estimated for the Orcutt Hill Stationary Source. This risk is primarily due to benzene emitted from storage tanks at the site. Additionally, chronic and acute non-carcinogenic risks of 0.3 and 0.2 have been estimated by the APCD and are mainly due to acrolein emissions from internal combustion engines. Approximately 3,663 pounds of benzene and about 317 pounds of acrolein were emitted from the entire stationary source in 1991. The cancer and noncancer risk projections are less than the APCD’s AB 2588 significance thresholds of 10 in a million and 1.0, respectively.

A second health risk assessment (HRA), based on the 2005 toxics emissions inventory, was prepared for the Orcutt Hill facilities in conjunction with the Diatomite Project permit process located on the Newlove Lease at the Orcutt Hill Stationary Source. This HRA was revised in January 2009, to reflect the current status of electrification of injection pump engines and engine locations. The results of this HRA are provided below:

Pathway	Health Impact Type	HARP Receptor Number	HARP Receptor Type	UTM Easting (NAD83, m)	UTM Northing (NAD83, m)	Health Risk	Significant Risk Level
Inhalation Only	Cancer	12024	Boundary	735210	3858241	8.73	≥ 10
	Chronic	12024	Boundary	735210	3858241	0.0175	≥ 1
	Acute	11936	Boundary	735998	3859372	0.823	≥ 1
Multi Pathway	Cancer	12024	Boundary	735210	3858241	9.80	≥ 10
	Chronic	12024	Boundary	735210	3858241	0.0175	≥ 1
	Acute	11936	Boundary	735998	3859372	0.823	≥ 1

An official AB2588 quadrennial update including an updated HRA will be required under the Air Toxics “Hot Spots” Program to ensure the source does not pose a significant risk.

7.0 CAP Consistency, Offset Requirements, and ERCs

7.1. General

Santa Barbara County has been classified as non attainment for the state eight-hour ozone standard as well as the state 24-hour and annual PM₁₀ ambient air quality standards. The County is either in attainment of or unclassified with respect to all other state ambient air quality standards.

Santa Barbara County's air quality has historically violated federal ozone standards. Since 1999, however, local air quality data show that every monitoring location in the County complied with the federal one-hour ambient air quality standard for ozone. The Santa Barbara County Air Pollution Control District adopted the 2001 Clean Air Plan (2001 CAP) that demonstrated attainment of the federal one-hour ozone standard and continued maintenance of that standard through 2015. Consequently, on August 8, 2003, the United States Environmental Protection Agency (USEPA) designated Santa Barbara County as an attainment area for the federal one-hour ozone standard.

On June 15, 2004, USEPA replaced the federal one-hour ozone standard with an eight-hour ozone standard. This eight-hour ozone standard, originally promulgated by USEPA on July 18, 1997, was set at 0.08 parts per million measured over eight hours and is more protective of public health and more stringent than the federal one-hour standard. In March 2008, USEPA lowered that standard to 0.075 parts per million. While USEPA has yet to formally designate Santa Barbara County with respect to the 0.075 parts per million standard, the state has recommended to USEPA that Santa Barbara County be designated as attainment.

Therefore, emissions from all emission units at the stationary source and its constituent facilities must be consistent with the provisions of the USEPA and State approved Clean Air Plans (CAP) and must not interfere with progress towards attainment or maintenance of federal and state ambient air quality standards. Under APCD regulations, any modifications at the source that result in an emissions increase of any nonattainment pollutant exceeding 25 lbs./day must apply BACT (NAR). Additional increases will trigger offsets at the source or elsewhere so that there is a net air quality benefit for Santa Barbara County. These offset threshold levels are 55 lbs/day for all non-attainment pollutants except PM₁₀ for which the level is 80 lbs/day. These thresholds apply to net emissions increases since November 15, 1990 as defined in District Rule 801.

7.2. Clean Air Plan

On August 16, 2007, the APCD Board adopted the 2007 Clean Air Plan to chart a course of action that provided for ongoing maintenance of the federal eight-hour ozone standard through the year 2014 as well as the expeditious attainment of the state one-hour ozone standard. These plans were developed for Santa Barbara County as required by both the 1998 California Clean Air Act and the 1990 Federal Clean Air Act Amendments. Santa Barbara County has now attained the state one-hour ozone standard but does not attain the state eight-hour ozone standard.

In 2010 the APCD will update those provisions of the 2007 Clean Air Plan which demonstrate expeditious attainment of the state eight-hour ozone standard. No changes will be made to the 2007 Clean Air Plan sections which demonstrate continued maintenance of the federal eight-hour ozone standard.

7.3. Offset Requirements

The BreitBurn Orcutt Hill stationary source does not currently require emission offsets. BreitBurn is required to provide offsets for the net emission increase at least two weeks prior to the onset of construction of Phase 2 of the Diatomite project located on the Newlove Lease. BreitBurn shall offset the maximum quarterly NO_x and ROC net emissions increase by reducing emissions at existing sources. Offset requirements for new projects at the Orcutt Hill stationary source prior to Phase 2 construction will be evaluated by excluding the Phase 2 contribution from the NEI total.

7.4. Emission Reduction Credits

The Orcutt Hill steam generators have not generated emission reduction credits. The BreitBurn Orcutt Hill stationary source has generated emission reduction credits as documented in the Orcutt Hill internal combustion engine permit (Part 70/PTO 8039).

8.0 Lead Agency, Permit Consistency

To the best of the APCD's knowledge, no other governmental agency's permit requires air quality mitigation.

9.0 Permit Conditions

For the purposes of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard in this permit, nothing in the permit shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test had been performed.

9.A Standard Administrative Conditions

Section A lists the applicable standard administrative conditions for all equipment in this permit. Conditions listed in this section are enforceable by the USEPA, the APCD, the State of California and the public. Where any reference contained in this section refers to any other part of this permit, that part of the permit referred to is federally enforceable. In case of a discrepancy between the wording of a condition and the applicable federal or APCD rule(s), the wording of the rule shall control.

A.1 Compliance with Permit Conditions:

- (a) The permittee shall comply with all permit conditions in Sections 9.A, 9.B and 9.C.
- (b) This permit does not convey property rights or exclusive privilege of any sort.
- (c) Any permit noncompliance constitutes a violation of the Clean Air Act and is grounds for enforcement action; for permit termination, revocation and re-issuance, or modification; or for denial of a permit renewal application.

- (d) It shall not be a defense for the permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- (e) A pending permit action or notification of anticipated noncompliance does not stay any permit condition.
- (f) Within a reasonable time period, the permittee shall furnish any information requested by the Control Officer, in writing, for the purpose of determining:
 - (i) compliance with the permit, or
 - (ii) whether or not cause exists to modify, revoke and reissue, or terminate a permit or for an enforcement action. [*Re: 40 CFR Part 70.6, APCD Rules 1303.D.1*]
- (g) In the event that any condition herein is determined to be in conflict with any other condition contained herein, then, if principles of law do not provide to the contrary, the condition most protective of air quality and public health and safety shall prevail to the extent feasible.

A.2 **Emergency Provisions:** The permittee shall comply with the requirements of the APCD, Rule 505 (Upset/Breakdown rule) and/or APCD Rule 1303.F, whichever is applicable to the emergency situation. In order to maintain an affirmative defense under Rule 1303.F, the permittee shall provide the APCD, in writing, a “notice of emergency” within 2 days of the emergency. The “notice of emergency” shall contain the information/documentation listed in Sections (1) through (5) of Rule 1303.F. [*Re: 40 CFR 70.6, APCD Rule 1303.F*]

A.3 **Compliance Plan:**

- (a) The permittee shall comply with all federally-enforceable requirements that become applicable during the permit term, in a timely manner, as identified in the Compliance Plan.
- (b) For all applicable equipment, the permittee shall implement and comply with any specific compliance plan required under any federally-enforceable rules or standards. [*Re: APCD Rule 1302.D.2*]

A.4 **Right of Entry:** The Regional Administrator of USEPA, the Control Officer, or their authorized representatives, upon the presentation of credentials, shall be permitted to enter upon the premises where a Part 70 Source is located or where records must be kept:

- (a) To inspect the stationary source, including monitoring and control equipment, work practices, operations, and emission-related activity;
- (b) To inspect and duplicate, at reasonable times, records required by this Permit to Operate;
- (c) To sample substances or monitor emissions from the source or assess other parameters to assure compliance with the permit or applicable requirements, at reasonable times. Monitoring of emissions can include source testing. [*Re: APCD Rule 1303.D.2*]

- A.5 **Payment of Fees:** The permittee shall reimburse the APCD for all its Part 70 permit processing and compliance expenses for the stationary source on a timely basis. Failure to reimburse on a timely basis shall be a violation of this permit and of applicable requirements and can result in forfeiture of the Part 70 permit. Operation without a Part 70 permit subjects the source to potential enforcement action by the APCD and the USEPA pursuant to section 502(a) of the Clean Air Act. [Re: APCD Rules 1303.D.1 and 1304.D.11, 40 CFR 70.6]
- A.6 **Prompt Reporting of Deviations:** The permittee shall submit a written report to the APCD documenting each and every deviation from the requirements of this permit or any applicable federal requirements within 7 days after discovery of the violation, but not later than 180-days after the date of occurrence. The report shall clearly document 1) the probable cause and extent of the deviation, 2) equipment involved, 3) the quantity of excess pollutant emissions, if any, and 4) actions taken to correct the deviation. The requirements of this condition shall not apply to deviations reported to APCD in accordance with Rule 505. *Breakdown Conditions*, or Rule 1303.F *Emergency Provisions*. [APCD Rule 1303.D.1, 40 CFR 70.6(a) (3)]
- A.7 **Reporting Requirements/Compliance Certification:** The permittee shall submit compliance certification reports to the USEPA and the Control Officer every six months. These reports shall be submitted on APCD forms and shall identify each applicable requirement/condition of the permit, the compliance status with each requirement/condition, the monitoring methods used to determine compliance, whether the compliance was continuous or intermittent, and include detailed information on the occurrence and correction of any deviations (excluding emergency upsets) from permit requirement. The reporting periods shall be each half of the calendar year, e.g., January through June for the first half of the year. These reports shall be submitted by September 1 and March 1, respectively, each year. Supporting monitoring data shall be submitted in accordance with the "Semi-Annual Monitoring/Compliance Verification Report" condition in section 9.C. The permittee shall include a written statement from the responsible official, which certifies the truth, accuracy, and completeness of the reports. [Re: APCD Rules 1303.D.1, 1302.D.3, 1303.2.c]
- A.8 **Federally-Enforceable Conditions:** Each federally-enforceable condition in this permit shall be enforceable by the USEPA and members of the public. None of the conditions in the APCD-only enforceable section of this permit are federally-enforceable or subject to the public/USEPA review. [Re: CAAA, § 502(b)(6), 40 CFR 70.6]
- A.9 **Recordkeeping Requirements:** Records of required monitoring information shall include the following:
- (a) The date, place as defined in the permit, and time of sampling or measurements;
 - (b) The date(s) analyses were performed;
 - (c) The company or entity that performed the analyses;
 - (d) The analytical techniques or methods used;
 - (e) The results of such analyses; and
 - (f) The operating conditions as existing at the time of sampling or measurement;

The records (electronic or hard copy), as well as all supporting information including calibration and maintenance records, shall be maintained for a minimum of five (5) years from date of initial entry by BreitBurn Energy and shall be made available to the APCD upon request. [Re: APCD Rule 1303.D.1.f, 40CFR70.6(a)(3)(ii)(A)]

A.10 **Conditions for Permit Reopening:** The permit shall be reopened and revised for cause under any of the following circumstances:

- (a) Additional Requirements: If additional applicable requirements (e.g., NSPS or MACT) become applicable to the source which has an unexpired permit term of three (3) or more years, the permit shall be reopened. Such a reopening shall be completed no later than 18 months after promulgation of the applicable requirement. However, no such reopening is required if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended. All such re-openings shall be initiated only after a 30-day notice of intent to reopen the permit has been provided to the permittee, except that a shorter notice may be given in case of an emergency.
- (b) Inaccurate Permit Provisions: If the APCD or the USEPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emission standards or other terms or conditions of the permit, the permit shall be reopened. Such re-openings shall be made as soon as practicable.
- (c) Applicable Requirement: If the APCD or the USEPA determines that the permit must be revised or revoked to assure compliance with any applicable requirement including a federally-enforceable requirement, the permit shall be reopened. Such re-openings shall be made as soon as practicable.

Administrative procedures to reopen and revise/revoke/reissue a permit shall follow the same procedures as apply to initial permit issuance. Re-openings shall affect only those parts of the permit for which cause to reopen exists.

If a permit is reopened, the expiration date does not change. Thus, if the permit is reopened, and revised, then it will be reissued with the expiration date applicable to the re-opened permit. [*Re: 40 CFR 70.7, 40 CFR 70.6*]

A.11 **Grounds for Revocation:** Failure to abide by and faithfully comply with this permit or any Rule, Order, or Regulation may constitute grounds for the APCD to petition for permit revocation pursuant to California Health & Safety Code Section 42307 *et seq.*

9.B. Generic Conditions

Section B lists the applicable 'generic' permit conditions, including emission standards for all equipment in this permit. Conditions listed in this section are enforceable by the USEPA, the APCD, the State of California and the public. Where any reference contained in this section refers to any other part of this permit, that part of the permit referred to is federally enforceable. In case of a discrepancy between the wording of a condition and the applicable federal or APCD rule(s), the wording of the rule shall control.

B.1 **Circumvention (Rule 301):** A person shall not build, erect, install, or use any article, machine, equipment or other contrivance, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which would otherwise constitute a violation of Division 26 (Air Resources) of the Health and Safety Code of

the State of California or of these Rules and Regulations. This Rule shall not apply to cases in which the only violation involved is of Section 41700 of the Health and Safety Code of the State of California, or of APCD Rule 303. [Re: APCD Rule 301]

B.2. Visible Emissions (Rule 302): BreitBurn Energy shall not discharge into the atmosphere from any single source of emission or air contaminants for a period or periods aggregating more than three minutes in any one hour which is:

- (a) As dark or darker in shade as that designated as No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines, or
- (b) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subsection B.2.(a) above. [Re: APCD Rule 302].

B.3 Nuisance (Rule 303): No pollutant emissions from any source at BreitBurn Energy shall create nuisance conditions. Operations shall not endanger health, safety or comfort, nor shall they damage any property or business. [Re: APCD Rule 303]

B.4 Specific Contaminants (Rule 309): BreitBurn Energy shall not discharge into the atmosphere from any single source sulfur compounds and combustion contaminants (particulate matter) in excess of the applicable standards listed in Sections A through E of Rule 309. [Re: APCD Rule 309].

B.5 Sulfur Content of Fuels (Rule 311): BreitBurn Energy shall not burn fuels with a sulfur content in excess of 796 ppmvd or 50 gr/100 scf (calculated as H₂S) for gaseous fuel. Compliance with this condition shall be based on quarterly measurements of the fuel gas using Draeger tubes, ASTM, or other APCD-approved methods. [Reference: APCD Rule 311.B]

9.C Requirements and Equipment Specific Conditions

Section C lists conditions affecting specific equipment in this permit. Conditions listed in this section are enforceable by the USEPA, the APCD, the State of California, and the public. Where any reference contained in this section refers to any other part of this permit, that part of the permit referred to is federally enforceable. In case of a discrepancy between the wording of a condition and the applicable federal or APCD rule(s), the wording of the rule shall control.

C.1 External Combustion. The following equipment is included in this emissions unit category:

Table C.1-1 External Combustion Equipment List

APCD DeviceNo	Device Name
<i>Steam Generator</i>	
104992	Smithmoon Steel Company Generator/North American Burners (23 MMBtu/hr)

- (a) Emission Limits. Mass emissions from the steam generator shall not exceed the “Steam Generator Total” listed in Tables 5-3 and 5-4 of this permit. Compliance shall be based

on the operational, monitoring, recordkeeping and reporting conditions of this permit as well as through source testing, fuel usage, and the total sulfur content analysis of the field gas.

- (i) *Oxides of Nitrogen (NO_x) Concentration Emissions Limits.* Emissions of NO_x (as NO₂) from the steam generator subject to this permit shall not exceed a NO_x stack concentration of 9 ppmvd at 3% O₂ or a NO_x stack emission rate of 0.011 lb/MMBtu when fired on PUC quality natural gas. Compliance with this condition and Rule 342 .D.1 shall be based on source testing and the monitoring condition of this permit.
 - (ii) *Reactive Organic Compound (ROC) Concentration Emissions Limits.* Emissions of ROC (as CH₄) from the steam generator subject to this permit shall not exceed a ROC stack concentration of 8.5 ppmvd at 3% O₂ or an ROC stack emission rate of 0.004 lb/MMBtu when fired on PUC quality natural gas. Compliance with this condition and Rule 342 .D.1 shall be based on source testing and the monitoring condition of this permit.
 - (iii) *Carbon Monoxide (CO) Concentration Emissions Limits.* Emissions of CO from the steam generator subject to this permit shall not exceed a 26 ppmvd at 3% O₂ or a CO stack emission rate of 0.019 lb/MMBTU when fired on PUC quality natural gas. Compliance with this condition and Rule 342.D.1 shall be based on source testing and the monitoring condition of this permit.
- (b) Operational Limits: The equipment listed in the Table C.1-1 must be properly maintained in accordance with the equipment manufacturer's/operator's maintenance manual to minimize combustion emissions. The following additional operational limits apply:
- (i) *Gaseous Fuel Sulfur Limit.* The steam generator listed in Table C.1-1 shall be fired on PUC quality gas. The concentration of sulfur compounds (calculated as H₂S at standard conditions, 60°F and 14.7 psia) in the natural gas fuel burned in this unit shall not exceed 1.36 grains per 100 cubic feet (23 ppmvd)
 - (ii) *Combustion Units -* The hourly, daily and annual heat input limits to the steam generator shall not exceed the values listed in Table C.1-2 below. These limits are based on the design rating of the units and the annual heat input value as listed in the permit application. Unless otherwise designated by the Control Officer, the fuel heat content of natural gas for determining compliance equals 1,050 Btu/scf.

Table C.1-2 Heat Input Limits

Combustion Unit	MMBtu/hr	MMBtu/day	MMBtu/yr
Steam Generator (DeviceNo 104992)	23	552	201,480

- (iii) *FGR Operation –* The oxygen (O₂) concentration of the combustion air mix to the steam generator burner shall not exceed 18.8% when the steam generator is operating.

- (iv) *Plate Restrictor* -- The combustion air intake restrictor plate shall remain bolted in place (per photo in Appendix D) at all times during steam generator operation
- (c) Monitoring: The following source testing and periodic monitoring conditions apply to the steam generator:
 - (i) *Fuel Meter* – The steam generator shall be equipped with a dedicated APCD-approved fuel meter that is non-resettable and pressure-corrected to measure the total cubic feet (scf) delivered to the combustion unit. The fuel meter shall be accurate to within five percent (5%) of the full scale reading. The fuel meter/gauge shall be calibrated annually in accordance with the fuel meter manufacturer’s procedures. Fuel monitoring components, manufacturer’s specifications, calibration specifications and the procedures for maintaining fuel use records required by condition d (ii) below shall be included in the *Fuel Use Monitoring Plan for the Diatomite Project Plan* required under ATC 12084 permit condition 6.a.(1) (d).
 - (ii) *FGR Operating Limit Monitoring* - The steam generator burner windbox shall be equipped with an oxygen monitor. The burner windbox operating O₂ shall be continuously monitored and the O₂% value displayed when the steam generator is operating.
 - (iii) *Source Testing* – BreitBurn Energy shall source test the steam generator annually, in accordance with Table 4.1 of this permit for compliance with applicable emission limits. The source test anniversary shall be February or other date if requested by the permittee and approved by the APCD to consolidate the testing of this steam generator with the steam generators that are part of the Diatomite Project. The next test shall be completed by the last day of February 2010. The source testing provisions listed below shall apply:
 - (1) BreitBurn shall submit a written source test plan to the APCD for approval at least thirty (30) days prior to initiation of each source test. The source test plan shall be prepared consistent with the APCD’s Source Test Procedures Manual (revised May 1990 and any subsequent revisions). BreitBurn shall obtain written APCD approval of the source test plan prior to commencement of source testing. The APCD shall be notified at least ten (10) calendar days prior to the start of source testing activity to arrange for a mutually agreeable source test date when APCD personnel may observe the test.
 - (2) Source test results shall be submitted to the APCD within forty-five (45) calendar days following the date of source test completion and shall be consistent with the requirements approved within the source test plan. Source test results shall document BreitBurn’s compliance status with mass emission rates in Section 5 and applicable permit conditions and rules. All APCD costs associated with the review and approval of all plans and reports and the witnessing of tests shall be paid by BreitBurn as provided for by APCD Rule 210.
 - (3) A source test for an item of equipment shall be performed on the scheduled day of testing (the test day mutually agreed to) unless circumstances beyond the control of the operator prevent completion of the test on the scheduled day.

Such circumstances include mechanical malfunction of the equipment to be tested, malfunction of the source test equipment, delays in source test contractor arrival and/or set-up, or unsafe conditions on site. Except in cases of an emergency, the operator shall seek and obtain APCD approval before deferring or discontinuing a scheduled test, or performing maintenance on the equipment item on the scheduled test day. Once the sample probe has been inserted into the exhaust stream of the equipment unit to be tested (or extraction of the sample has begun), the test shall proceed in accordance with the approved source test plan. In no case shall a test run be aborted except in the case of an emergency or unless approval is first obtained from the APCD. If the test cannot be completed on the scheduled day, then the test shall be rescheduled for another time with prior authorization by the APCD. Failing to perform the source test of an equipment item on the scheduled test day without a valid reason and without APCD's authorization shall constitute a violation of this permit. If a test is postponed due to an emergency, written documentation of the emergency event shall be submitted to the APCD by the close of the business day following the scheduled test day.

- (4) The timelines in (a), (b), and (c) above may be extended for good cause provided a written request is submitted to the APCD at least three (3) days in advance of the deadline, and approval for the extension is granted by the APCD.

Table 4.1: Source Test Parameters
 BreitBurn Energy: Orcutt Hill Steam Generator
 Permit to Operate 11405-R1

Emission & Test Points	Pollutants/Parameters ^{(b), (e)}	Test Methods ^{(a), (c)}
Steam Generator Stack ⁽²⁾	NO _x - ppmv & lb/hr	EPA Method 7E
	ROC - ppmv & lb/hr	EPA Method 18
	CO - ppmv & lb/hr	EPA Method 10
	Stack Gas Flow Rate	EPA Method 2
	O ₂ , CO ₂ , Dry Mole Wt	EPA Method 3
	Moisture Content	EPA Method 4
Stream Generator Fuel Gas	Fuel Gas Flow Rate	Plant gas meter
	Higher Heating Value	ASTMD 1826-88
	Total Sulfur Content ⁽²⁾	ASTMD 1072
Burner Windbox	O ₂	Record O ₂ % values off display

Site Specific Requirements

- a) Alternative methods may be acceptable on a case-by-case basis.
- b) The emission rates shall be based on EPA Methods 2 and 4, or Method 19 along with the heat input rate.
- c) For NO_x, CO, and O₂ a minimum of three 40-minute runs shall be obtained during each test.
- d) Total sulfur content fuel samples shall be obtained using EPA Method 18 with Tedlar Bags (or equivalent) equipped with Teflon tubing and fittings. Turnaround time for laboratory analysis of these samples shall be no more than 24 hours from sampling in the field.
- e) Source testing shall be performed annually for the steam generator in an "as found" condition.

- (d) **Recordkeeping:** The steam generator is subject to the recordkeeping requirements listed in Rule 342.I. All records shall be maintained by BreitBurn Energy for a minimum of five (5) years. The following records (electronic or hard copy) shall be maintained by the permittee and shall be made available to the District upon request:
- (i) *Sulfur Content* - The annual measured total sulfur content, in units of ppmvd, of the purchased PUC quality natural gas burned in the steam generator burner.
 - (ii) *Natural Gas Fuel Use* - The volume of (1) PUC natural gas (including Orcutt Hill Field produced gas when blended) and, (2) Diatomite project produced gas combusted each month (in units of standard cubic feet) in the steam generator and the number of days per month that the steam generator operated.
 - (iii) *Maintenance Logs* - Maintenance logs for the steam generator, emission control systems and fuel flow meters.
 - (iv) *FGR Operating Limit Monitoring* - Daily windbox O₂% readings shall be maintained in a log and provided to the APCD upon request.
- (e) **Reporting:** The equipment listed in this section is subject to all the reporting requirements listed in APCD Rule 342.J. On a semi-annual basis, a report detailing the previous six month's activities shall be provided to the APCD. The report must list all data required by the *Compliance Verification Reports* condition of this permit.

C.2 **Fugitive Hydrocarbon Emissions Components.** The following equipment are included in this emissions unit category:

Device Type	Device Subtype	APCD DeviceNo¹
<i>Fugitive Components - Gas/Condensate</i>		
Valve	Accessible	105074
Connection	Accessible	105075

Notes:

¹Each APCD DeviceNo is unique, representing a specific piece of equipment (device) identified on permit. In the case of fugitive hydrocarbon components, each APCD DeviceNo represents all permitted fugitive components of a specific "Device Subtype" or fugitive component

- (a) **Emission Limits:** Mass emissions from the gas/condensate and oil service (sub-total) components listed above shall not exceed the limits listed in Tables 5-3 and 5-4. Compliance with this condition shall be based on actual component-leak path counts as documented through monitoring, recordkeeping, and reporting conditions in this permit.
- (b) **Operational Limits:** Operation of the equipment listed in this section shall conform to the requirements listed in APCD Rule 331.D and E. Compliance with these limits shall be

assessed through compliance with the monitoring, recordkeeping and reporting conditions in this permit. In addition BreitBurn shall meet the following requirements:

- (i) *I&M Program*: The APCD-approved I&M Plan for the Orcutt Hill Compressor Plant shall be implemented for the life of the project. The Plan, and any subsequent APCD approved revisions, is incorporated by reference as an enforceable part of this permit. An updated Fugitive Emissions Inspection and Maintenance Plan must be submitted to the APCD for review and approval within one calendar quarter whenever there is a change in the component list or diagrams.
- (ii) *Leak path Count*: The total component-leak path count listed in BreitBurn's most recent I&M component-leak path inventory shall not exceed the total component-leak path count listed in Table 5-1 by more than five percent. This five percent range is to allow for minor differences due to component counting methods and does not constitute allowable emissions growth due to the addition of new equipment.
- (c) Monitoring: The equipment listed in this section is subject to all the monitoring requirements listed in APCD Rule 331.F. The test methods in Rule 331.H shall be used, when applicable.
- (d) Recordkeeping: The equipment listed in this section is subject to all the recordkeeping requirements listed in APCD Rule 331.G. In addition, BreitBurn shall:
 - (i) *I&M Log* – BreitBurn shall record in a log the following: a record of leaking components found (including name, location, type of component, date of leak detection, the ppmv or drop-per-minute reading, date of repair attempts, method of detection, date of re-inspection and ppmv or drop-per-minute reading following repair); a record of the total components inspected and the total number and percentage found leaking by component type; a record of leaks from critical components; a record of leaks from components that incur five repair actions within a continuous 12-month period; and, a record of component repair actions including dates of component re-inspections. For the purpose of this paragraph, a leaking component is any component which exceeds the applicable limit:
 - (1) greater than or equal to 1,000 ppmv for minor leaks under Rule 331 (includes Accessible/Inaccessible components and Category A components);
- (e) Reporting: On a semi-annual basis, a report detailing the previous six-month's activities shall be provided to the APCD. The report must list all data required by the *Semi-Annual Compliance Verification Reports* condition of this permit.[*Re: APCD Rules 331 and 1303, 40 CFR 70.6*]

C.3 **Fuel Gas Sulfur Limit**: The total sulfur content (calculated as H₂S at standard conditions, 60° F and 14.7 psia) of the purchased PUC quality natural gas fuel burned at the facility shall not exceed 1.36 grains per 100 cubic feet (23 ppmvd). BreitBurn Energy shall measure the total sulfur content annually at a location downstream of the facility purchased gas meter in accordance with ASTM-D1072 or an APCD approved equivalent method. Records shall be kept on site and made available for inspection by the APCD upon request.

C.4 **Compliance Verification Reports.** Twice a year, BreitBurn Energy shall submit a compliance verification report to the APCD. Each report shall document compliance with all permits, rule or other statutory requirements during the prior two calendar quarters. The first report shall cover calendar quarters 1 and 2 (January through June) and the second report shall cover calendar quarters 3 and 4 (July through December). The reports shall be submitted by March 1st and September 1st each year. Each report shall contain information necessary to verify compliance with the emission limits and other requirements of this permit and shall document compliance separately for each calendar quarter. These reports shall be in a format approved by the APCD. Compliance with all limitations shall be documented in the submittals. All logs and other basic source data not included in the report shall be made available to the APCD upon request. The second report shall also include an annual report for the prior four quarters. Pursuant to Rule 212, a completed *APCD Annual Emissions Inventory* questionnaire should be included in the annual report or submitted electronically via the APCD website. BreitBurn Energy may use the Compliance Verification Report in lieu of the Emissions Inventory questionnaire if the format of the CVR is acceptable to the APCD's Emissions Inventory Group and if BreitBurn Energy submits a statement signed by a responsible official stating that the information and calculations of quantifies of emissions of air pollutants presented in the CVR are accurate and complete to best knowledge of the individual certifying the statement. The report shall include the following information:

- (a) *External Combustion Units – Steam Generator.*
 - (i) The quarterly measured sulfur concentration of the fuel gas calculated as H₂S
 - (ii) The annually analyzed total sulfur content of fuel gas.
 - (iii) The total volume of natural gas combusted in the steam generator, on a daily, monthly, and annual basis in units of standard cubic feet and million BTUs
 - (iv) Days of operation per month.
 - (v) The date and burner windbox oxygen readings in excess of the operational limit.
 - (vi) The windbox oxygen set-point.

- (b) *Fugitive Hydrocarbons.* Rule 331 fugitive hydrocarbon I&M program data (on a quarterly basis):
 - (i) Inspection summary.
 - (ii) Record of leaking components.
 - (iii) Record of leaks from critical components.
 - (iv) Record of leaks from components that incur five repair actions within a continuous 12-month period.
 - (v) Record of component repair actions including dates of component re-inspections.
 - (vi) An updated FHC I&M inventory due to change in component list or diagrams.
 - (vii) Listing of components installed as BACT under APCD Rule 331 and Rule 802 as approved by the APCD.



Air Pollution Control Officer

JUN 02 2009

Date

NOTES:

- (a) This permit supersedes all previous APCD permits issued for the Orcutt Hill Steam Generators
- (b) Permit Reevaluation Due Date: June 2, 2012
- (c) Part 70 Operating Permit Expiration Date: June 2, 2012

10.0 Attachments

10.1. Emission Calculation Documentation

Table 10-1 Steam Generator Calculations – Natural Gas

Attachment: A-1
 Date: 02/23/09

BOILER / STEAM GENERATOR CALCULATION WORKSHEET (ver. 6.0)

DATA

Permit No.	AP11405-02
Owner/Operator	BreitBurn Energy
Facility/Lease	Orcutt Hill
Boiler Type	Steam Generator
Boiler Mfg.	Smithmoon
Boiler Model No.	14179-65
Boiler Serial/ID No.	no data
Boiler Horsepower	no data Bhp
Burner Type	Low-Nox
Burner Mfg.	North American
Burner Model No.	4211-LE
Max. Firing Rate of Burner	23.000 MMBtu/hr
Max. Annual Heat Input	201,480.000 MMBtu/yr
Daily Operating schedule	24 hrs/day
Yearly Load factor (%)	100 %
Fuel Type	PUC Natural Gas
High Heating Value	1,050 Btu/scf
Sulfur Content of Fuel	23.00 ppmvd as H2S
Nitrogen Content of Fuel	- wt. % N
Boiler Classification	Industrial
Firing Type	Other Type
PM Emission Factor	0.0060 lb/MMBtu
PM ₁₀ Emission Factor	0.0060 lb/MMBtu
NO _x Emission Factor	0.0110 lb/MMBtu
SO _x Emission Factor	0.0037 lb/MMBtu
CO Emission Factor	0.0190 lb/MMBtu
ROC Emission Factor	0.0040 lb/MMBtu

RESULTS

	<u>lb/hr</u>	<u>lb/day</u>	<u>TPY</u>
Nitrogen Oxides (as NO ₂)	0.25	6.1	1.11
Sulfur Oxides (as SO ₂)	0.09	2.0	0.37
PM ₁₀	0.14	3.3	0.60
Total Suspended Particulate (PM)	0.14	3.3	0.60
Carbon Monoxide	0.44	10.5	1.91
Reactive Organic Compounds (ROC)	0.09	2.2	0.40
Hourly Heat Release	23.000	MMBtu/hr	
Daily Heat Release.....	552.000	MMBtu/day	
Annual Heat Release	201,480.000	MMBtu/yr	
Rule 342 Applicability	201.5	Billion Btu/yr	

Table 10-2 Fugitive Hydrocarbon Component Emissions Calculation

FUGITIVE ROC EMISSIONS CALCULATION										
ADMINISTRATIVE INFORMATION										
Attachment:	10.1									
Company:	BretBurn Energy									
Facility:	Stream Generators									
Processed by:	LXK									
Date:	2/13/2006									
Path & File Name:	\\sceptol.org\Shares\Groups\ENGR\WP\PT70SRCE\PERMITS\O&G-PROD\BretBurn Orcutt\Stream Generators\AP11405\FHC Calcs - CLP Method (ver 3.0).xls\AP11405 (2)									
Facility Type: (Choose one)	x									
Production Field	Gas Processing Plant				Offshore Platform					
Component:	Specific Type:	APCD DeviceNo.	Count ⁽¹⁾	THC ⁽²⁾ Emission Factor (lb./day-clp)	ROC:THC Ratio	Uncontrolled ROC Emission (lb./day)	Controlled Efficiency	Controlled ROC Emission (lb./day)	Controlled ROC Emission (Tons/Qt)	Controlled ROC Emission (Tons/Yr)
Gas Condensate Service	Valve	105074	42	0.295	0.31	3.84	0.80	0.768	0.035	0.140
	Connection	105075	346	0.07	0.31	7.51	0.80	1.502	0.069	0.274
	Sub Total		388			11.35		2.270	0.104	0.414
Oil Service	Valve	105077		0.0041	0.56	0.00	0.80	0.000	0.000	0.000
	Connection	105078	0	0.002	0.56	0.00	0.80	0.000	0.000	0.000
	Sub Total		0			0.000		0.000	0.000	0.000
Total			388			11.349		2.270	0.104	0.414

Notes:

1. Revised Component Counts as provided by RJT on 8/29/05 per AM 11405 inspection.
2. APCD P&P #6100.060.1998.
3. APCD P&P #6100.061.1998
4. A 80% efficiency is assigned to fugitive components Rule 331 implementation.
5. Emission Control efficiencies for the "category x" components are identified in "FHC Control Factors (ver 2.0)"

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10.2. Fee Calculation

FEE STATEMENT

ATC/PTO No. 11405

FID: 10482 Orcutt Hill - Steam Generators / SSID: 02667



Santa Barbara County
Air Pollution Control District

Device Fee

Device No.	Device Name	Fee Schedule	Qty of Fee Units	Fee per Unit	Fee Units	Max or Min. Fee Apply?	Number of Same Devices	Pro Rate Factor	Device Fee	Penalty Fee?	Fee Credit	Total Fee per Device
10492	Portable Steam Generator	A3	23,000	396.55	Per 1 million Btu input	Max	1	1.000	5,306.00	0.00	0.00	5,306.00
105074	Valves - Accessible	A1.a	1,000	52.86	Item	No	1	1.000	52.86	0.00	0.00	52.86
	Device Fee Sub-Totals =								\$5,358.86	\$0.00	\$0.00	\$5,358.86
	Device Fee Total =											

Permit Fee

No Permit Level Fee

Fee Statement Grand Total = \$5,358.00

Notes:

- (1) Fee Schedule Items are listed in APCD Rule 210, Fee Schedule "A".
- (2) The term "Units" refers to the unit of measure defined in the Fee Schedule.

Permit to Operate 11405-R1

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10.3. Facility NEI

Table 10-3 Facility Net Emissions Increase (NEI-90)

TABLE C.1 - Facility Emissions Summary													
BreitBurn Energy: Orcutt Hill Steam Generator													
ATC/PTO 11405-02													
I. This Projects "I" NEI-90													
Permit No.	Date Issued	NOx		ROC		CO		SOx		PM		PM10	
		lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
Totals		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Notes:													
II. This Facility's "P1s"													
Enter all facility "P1" NEI-90s below:													
Permit No.	Date Issued	NOx		ROC		CO		SOx		PM		PM10	
		lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
ATC/PTO 11405	3/29/2006	0.62	0.11	2.00	0.37	-24.1	-4.4	1.98	0.36	0.99	0.18	0.99	0.18
ATC 11405 Mod-01	5/16/2005	13.18	2.40	2.81	0.51	34.59	6.51	6.30	1.15	3.15	0.57	3.15	0.57
Totals		13.80	2.51	4.81	0.88	10.49	1.91	8.28	1.51	4.14	0.75	4.14	0.75
Notes: (1) Facility NEI from IDS. (2) Totals only apply to permits for this facility ID. Totals may not appear correct due to rounding. (3) Because of rounding, values in this table shown as 0.00 are less than 0.005, but greater than zero.													
III. This Facility's "P2" NEI-90 Decreases													
Enter all facility "P2" NEI-90s below:													
Permit No.	Date Issued	NOx		ROC		CO		SOx		PM		PM10	
		lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
ATC/PTO 11405-01	12/8/2006	4.14	0.76										
ATC/PTO 11405-02		3.61	0.66	0.99	0.18			6.24	1.14	0.83	0.15	0.83	0.15
Totals		7.75	1.42	0.99	0.18	0.00	0.00	6.24	1.14	0.83	0.15	0.83	0.15
Notes: (1) Facility NEI from IDS. (2) Totals only apply to permits for this facility ID. Totals may not appear correct due to rounding. (3) Because of rounding, values in this table shown as 0.00 are less than 0.005, but greater than zero.													
IV. This Facility's Pre-90 "D" Decreases													
Enter all facility "D" decreases below:													
Permit No.	Date Issued	NOx		ROC		CO		SOx		PM		PM10	
		lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr
Totals		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Notes: (1) Facility "D" from IDS. (2) Totals only apply to permits for this facility ID. Totals may not appear correct due to rounding. (3) Because of rounding, values in this table shown as 0.00 are less than 0.005, but greater than zero.													
V. Calculated This Facility's NEI-90													
Table below summarizes facility NEI-90 as equal to: I - (P1-P2) -D													
Term	NOx		ROC		CO		SOx		PM		PM10		
	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	lb/day	ton/yr	
Project "I"	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
P1	13.80	2.51	4.81	0.88	10.49	1.91	8.28	1.51	4.14	0.75	4.14	0.75	
P2	7.75	1.42	0.99	0.18	0.00	0.00	6.24	1.14	0.83	0.15	0.83	0.15	
D	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
FNEI-90	6.05	1.10	3.82	0.70	10.49	1.91	2.04	0.37	3.31	0.60	3.31	0.60	
Notes: (1) Resultant FNEI-90 from above Section I thru IV data. (2) Totals only apply to permits for this facility ID. Totals may not appear correct due to rounding. (3) Because of rounding, values in this table shown as 0.00 are less than 0.005, but greater than zero.													

10.4. Equipment List

PT-70/Reeval 11405 R1 / FID: 10482 Orcutt Hill - Steam Generators / SSID: 02667

A PERMITTED EQUIPMENT

1 Portable Steam Generator

<i>Device ID #</i>	104992	<i>Device Name</i>	Portable Steam Generator
<i>Rated Heat Input</i>	23.000 MMBtu/Hour	<i>Physical Size</i>	201480.00 MMBtu/yr
<i>Manufacturer</i>	Smithmoon Steel Company	<i>Operator ID</i>	
<i>Model</i>	14179-65	<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>	Steam generator will be used on the Dome and Newlove Leases and for use on the Diatomite Project. Unit includes North American, model 4211-21-LE low NOx burners and flue gas recirculation.		

2 Valves - Accessible

<i>Device ID #</i>	105074	<i>Device Name</i>	Valves - Accessible
<i>Rated Heat Input</i>		<i>Physical Size</i>	42.00 Component Leakpath
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>			

3 Flanges/Connections - Accessible

<i>Device ID #</i>	105075	<i>Device Name</i>	Flanges/Connections - Accessible
<i>Rated Heat Input</i>		<i>Physical Size</i>	346.00 Component Leakpath
<i>Manufacturer</i>		<i>Operator ID</i>	
<i>Model</i>		<i>Serial Number</i>	
<i>Location Note</i>			
<i>Device Description</i>			

10.5 APCD Response to Comments

The notice for public comment on the draft of this permit was published April 6, 2009. The public comment period extended from April 6, 2009 through May 21, 2009. During that period, only comments received were from the permittee. The following are comments received from the permittee and the APCD response to each of those comments that relate to this permit.

1. **BreitBurn Comment:** There should be mention that this steam generator is considered part of the Diatomite Project and clarify why the Diatomite Project and the Steam Generator are included in the same permit.

APCD Response: The steam generator is considered a separate facility from the Diatomite Project, and while it may be used in conjunction with the Diatomite Project, it is also permitted for use on other locations in the BreitBurn Orcutt Hill Stationary Source.

2. **BreitBurn Comment:** BreitBurn is requesting that the fuel monitoring requirements are the same as for this steam generator as SG 100 the 62 MMBtu steam generator. SG 100 is required to record the fuel volume on a monthly basis along with the total number of days of operation.

APCD Response: Recordkeeping requirement (Condition 9.C.1.d.(ii)) revised to require monthly fuel volume and total number of days of operation, consistent with requirements for the 62 MMBtu steam generator.

3. **BreitBurn Comment:** Section 1.2.1. The 23.MMBtu steam generator is located in the Diatomite Steam Generator area. The area described in the permit is now the Diatomite Project area. There is no pipe/bone yard area west of the office any longer.

APCD Response: Location description updated.

4. **BreitBurn Comment:** Section 4.4. Most recent source testing conducted on January 27th confirms that the 23 MMBtu steam generator meets the requirements of BACT emission limits.

APCD Response: Section 4.4 updated to reflect most recent source test results.

5. **BreitBurn Comment:** Section 4.6 requires that annual source testing be conducted for NO_x and CO, there is no mention of ROC.

APCD Response: Section 4.6 updated to include source ROC as a source testing requirement.

6. **BreitBurn Comment:** Table 4.1 in site specific requirements the incorrect sample and analysis method is listed for sampling sulfur.

APCD Response: Table 4.1 updated to specify ASTM D 5504 as the approved method for fuel sulfur analysis (per Source Test Protocol Revision II, approved October 25, 2007).

7. **BreitBurn Comment:** Section 5.7 should state that the steam generator operates on field gas or a blend of field gas purchased utility gas that meets the requirements of PUC quality.

APCD Response: Section 5.7 revised to include language stating the steam generator may operate on field gas or a blend of field gas and purchased utility gas that meets the requirements of PUC quality.

8. **BreitBurn Comment:** Section 7.3 Please correct the spelling of BreitBurn.

APCD Response: Spelling corrected.

