



air pollution control district
SANTA BARBARA COUNTY

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Authority to Construct 15414

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PROPERTY OWNER:

Tesoro Refining & Marketing Company, LLC.

RESPONSIBLE PARTY:

Moller Investment Group, Inc.

205639

EQUIPMENT OWNER/OPERATOR:

ES Engineering Services, LLC.

EQUIPMENT LOCATION:

901 N. H Street, Lompoc

STATIONARY SOURCE/FACILITY:

H St, 901 N. (CSC)

SSID: 10716

FID: 10878

AUTHORIZED MODIFICATION:

This permit grants approval to remediate contaminated soils at 901 North H Street in Lompoc. The soil will be remediated using in-situ soil vapor extraction (SVE) and treatment with a thermal oxidizer system.

PROJECT/PROCESS DESCRIPTION:

The equipment covered by this permit is designed to remediate soil contaminated by a leaking underground fuel storage tank at 901 North H Street in Lompoc. The contaminated vapors will be extracted from the soil and sent to a thermal oxidizer system.

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EQUIPMENT DESCRIPTION:

1. Vacuum Extraction Air Blower: Manufacturer – Roots; Model – 47; 10 horsepower electric motor; maximum flow – 500 scfm.
2. Nine (9) vapor extraction wells, 4 inch diameter; maximum depth of 65 feet; radius of influence of 60 feet.
3. Monitoring devices to monitor common manifold and vapor extraction system temperature, vacuum and flows.
4. Piping, valves, fittings and connections.

Emissions Control:

5. Thermal Oxidizer: Manufacturer – Mako; Model – 500; natural gas; heat rating of 1.0 MMBtu/hr.

PHASE I THERMAL OXIDIZER CONTROL PARAMETERS

Maximum influent gas flow rate:	500	scfm
Stack diameter:	14	inches
Stack height:	13	feet
Minimum oxidizer bed temperature:	1400	°F
Minimum stack outlet temperature:	1250	°F
Maximum stack exit velocity:	10.6	ft/sec

CONDITIONS:

1. **Emission Limitations.** At no time shall emissions to the atmosphere exceed any of the following:

TABLE 1. PERMITTED EMISSIONS

<i>Pollutant</i>	<i>lb/hr</i>	<i>lb/day</i>	<i>TPY</i>	<i>ppmv</i>
ROC	0.894	21.447	3.914	147.3
Benzene	0.015	0.356	0.065	1.77
Ethyl Benzene	0.003	0.081	0.015	0.29
Toluene	0.044	1.050	0.192	4.42
Xylenes	0.017	0.403	0.074	1.47
NO _x	0.098	2.352	0.429	—
SO _x	0.014	0.328	0.060	—
CO	0.082	1.978	0.361	—
PM ₁₀	0.008	0.180	0.033	—
PM	0.008	0.180	0.033	—

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Compliance with these emission limits shall be determined by sampling and laboratory analysis required in the Monitoring Condition as well as the other conditions of this permit.

2. **Fugitive Emissions.** Contaminated excavated soils and soil borings shall be covered with 20-mil heavy duty plastic sheeting, or two sheets of 10-mil heavy duty plastic sheeting, or placed in a sealed container. The plastic sheeting shall be completely secured to prevent fugitive emissions. Contaminated excavated soils and soil borings shall be disposed of within ten days at an approved treatment/disposal facility unless an extension is requested and granted by the District.
 - a. ROC Emissions. All equipment that comes in contact with hydrocarbons shall not have detectable leaks. A leak is defined as any reading greater than 28 ppmv above background by a portable photoionization detector (PID) that is calibrated to isobutylene.
 - b. Particulate Matter Emissions. During dry periods (defined here as no measurable precipitation during past three calendar days), water sprays or other adequate measures shall be applied twice daily to all areas disturbed by construction with the potential to emit fugitive dust. Additionally, adequate dust control shall be used to prevent fugitive dust from being transmitted offsite. Upon completion of soil-disturbing activities in each area, soil shall be stabilized to prevent wind erosion.
3. **Operation Limitations.** The permittee shall comply with the following operational limits:

Phase I - Thermal Oxidizer

- a. The stack exhaust gas flow rate shall not exceed 500 scfm.
- b. The stack exhaust gas temperature shall be maintained at or above 1250 °F.
- c. The ROC removal efficiency across the thermal oxidizer shall be greater than 98 percent (mass basis) or outlet stack ROC concentrations shall be ≤ 10 ppmv, whichever is attainable.
- d. The thermal oxidizer shall be operated on natural gas.

Compliance with the above conditions shall be determined through monitoring, recordkeeping and reporting conditions of this permit.

4. **Monitoring.** The permittee shall implement a monitoring program consistent with the “Guidance Document for Emission Verification of Contaminated Soil/Groundwater Cleanup Process” (Guidance Document, July 2019 and all updates thereof) and the District-approved Emission Verification Test (EVT) Plan for this facility. The following components shall be monitored for the life of the project:

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- a. Stack Exhaust Flow and Temperature. At least once per month, the thermal oxidizer operating temperature, stack exhaust temperature, inlet flow rate and exhaust flow rate (in units of °F and scfm) shall be monitored using District-approved methods. Alternatively, EPA Method 19 may be used to calculate the stack exhaust flow rate.
- b. Sampling – Lab Analyses. At least once per month (during stack and temperature sampling required by condition 4.a), the ROC and benzene, toluene, ethyl benzene and xylenes (BTEX) content (ppmv and lb/hr), and other parameters required by the District, of both the control device influent and effluent shall be sampled using gas tedlar bags (or District approved equivalent) within 15 minutes of each other. A state certified laboratory shall analyze these samples for ROC¹ and BTEX. During sampling, all system process parameters shall be recorded (including stack exhaust flow rates in units of scfm and temperature in units of °F). Test results shall be available within 10 days of sampling. The permittee shall immediately assess compliance with the requirements of this permit upon receipt of the test results and shall initiate the required actions for equipment replacement and/or system shutdown if necessary.

The permittee shall notify the District via e-mail (enfr@sbcapcd.org, Attn: *CSC Project Manager*) within 24 hours of discovery of being out of compliance with the requirements of this permit.

Upon showing reasonable need, the District may require an increased (or decreased) monitoring frequency. Backup documentation such as instrument calibration, equipment maintenance, chain of custody records and sampling logs shall be available for District review. If documentation is not onsite, the permittee shall produce the required documentation within 7 calendar days of request by the District. The instruments shall be maintained according to manufacturer's specifications.

5. **Recordkeeping.** The permittee shall record and maintain the following information. This data shall be maintained for a minimum of three (3) years from the date of each entry and made available to the District upon request:
 - a. A copy of the manufacturer-designed or permittee-designed operations procedures for the process monitoring and control equipment and a copy of the District-approved EVT Plan. These records shall be maintained for the life of the project.
 - b. Monthly ROC¹ and BTEX lab sampling results for the control device influent and effluent vapor in units of ppmv and lb/hr as well as the calculated ROC control efficiency (mass basis). A District-approved log shall be maintained (tabular format) that contains the following information on an ongoing basis: site location, permit number, sampling date, ROC concentration results at the inlet and outlet of the control system in units of

¹ This may be analyzed and reported as total petroleum hydrocarbons (TPH) if allowed under the District approved EVT plan.

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ppmv, stack exhaust flow rate² in units of scfm, stack exhaust temperature, the mass emissions at the inlet and exhaust to the atmosphere of ROC and BTEX in units of lb/hr, the calculated system control efficiency for ROC, and whether the unit was in compliance (Y/N). The sampling results data shall be maintained using a District-approved tabular format that documents the monthly results on an ongoing basis. All lab reports, including chain of custody documentation, shall be maintained.

- c. Actions taken to remedy non-compliance based on monthly lab analysis tests (ppmv, lb/hr, efficiency). These actions shall be documented in a District-approved *CSC Non-Compliance Reporting Form*.
6. **Reporting.** By March 1 of each year or at the completion of the project, a written report documenting compliance with the terms and conditions of this permit for the previous calendar year shall be provided by the permittee to the District (Attn: *Annual Report Coordinator*). The report shall contain information necessary to verify compliance with the emission limits and other requirements of this permit. The report shall be in a format approved by the District. Compliance with all limitations and restrictions shall be documented in the submittals. All logs and other basic source data not included in the report shall be made available to the District upon request. The report shall include the following information:
- a. Results of monthly sampling lab analyses. Include the District-approved reporting log from condition 5.b.
 - b. Copies of all *CSC Non-Compliance Reporting Forms* that documented the actions taken to remedy non-compliance based on monthly lab analysis tests (ppmv, lb/hr, efficiency).
7. **Source Compliance Demonstration Period.** The equipment covered by this permit shall be allowed to temporarily operate for 60 calendar days after initial operations (subject to the requirements of this condition). This time period is termed the “Source Compliance Demonstration Period” (SCDP). During the SCDP, the permit holder is not considered in violation of this permit if the emission limits stated in this permit are exceeded while testing and/or debugging the system. However, enforcement action may be taken against operations that result in a violation of any emission limit stipulated by a prohibitory rule in the District’s Rules and Regulations.

The permit holder is responsible for ensuring the following actions are taken during the SCDP:

- a. Provide written notification to the District (Attn: *CSC Project Manager*), prior to initial operations under the SCDP, of the startup date of the equipment permitted herein. Initial operations are defined as the first day vapors are introduced into the thermal oxidizer.
- b. Initiate all required monitoring and recordkeeping as required under this permit.

² Include the relevant process data for the calculated value if Method 19 is used (e.g. pressure, temperature, heat content, f-factor).

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- c. Arrange for District inspection not more than thirty (30) calendar days (or other mutually agreed to time period) after the SCDP begins. A minimum of three calendar days advance notice shall be given to the District. This inspection is required to verify that the equipment and its operation are in compliance with District Rules and Permit Conditions.
- d. Conduct an Emissions Verification Test and submit results of the test to the District. The District shall be notified by e-mail (sourcetest@sbcapcd.org) at least ten (10) calendar days prior to the start of EVT to arrange for a mutually agreeable EVT date when a District representative may observe the EVT.
- e. Submit a complete application for a Permit to Operate. All records required by the Recordkeeping condition and a copy of the EVT Report shall be submitted to the District as an attachment to the Permit to Operate application (District Form -01). Facility operations beyond the SCDP without a PTO are considered a violation of District Rule 201.

If items (a) through (e) of this condition are not satisfied within sixty (60) calendar days of the initiation of the SCDP, the SCDP shall terminate and the operation of any equipment covered by this permit will be considered a violation of District rules and regulations. If the District has determined that the application for the Permit to Operate is complete, the SCDP shall remain valid until the District issues (or denies) the Permit to Operate. The SCDP may be extended at either the District's discretion or at the request of the permittee provided such a request is submitted, in writing (Attn: *CSC Project Manager*) to the District two weeks prior to the end of the SCDP and sufficient justification is provided.

8. **Emission Verification Test and Report.** Within the first 14 calendar days after the commencement of each phase of equipment operation, the permittee shall conduct system testing for a 3-hour time period. This testing is termed the "Emission Verification Test." The EVT shall be consistent in content and format with guidelines contained in the Guidance Document and the District-approved EVT Plan for this permit. The permittee shall obtain written District approval of the EVT plan prior to performing the EVT. The District shall be notified at least ten (10) calendar days prior to the start of EVT to arrange for a mutually agreeable EVT date when a District representative may observe the EVT. The District, at its discretion, may participate in the sampling of the influent and effluent gases as well as the monitoring of other system parameters.

Test results shall be prepared and presented in the EVT Report, consistent in form and content with the Guidance Document and the District-approved EVT Plan submitted with the ATC application. Data shall be compiled using the tables provided in the Guidance Document (or equivalent). The EVT Report for each phase of equipment operation shall contain results of all testing and field monitoring performed to date. The EVT Report shall be received by the District within 10 days after test completion if continued equipment operations are desired. The permittee shall clearly state in the Executive Summary of the report whether or not the facility is in compliance with all permit and rule requirements.

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If the EVT does not demonstrate compliance, operations may continue for no more than thirty days after the test date provided that time is used for testing, process debugging, or other activities required to bring the facility into compliance with the requirements of the permit (including providing documentation of compliance). During the 30-day period, the permit holder is not considered in violation of this permit if the emission limits stated in this permit are exceeded or the required control efficiency is not met due to testing and/or process debugging operations. However, enforcement action may be taken against operations which result in a violation of any emission limit stipulated by a prohibitory rule in the District's Rules and Regulations. The permittee shall notify the District via e-mail (e-mail: enfr@sbcapcd.org, Attn: *CSC Project Manager*) within 24 hours of discovery of being out of compliance with the requirements of this permit.

If the results of the EVT(s) indicate discrepancies in the data, specifications, or assumptions included with the application (and supplements thereof) or the District's Permit Evaluation under which this permit is issued, then the project may be subjected to reevaluation and require the permittee to apply for a permit modification or perform additional EVT(s).

9. **IC Engines.** Any internal combustion engine with a rated brake horsepower of 50 or greater used on-site (i.e. drill rig engines) must have a valid District Permit to Operate, or must be registered in the Statewide Portable Equipment Registration Program. Engines used to propel vehicles do not require a permit.
10. **Consistency with Analysis.** Operation under this permit shall be conducted consistent with all data, specifications and assumptions included with the application and supplements thereof (as documented in the District's project file) and the District's analyses under which this permit is issued as documented in the Permit Analyses prepared for and issued with the permit.
11. **Equipment Maintenance.** The equipment listed in this permit shall be properly maintained and kept in good condition at all times. The equipment manufacturer's maintenance manual, maintenance procedures and/or maintenance checklists (if any) shall be kept on site.
12. **Compliance.** Nothing contained within this permit shall be construed as allowing the violation of any local, state or federal rules, regulations, air quality standards or increments.
13. **Severability.** In the event that any condition herein is determined to be invalid, all other conditions shall remain in force.
14. **Conflict Between Permits.** The requirements or limits that are more protective of air quality shall apply if any conflict arises between the requirements and limits of this permit and any other permitting actions associated with the equipment permitted herein.
15. **Access to Records and Facilities.** As to any condition that requires for its effective enforcement the inspection of records or facilities by the District or its agents, the permittee shall make such records available or provide access to such facilities upon notice from the

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District. Access shall mean access consistent with California Health and Safety Code Section 41510 and Clean Air Act Section 114A.

16. **Emission Factor Revisions.** The District may update the emission factors for any calculation based on USEPA AP-42 or District emission factors at the next permit modification or permit reevaluation to account for USEPA and/or District revisions to the underlying emission factors.
17. **Reimbursement of Costs.** All reasonable expenses, as defined in District Rule 210, incurred by the District, District contractors, and legal counsel for the activities listed below that follow the issuance of this permit, including but not limited to permit condition implementation, compliance verification and emergency response, directly and necessarily related to enforcement of the permit shall be reimbursed by the permittee as required by Rule 210. Reimbursable activities include work involving permitting, compliance, CEMS, modeling/AQIA, ambient air monitoring and air toxics.
18. **Nuisance.** Except as otherwise provided in Section 41705 of the California H&SC, no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.
19. **Grounds for Revocation.** Failure to abide by and faithfully comply with this permit or any Rule, Order, or Regulation may constitute grounds for revocation pursuant to California Health & Safety Code Section 42307 *et seq.*
20. **Transfer of Owner/Operator.** This permit is only valid for the owner and operator listed on this permit unless a *Transfer of Owner/Operator* application has been applied for and received by the District. Any transfer of ownership or change in operator shall be done in a manner as specified in District Rule 203. District Form -01T and the appropriate filing fee shall be submitted to the District within 30 days of the transfer.

AIR POLLUTION CONTROL OFFICER

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Attachments:

- Permit Evaluation for Authority to Construct 15414

Notes:

- This permit is valid for one year from the date stamped above if unused.
- Stationary sources are subject to an annual emission fee (see Fee Schedule B-3 of Rule 210).
- Annual reports are due by March 1st of each year.
- CSC monthly monitoring form ENF-89 and *CSC Non-Compliance Reporting Form* ENF-88 are available on the District website here: <https://www.ourair.org/csc-projects/>.



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PERMIT EVALUATION FOR AUTHORITY TO CONSTRUCT 15414

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1.0 BACKGROUND

- 1.1 General: ES Engineering Services, LLC., on behalf of the responsible party, plans to operate in-situ remediation equipment for the treatment of VOC-containing soil contaminated by a former gasoline service station located at 901 North H Street in Lompoc. The operation consists of nine vapor extraction wells controlled by a thermal oxidizer system. The application for Authority to Construct 15414 was received by the District on August 7, 2019 and deemed complete on August 15, 2019.

An SVE system was previously installed at this location under PTO 14256. The system was removed on June 28, 2018 due to a faulty temporary power pole. PTO 14256-R1 was cancelled on August 13, 2019.

1.2 Permit History:

PERMIT	FINAL ISSUED	PERMIT DESCRIPTION
Reeval 14256 R1	05/25/2017	Reevaluation of permit for installation of an SVE system using thermal oxidizer controls.

- 1.3 Compliance History: The system operating under PTO 14256 was last inspected on February 1, 2017 by Aimee Long. At the time of inspection, the system was operating within the conditions of PTO 14256.

2.0 ENGINEERING ANALYSIS

- 2.1 Equipment/Processes: The contaminated soil is being remediated using a soil vapor extraction system to remove the contaminated vapor from the soil. The vapors will be combusted in a natural gas-fired thermal oxidizer.
- 2.2 Emission Controls: A thermal oxidizer with a control efficiency of 98 percent or greater is used to control emissions.
- 2.3 Emission Factors: Emissions are based on engineering calculations using inlet concentration data, flow rates and the emission control efficiency. Emission factors were used for calculating the ROC, NO_x, CO, SO_x, PM, PM₁₀ and PM_{2.5} emissions from natural gas combustion. The emission factors used are shown below with references.

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**PERMIT EVALUATION FOR
AUTHORITY TO CONSTRUCT 15414**

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Natural Gas Combustion Emission Factors (lb/MMBtu)						
ROC ¹	NO_x ²	CO ²	SO_x ³	PM ⁴	PM₁₀ ⁴	PM_{2.5} ⁵
0.0054	0.098	0.0824	0.0137	0.0075	0.0075	0.0075

Notes:

1. ROC from AP-42, Table 1.4-2 (Dated July 1998).
 2. NO_x and CO from AP-42, Table 1.4-1, for uncontrolled emissions (Dated July 1998).
 3. SO_x by mass balance. For more information see: <http://www.sbcpd.org/eng/tech/sulfur01.htm>
 4. PM and PM₁₀ from AP-42, Table 1.4-2 (Dated July 1998) and APCD Permit Guideline Document for Boilers, Process Heaters, Steam Generators (Dated July 13, 1998).
 5. PM_{2.5} is conservatively assumed to equal PM₁₀.
- 2.4 Reasonable Worst Case Emission Scenario: The emission operations scenario for this project is 24 hr/day, 365 days/year.
- 2.5 Emission Calculations: Emissions were calculated using influent concentrations, flow rates and assumed control efficiencies. Detailed emission calculation spreadsheets may be found in the Emission Calculations Attachment. These emissions define the Potential to Emit for the permitted equipment.
- 2.6 Special Calculations: The concentration of the effluent was calculated from the system exhaust flow rate. See the Emission Calculations Attachment for details.
- 2.7 BACT Analyses: Best Available Control Technology was not required for this project.
- 2.8 Enforceable Operational Limits: The permit has enforceable operating conditions that ensure the equipment is operated properly.
- 2.9 Monitoring Requirements: Monitoring of the equipment's operational limits are required to ensure that these are enforceable. The monitoring includes monthly stack exhaust flow, stack temperature and lab analyses of samples for mass emission determinations.
- 2.10 Recordkeeping and Reporting Requirements: The permit requires that the data which is monitored be recorded and reported to the District.
- 3.0 REEVALUATION REVIEW (not applicable)**

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4.0 REGULATORY REVIEW

4.1 Partial List of Applicable Rules:

Rule 201.	Permits Required
Rule 202.	Exemptions to Rule 201
Rule 205.	Standards for Granting Permits
Rule 301.	Circumvention
Rule 302.	Visible Emissions
Rule 303.	Nuisance
Rule 345.	Control of Fugitive Dust from Construction and Demolition Activities
Rule 801.	New Source Review – Definitions and General Requirements
Rule 802.	New Source Review
Rule 809.	Federal Minor Source New Source Review
Rule 810.	Federal Prevention of Significant Deterioration

4.2 Rules Requiring Review:

- 4.2.1 *Rule 345 - Control of Fugitive Dust from Construction and Demolition Activities:* This rule requires fugitive dust control for any activity associated with construction or demolition of a structure or structures. The soil vapor extraction activities allowed by this permit do not constitute construction or demolition, and are therefore not subject to the requirements of this rule. Any construction or demolition of structures (including but not limited to grading, excavating or paving) is subject to the requirements and standards of this rule.

5.0 AQIA

The project is not subject to the Air Quality Impact Analysis requirements of Regulation VIII.

6.0 OFFSETS/ERCs

6.1 Offsets: The emission offset thresholds of Regulation VIII are not exceeded.

6.2 ERCs: This source does not generate emission reduction credits.

7.0 AIR TOXICS

An air toxics Health Risk Assessment (HRA) screening was conducted by the Santa Barbara County Air Pollution Control District (District) for the contaminated soil cleanup (CSC) project located at 901 N. H Street in Lompoc. The HRA screening was conducted using the USEPA-recommended screening model, AERSCREEN, with the Hotspots Analysis and Reporting Program (HARP) software, Version 2 (Build 19044). Cancer risk and chronic and acute non-cancer Hazard Index (HI) risk values were calculated and compared to the significance thresholds for cancer risk and chronic and acute non-cancer risk adopted by the District's Board of Directors. The calculated risk values and applicable thresholds are as follows:

PERMIT EVALUATION FOR
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	<u>H Street CSC Max Risks</u>	<u>Significance Threshold</u>
Cancer risk:	6.7/million	≥10/million
Chronic non-cancer risk:	0.1	>1
Acute non-cancer risk:	0.1	>1

- A. Emission Calculations
- B. HRA Documentation
- C. IDS Tables

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ATTACHMENT A
Emission Calculations

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CALCULATION SUMMARY FOR PROJECT TOTAL ROC AND TOXIC EMISSIONS - Natural Gas Combustion
ATC 15414 Contaminated Soil Remediation Project at 901 North H Street

Table 1: Maximum Projected ROC Emissions

Source	Total ROC Influent into Control Device (ppm as C ₄ H ₈)	System Flow Rate (scfm)	C ₄ H ₈ Molecular Weight (lb/lb-mol)	ROC Influent into Control Device (lb/hr)	Control Efficiency (%)	ROC Effluent from Control Device (lb/hr)	ROC Effluent Concentration from Control Device (ppm as C ₆ H ₁₄)	ROC Effluent from Control Device (lb/day)	ROC Effluent from Control Device (TPY)
Thermal Oxidizer Ph I	10,000	500	56.106	44.411	98	0.888	147.3	21.317	3.890

Table 2: Maximum Projected Toxic Emissions

Toxic Pollutant	Molecular Weight (lb/lb-mol)	Control Device Influent Concentration (ppmv)	Flow Rate (scfm)	Pollutant Influent into Control Device (lb/hr)	Control Efficiency (%)	Pollutant Effluent from Control Device (lb/hr)	Pollutant Effluent Concentration from Control Device (ppm)	Pollutant Effluent from Control Device (lb/day)	Pollutant Effluent from Control Device (TPY)
Benzene	78.11	120	500	0.7419	98	0.0148	1.77	0.356	0.065
Ethyl Benzene	106.17	20	500	0.1681	98	0.0034	0.29	0.081	0.015
Toluene	92.14	300	500	2.1880	98	0.0438	4.42	1.050	0.192
Xylenes	106.16	100	500	0.8403	98	0.0168	1.47	0.403	0.074

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ATTACHMENT A
Emission Calculations

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Attachment: A

Date: 11/14/19

BOILER / STEAM GENERATOR CALCULATION WORKSHEET (ver. 6.0)

DATA

Permit No.	15414
Owner/Operator	ES Engineering Services, LLC
Facility/Lease	10878
Boiler Type	N/A
Boiler Mfg.	Mako
Boiler Model No.	500
Boiler Serial/ID No.	no data
Boiler Horsepower	no data Bhp
Burner Type	Gas
Burner Mfg.	no data
Burner Model No.	no data
Max. Firing Rate of Burner	1.000 MMBtu/hr
Max. Annual Heat Input	8,760.000 MMBtu/yr
Daily Operating schedule	24 hrs/day
Yearly Load factor (%)	100 %
Fuel Type	Natural Gas
High Heating Value	1,050 Btu/scf
Sulfur Content of Fuel	80.00 ppmvd as H ₂ S
Nitrogen Content of Fuel	- wt. % N
Boiler Classification	Commercial
Firing Type	Other Type
PM Emission Factor	0.0075 lb/MMBtu
PM ₁₀ Emission Factor	0.0075 lb/MMBtu
NO _x Emission Factor	0.0980 lb/MMBtu
SO _x Emission Factor	0.0137 lb/MMBtu
CO Emission Factor	0.0824 lb/MMBtu
ROC Emission Factor	0.0054 lb/MMBtu

RESULTS

	lb/hr	lb/day	TPY
Nitrogen Oxides (as NO ₂)	0.098	2.35	0.43
Sulfur Oxides (as SO ₂)	0.0137	0.33	0.060
PM ₁₀	0.0075	0.180	0.033
Total Suspended Particulate (PM)	0.0075	0.180	0.033
Carbon Monoxide	0.082	1.98	0.36
Reactive Organic Compounds (ROC)	0.0054	0.130	0.0237
Hourly Heat Release	1.000	MMBtu/hr	
Daily Heat Release	24.000	MMBtu/day	
Annual Heat Release	8,760.000	MMBtu/yr	
Rule 342 Applicability	8.8	Billion Btu/yr	

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ATTACHMENT A
Emission Calculations

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NATURAL GAS COMBUSTION CALCULATION SUMMARY
ATC 15414 Contaminated Soil Remediation Project at 901 North H Street

Natural Gas Combustion

Operating Mode	BTU/hr	ft ³ /hr	ft ³ /min
Thermal Oxidizer	1,000,000	952.38	15.87

Natural Gas Combustion Products (ft³/min) at 60F and 1 atm

Natural Gas Composition			CO ₂		H ₂ O		N ₂	
	Fraction	ft ³ /min	ft ³ CO ₂ /ft ³ NG	ft ³ /min	ft ³ H ₂ O/ft ³ NG	ft ³ /min	ft ³ N ₂ /ft ³ NG	ft ³ /min
Methane	86.50%	13.73	1	13.73	2	27.46	7.53	103.39
Ethane	8.00%	1.27	2	2.54	3	3.81	13.18	16.74
Propane	1.90%	0.30	3	0.90	4	1.21	18.82	5.68
Butane	0.30%	0.05	4	0.19	5	0.24	24.47	1.17
Pentanes	0.10%	0.02	5	0.08	6	0.10	30.11	0.48
Hexanes	0.10%	0.02	6	0.10	7	0.11	35.76	0.57
Nitrogen	2.60%	0.41		0.00		0.00		0.41
CO ₂	0.50%	0.08		0.08		0.00		0.00
Sub total	100.00%	15.87		17.62		32.92		128.42

Stack flow attributed to combustion of natural gas (ft³/min)

178.96

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ATTACHMENT B
HRA Documentation

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Santa Barbara County Air Pollution Control District
Health Risk Assessment

Owner: Moller Retail, Inc.
Operator: ES Engineering Services, LLC
Facility: 901 N. H Street (CSC)
Permit Type: ATC
Permit No: 15414
FID No: 10878
SSID No: 10716

1.0 SUMMARY

An air toxics Health Risk Assessment (HRA) screening was conducted by the Santa Barbara County Air Pollution Control District (District) for the contaminated soil cleanup (CSC) project located at 901 N. H Street in Lompoc. The HRA screening was conducted using the USEPA-recommended screening model, AERSCREEN, with the Hotspots Analysis and Reporting Program (HARP) software, Version 2 (Build 19044). Cancer risk and chronic and acute non-cancer Hazard Index (HI) risk values were calculated and compared to the significance thresholds for cancer risk and chronic and acute non-cancer risk adopted by the District's Board of Directors. The calculated risk values and applicable thresholds are as follows:

	<u>H Street CSC Max Risks</u>	<u>Significance Threshold</u>
Cancer risk:	6.7/million	≥10/million
Chronic non-cancer risk:	0.1	>1
Acute non-cancer risk:	0.1	>1

Based on these results, the proposed CSC project at 901 N. H Street in Lompoc does not present a significant risk to the surrounding community. For this reason, Authority to Construct No. 15414 will be issued for this project.

2.0 BACKGROUND

Health risk assessments are completed with computer modeling for all CSC projects. The USEPA-approved dispersion model AERSCREEN was used to determine the maximum hourly and the annual average ambient air pollutant concentrations under the worst-case meteorological conditions through Lakes AERSCREEN View Version 2.6.0. After the ambient concentrations were calculated by AERSCREEN View, the concentration of each pollutant was scaled based on actual emission rates. The Risk Assessment Standalone Tool (Build 19044) of Hotspots Analysis and Reporting Program Version 2 (HARP 2) was then used to calculate a screening risk value for cancer as well as chronic and acute non-cancer effects. The pollutants included in the health risk assessment were benzene, ethyl benzene, toluene and xylenes.

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Section 8.0 of this document contains a link to more information on health risk assessments.

3.0 MODELING INFORMATION

The stack parameter inputs to AERSCREEN View are outlined in Table 3.1.

Table 3.1 – Summary of Stack Parameter Inputs

Source ID	Source Type	Release Type	Release Height (ft)	Temperature (°F)	Velocity (ft/s)	Diameter (ft)
STCK1	POINT	Vertical	13.0	1250	10.58	1.167

The urban option was enabled and a flagpole height of 1.5 meters was used for all receptors. The AERSURFACE output file for the Lompoc H Street meteorological data for the years 2012-2016 was used. The default minimum distance of 1 meter from the source to the property boundary was used. The closest residential receptor at 100 m and the closest worker receptor at 5 m from the source were included. The inversion break-up fumigation and shoreline fumigation options were not enabled. Terrain effects were not included. Building downwash was included, and the building information is shown in Table 3.2. The X and Y coordinates in the table are relative to the location of the exhaust stack.

Table 3.2 – Summary of Building Information

Building ID	Height (m)	Building Type	SW Corner X-coordinate (m)	SW Corner Y-coordinate (m)	X-Length (m)	Y-Length (m)
BLD1	3.0	Rectangular	-15.0	-23.0	11.0	17.0

After the pollutant concentrations were entered into HARP 2, the cancer risk was calculated at the maximally exposed individual resident (MEIR) using the “individual resident” receptor type and the breathing rate from the “RMP using the Derived Method” for an exposure duration of 30 years. Under the inhalation pathway, the fraction of time at home (FAH) values were not applied for any age bins. The cancer risk was also calculated at the maximally exposed individual worker (MEIW) using the “worker” receptor type and the breathing rate from the “OEHHA Derived Method” for an exposure duration of 25 years. The chronic non-cancer hazard index was calculated for the MEIR using the “individual resident” receptor type and the breathing rate from the “OEHHA Derived Method.” The chronic non-cancer hazard index was also calculated for the MEIW using the “worker” receptor type and the breathing rate from the “OEHHA Derived Method.” The acute non-cancer hazard index was calculated at the point of maximum impact (PMI). The only exposure pathway analyzed was the inhalation pathway because none of the modeled pollutants are multipathway. A list of multipathway pollutants can be found in Table 5.1 of OEHHA's 2015 Guidance Manual which is included in Section 3.4 of the District's *Modeling Guidelines for Health Risk Assessments*, referenced in Section 8.0 of this document.

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4.0 EMISSIONS

The facility's calculated annual and hourly emissions are shown in Table 4.1. These emissions were calculated based on a contaminated vapor flow exhaust rate of 679 scfm and thermal oxidizer control efficiency of 98%.

Table 4.1 –Facility Emissions Summary

Pollutant	Outlet Concentration (ppm)	Annual Emissions (lb/yr)	Hourly Emissions (lb/hr)
Benzene	1.77	130.0	0.0148
Ethyl benzene	0.29	29.4	0.0034
Toluene	4.42	383.3	0.0438
Xylenes	1.47	147.2	0.0168

5.0 CALCULATIONS

Because AERSCREEN calculates maximum hourly pollutant concentrations based on a unit emission rate of 1 g/s, the resulting concentrations must be scaled based on actual emission rates before they are used to calculate cancer risks. Equation 1 below was used to calculate the maximum hourly concentrations of each emitted pollutant.

$$C_{\text{hourly}} = C_{\text{screening,h}} * \frac{E_h}{E} \quad (\text{Eq. 1})$$

where: C_{hourly} = maximum hourly concentration of a pollutant

$C_{\text{screening,h}}$ = maximum hourly concentration calculated by AERSCREEN

E_h = actual maximum hourly emission rate of the pollutant

E = unit emission rate (1 g/s)

Equation 2 below was used to calculate the average annual concentrations of each emitted pollutant. The scaling factor of 0.1 used for estimating the annual concentration comes from the USEPA's *AERSCREEN User's Guide*, referenced in Section 8.0 of this document.

$$C_{\text{annual}} = C_{\text{screening,a}} * \frac{E_a}{E} \quad (\text{Eq. 2})$$

where: C_{annual} = average annual concentration of a pollutant

$C_{\text{screening,a}}$ = average annual concentration = $C_{\text{screening,h}} * 0.1$

E_a = actual average annual emission rate of the pollutant

E = unit emission rate (1 g/s)

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6.0 RESULTS

Using the unit emission rate of 1 g/s, AERSCREEN predicted a maximum hourly concentration ($C_{\text{screening,h}}$) of 2143 $\mu\text{g}/\text{m}^3$. The predicted annual average concentration ($C_{\text{screening,a}}$) was 50.70 $\mu\text{g}/\text{m}^3$ at the MEIR, and 214.3 $\mu\text{g}/\text{m}^3$ at the MEIW. The cancer risk is higher at the MEIR than at the MEIW, and the chronic non-cancer risk is higher at the MEIW than at the MEIR. Table 6.1 displays the cancer risk results at the MEIR, the chronic non-cancer risk results at the MEIW, and the acute non-cancer risk results at the PMI. All of the calculated risk values are below the District's significance thresholds.

Table 6.1 – Summary of Screening Model Results

Pollutant	C_{annual} at MEIR ($\mu\text{g}/\text{m}^3$)	C_{annual} at MEIW ($\mu\text{g}/\text{m}^3$)	C_{hourly} at PMI ($\mu\text{g}/\text{m}^3$)	Cancer Risk (per million)	Chronic Non-Cancer Risk (Hazard Index)	Acute Non-Cancer Risk (Hazard Index)
Benzene	0.0948	0.4007	4.007	6.542	0.1336	0.1484
Ethyl benzene	0.0215	0.0908	0.908	0.129	—	—
Toluene	0.2796	1.1816	11.816	—	—	0.0003
Xylenes	0.1074	0.4538	4.538	—	—	—
Total:				6.671	0.1336	0.1487

7.0 CONCLUSION

Per District guidelines, if a facility's toxic emissions result in a cancer risk equal to or greater than 10 in a million, it is considered a *significant risk* facility. For non-cancer risk, if a facility's toxic emissions result in a Hazard Index greater than 1.0, it is considered a *significant risk* facility. The risk assessment results show that the CSC project at 901 N. H Street in Lompoc does not present a significant risk to the surrounding community. Therefore, based on the results of this HRA screening, Authority to Construct No. 15414 will be issued for this project.

8.0 REFERENCES

- Risk notification levels were adopted by the Santa Barbara County Air Pollution Control Board of Directors on June 1993. The risk notification levels were set at 10 per million for cancer risk and a Hazard Index of greater than 1.0 for non-cancer risk.
- Office of Environmental Health Hazard Assessment. February 2015. *Air Toxics Hot Spots Program: Risk Assessment Guidelines*. California Environmental Protection Agency. http://www.oehha.ca.gov/air/hot_spots/2015/2015GuidanceManual.pdf.
- Santa Barbara County Air Pollution Control District. July 2019. *Modeling Guidelines for Health Risk Assessments*. <http://www.ourair.org/wp-content/uploads/apcd-15i.pdf>.

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- USEPA. December 2016. *AERSCREEN User's Guide*.
https://www3.epa.gov/scram001/models/screen/aerscreen_userguide.pdf.

9.0 ATTACHMENT

Source parameter data and the AERSCREEN and HARP 2 input and output files may be found in the following location: \\sbcapcd.org\shares\Toxics\ActiveSourceFiles\SSID10716_H_St_901_N_CSC\ATC_15414_HRA_Screening

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ATTACHMENT C
IDS Tables

PERMIT POTENTIAL TO EMIT

	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}
lb/day	2.35	21.45	1.98	0.33	0.18	0.18	0.18
lb/hr	0.10	0.89	0.08	0.01	0.01	0.01	0.01
TPQ							
TPY	0.43	3.91	0.36	0.06	0.03	0.03	0.03

FACILITY POTENTIAL TO EMIT

	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}
lb/day	2.35	21.45	1.98	0.33	0.18	0.18	0.18
lb/hr	0.10	0.89	0.08	0.01	0.01	0.01	0.01
TPQ							
TPY	0.43	3.91	0.36	0.06	0.03	0.03	0.03

STATIONARY SOURCE POTENTIAL TO EMIT

	NO _x	ROC	CO	SO _x	PM	PM ₁₀	PM _{2.5}
lb/day	2.35	21.45	1.98	0.33	0.18	0.18	0.18
lb/hr	0.10	0.89	0.08	0.01	0.01	0.01	0.01
TPQ							
TPY	0.43	3.91	0.36	0.06	0.03	0.03	0.03

Notes:

- (1) Emissions in these tables are from IDS.
- (2) Because of rounding, values in these tables shown as 0.00 are less than 0.005, but greater than zero.