METHANE GAS ASSESSMENT REPORT
8.45 ACRE PROPERTY
SEC ROSE DRIVE & ALTA VISTA STREET
PLACENTIA, CALIFORNIA 92870
APN 341-324-01

Prepared for:

SC PLACENTIA DEVELOPMENT LP
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Prepared by:

SCS ENGINEERS
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(562) 426-9544

July 2017
File No. 01217181

This Methane Gas Assessment Report for property located at the southeast corner of Rose Drive and Alta Vista Street, Placentia, California was prepared by and reviewed by the following.

Thomas Dong, REPA, CEA
Project Director
SCS ENGINEERS

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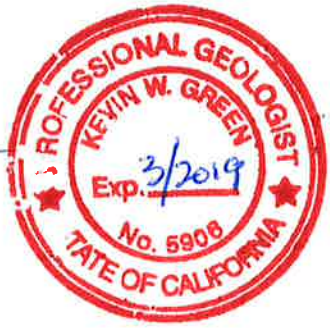

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LIMITATIONS/DISCLAIMER

This report has been prepared specifically for SC Placentia Development LP, Inc., with application to a Methane Gas Assessment of the 8.45 acre property located at the southeast corner of Rose Drive and Alta Vista Street, Placentia, California. This report has been prepared in accordance with the care and skill generally exercised by reputable professionals, under similar circumstances, in this or similar localities. No other warranty, express or implied, is made as to the professional opinions presented herein. Third parties use this report at their own risk. SCS assumes no responsibility for the accuracy of information obtained from, compiled, or provided by outside sources.

Changes in site conditions may occur due to variations in rainfall, temperature, water usage, or other factors. Additional information that was not available to the consultant at the time of this investigation or changes that may occur on the site or in the surrounding area may result in modification to the site that would impact the summary and recommendations presented herein. This report is not a legal opinion.

1 INTRODUCTION

SCS Engineers (SCS) was retained by SC Placentia Development LP, Inc. to conduct a methane gas assessment as required by the Orange County Fire Authority (OCFA) as outlined in the Combustible Soil Gas Hazard Mitigation Guideline C-03 (January 2017), as it relates to a proposed residential development located at the southeast corner of Rose Drive and Alta Vista Street, Placentia, California (the "Property). A copy of Guideline C-03 is included in **Appendix A**.

SCS understands that the property is slated for development with a new residential housing tract and a small retail area at the northwest portion of the Property. A Property location map is provided as **Figure 1.**

In order to assess protection measures that may be required for future structures, a methane gas assessment was conducted in accordance with the Guideline C-03 dated January 1, 2017. This methane gas assessment addresses current requirements of the Guideline, which includes installation and monitoring of multiple-depth, subsurface methane gas probes. The data collected during this assessment can be used to determine the level of methane protection required for structures constructed on the Property.

On June 14, 2017, a methane workplan was emailed to OCFA, and the required fees were submitted on June 15, 2017 to OCFA. A copy of the Methane Workplan email is provided in **Appendix B**.

2 PHYSICAL SETTING

GENERAL SITE DESCRIPTION

The Property currently consists of an 8.45 acre parcel that was formerly used for oil field related purposes. The Property previously had eight oil/gas recovery wells that were abandoned in the 1990s. Based on information from the developer and architect, SCS understands that none of the proposed structures will be built over former oil wells; all former oil wells will be located beneath proposed streets. The Property has uneven topography with high and low spots scattered throughout and with mounds of soil, construction debris/rubble, large old tires, engineered drainage collection area, etc. The Placentia area has been historically used for oil well exploration/recovery operations.

Per Associated Soils Engineering (ASE) geotechnical information, much of the subsurface soils on the Property consist of fill containing interbedded silty sands, sands, and sand with silt, with some layers of sandy silts, clayey silts with sands, silty clays, and clays. Encountered artificial fill soils were generally medium dense to very dense.

3 SITE INVESTIGATION

METHANE PROBE INSTALLATION

Eighteen multi-depth (10- and 20-foot bgs) methane monitoring probes designated B1 through B9 were installed on June 19 and 20, 2017 by Choice Drilling with oversight of SCS. The gas probes were installed in soil boring locations selected by Associated Soils Engineering (ASE) for collection of geotechnical soil samples. Methane monitoring probe locations designated B1 through B9 are shown on **Figure 2**.

Methane probes were installed using hollow-stem drilling methods. Under the oversight of SCS/ASE, Choice Drilling of Pacoima, California drilled borings and constructed the combustible gas probes. In accordance with discussion with OCFA personnel, dual-nested probes were installed at depths of 10 and 20 feet below ground surface (bgs) at nine locations.

The hollow-stem augers were removed from each boring and new (clean) 1/4-inch diameter Nylaflow tubing with a polypropylene filter placed on the bottom end, was inserted to the desired depths of 10 and 20 feet below ground surface. Clean #2/12 Monterey sand was placed in a 1-foot vertical interval around each filter. The annular space above and between each probe interval was sealed with hydrated bentonite. A two-way valve was placed at the top of each probe and tubing was marked to show depth of each vapor probe. A generic methane probe completion schematic is included in **Appendix C**.

METHANE PROBE MONITORING

On June 23 and 27, 2017, the nine gas probes were monitored. Prior to gas monitoring, a Magnehelic pressure gauge was used to measure the vacuum/pressure within each probe. Gas probes were monitored for methane (CH4), carbon monoxide (CO), hydrogen sulfide (H2S), and oxygen (O2) using an Eagle™ 401 manufactured by RKI Instruments. Prior to field use, the RKI Eagle instrument was calibrated using laboratory-certified calibration gas.

The Eagle™ 401 measures CH4, H2S, and O2 using infrared and/or catalytic bead sensors. Calibration gas components consist of CH4 at 2.5% (equal to 50% of the Lower Explosive Limit [LEL] for methane), H2S at 25 parts per million (ppm), O2 at 20.9%, and CO at 50 ppm with a nitrogen balance. The Eagle™ 401 is used to measure CH4 concentrations in the range of "0" to 5% by volume in air (5% by volume in air is equivalent to 100% of the Lower Explosive Limit [LEL] for methane, or 50,000 parts per million by volume [ppmv]). The Eagle™ 401 provides methane readings in 5 ppmv increments, although the manufacturer (personal communication) has indicated that the practical quantitation limit (i.e., lowest reliable detection) of the methane sensor is about 100 ppmv.

METHANE ASSESSMENT

Methane is explosive when it reaches a concentration of between 5 and 15 percent in air; 5 percent is also known as the LEL. Regulatory agencies are generally concerned that methane will seep or migrate through soil and accumulate in structures. If the methane should permeate flooring materials

or flow through cracks, accumulate in enclosed spaces (rooms, utility vaults, wall spaces) at concentrations above the LEL, and then be subject to an ignition source (e.g., pilot flame, electrical spark, cigarette), a fire or explosion could result. Although subsurface methane is present in large areas of Southern California, fires associated with such methane are extremely rare.

Methane concentrations can be expressed in terms of either percent by volume, percent of the LEL, or ppmv. For reference, 5% methane in air is equivalent to 100% of the LEL or 50,000 ppmv; 1% methane in air is equivalent to 20% of the LEL or 10,000 ppmv; and 0.05% in air is equivalent to 1% LEL or 500 ppmv.

MONITORING RESULTS

Probes installed at the Property were monitored on June 23 and 27, 2017. Field monitoring results for methane are presented in the completed Guideline C-03 Attachment 1 – Combustible Gas Study Checklist which is provided in **Appendix D**. Methane was detected with the RKI Eagle™ 401 in vapor probes at concentrations ranging from 0 to 500 ppmv.

During field monitoring, SCS also measured oxygen, hydrogen sulfide and carbon monoxide levels. Hydrogen sulfide and carbon monoxide were not detected. Oxygen concentrations measured during the two sampling events and ranged from 0.9% to 19.6%. No pressure greater than 0.05 inches of water column was detected in any of the probes.

4 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

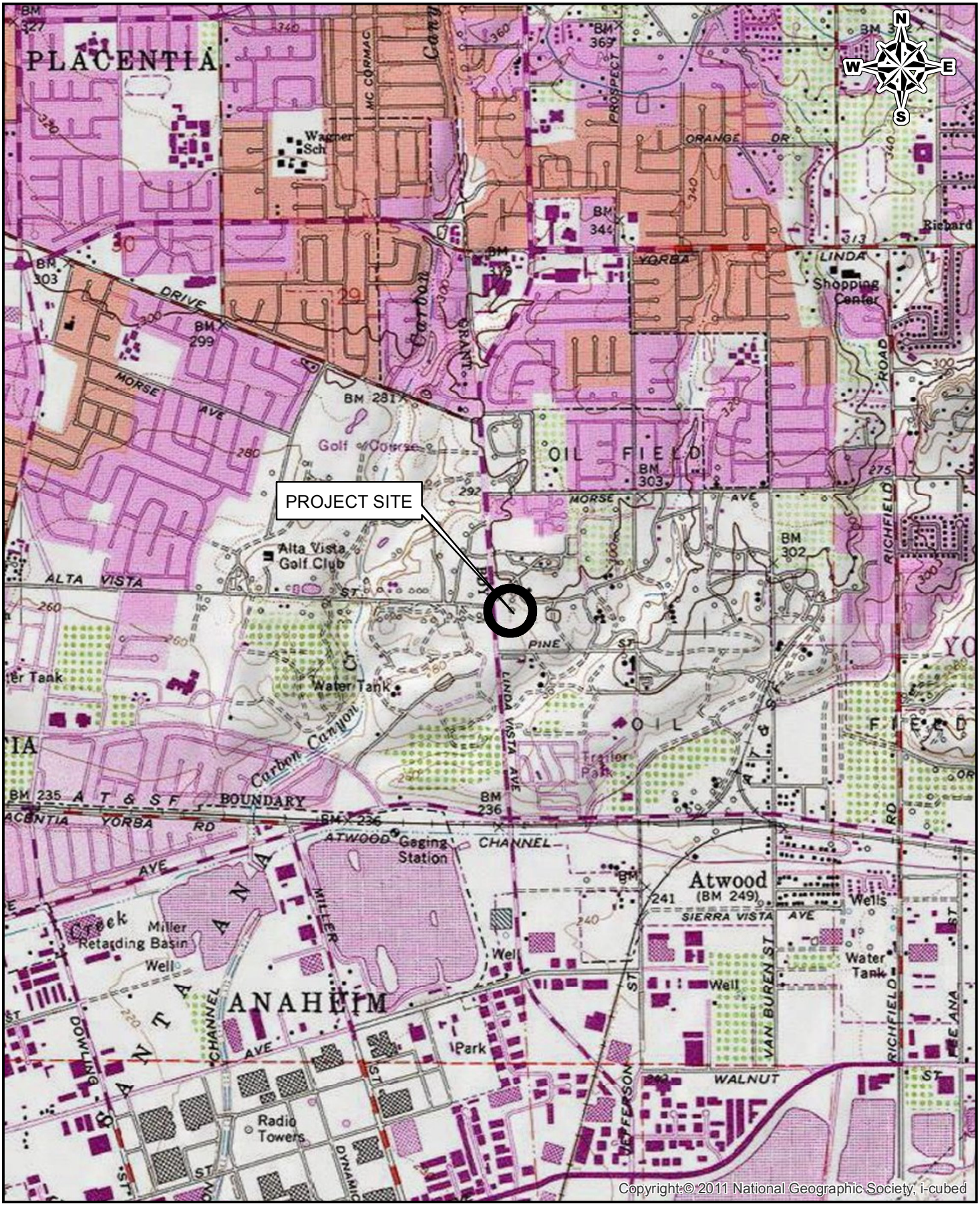
Based on the background information and monitoring results, SCS concludes the following with regard to this Methane Gas Assessment:

- The Property lies within a former oil field area.
- None of the gas probes contained methane exceeding 500 ppmv.
- None of the gas probes contained pressure exceeding 0.05 inches of water column.
- Methane mitigation measures are not warranted for proposed structures. As discussed above, former oil wells will be located beneath the streets of the proposed development.

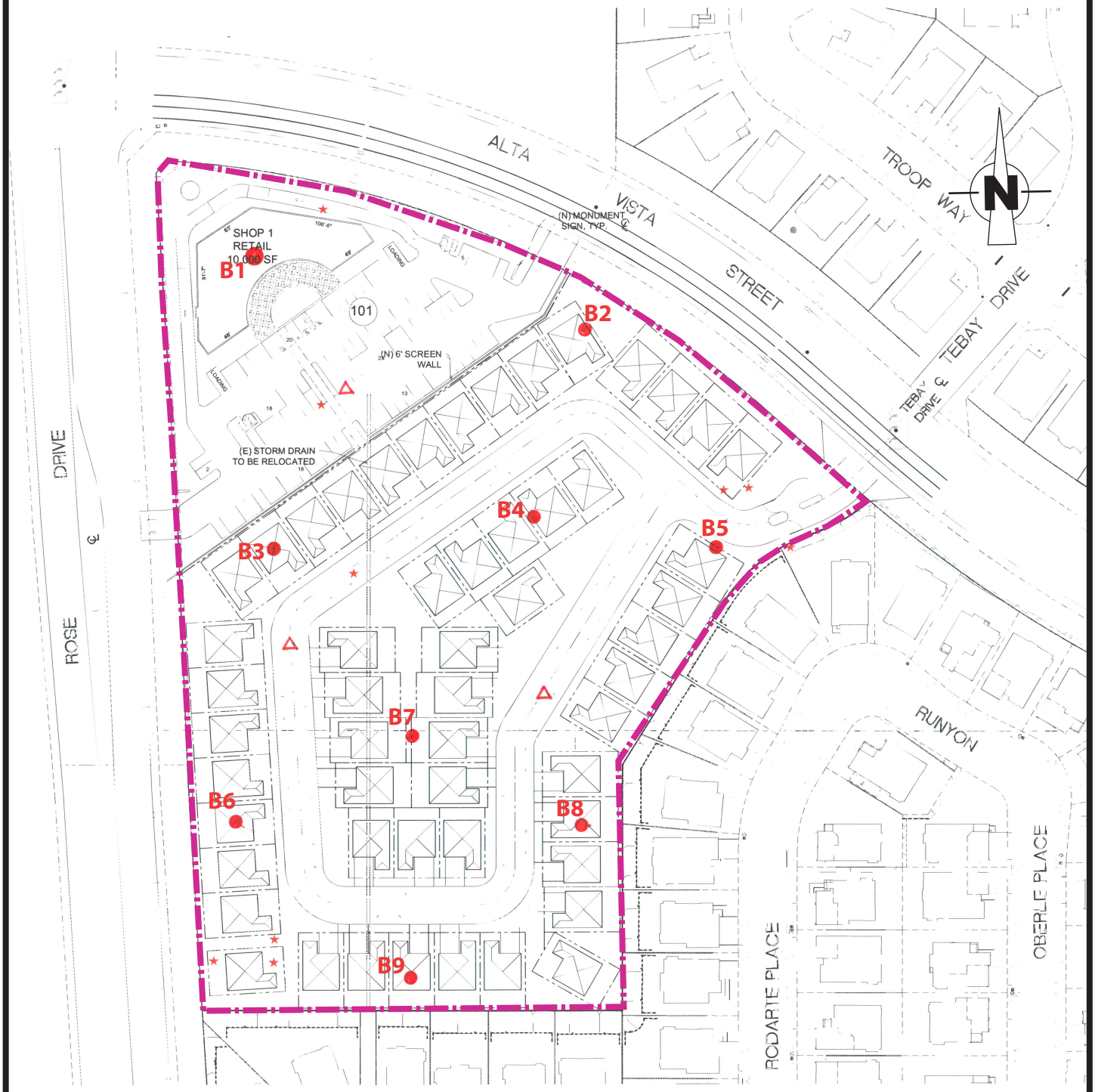
RECOMMENDATIONS

Based on the results of this methane gas assessment for the 8.45 acre property located at the southeast corner of Rose Drive and Alta Vista Street, SCS recommends submittal of this Methane Gas Assessment report to the Orange County Fire Authority for review and approval.

FIGURES 1 AND 2



SCS ENGINEERS 3900 KILROY AIRPORT WAY, STE 100 LONG BEACH, CALIFORNIA 90806-6816	SITE: SE Corner of Rose Drive & Alta Vista Street Placentia, California 92870	Job No.: 01217181.00 Title: SITE LOCATION MAP	FIGURE 1



Legend

- Dual Nested Methane Gas Probes (10 & 20' Bgs)

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS
3900 KILROY AIRPORT WAY, SUITE 100
LONG BEACH, CA 90806
PH. (562) 426-9544 FAX. (562) 427-0805

PROJ. NO.: 01217181.00	DWN. BY: K.BRAUN APP. BY: T. DONG	CLIENT: SC PLACENTIA DEVELOPMENT 14841 YORBA STREET, SUITE 205 TUSTIN, CALIFORNIA 92780	SHEET TITLE: Location of Dual Nested Methane Monitoring Probes PROJECT TITLE: SEC OF ROSE DRIVE AND ALTA VISTA STREET PLACENTIA, CALIFORNIA	DATE: July 5, 2017 SCALE: Not to Scale

APPENDIX A

OCFA COMBUSTIBLE SOIL GAS HAZARD MITIGATION GUIDELINE C-03

ORANGE COUNTY FIRE AUTHORITY

Community Risk Reduction
1 Fire Authority Road, Building A, Irvine, CA 92602, www.ocfa.org 714-573-6100

Combustible Soil Gas Hazard Mitigation

Guideline C-03

Serving the Cities of: Aliso Viejo, Buena Park • Cypress • Dana Point • Irvine • Laguna Hills • Laguna Niguel • Laguna Woods • Lake Forest • La Palma • Los Alamitos • Mission Viejo • Placentia • Rancho Santa Margarita • San Clemente • San Juan Capistrano • Santa Ana • Seal Beach • Stanton • Tustin • Villa Park • Westminster • Yorba Linda • and Unincorporated Areas of Orange County

Combustible Soil Gas Hazard Mitigation

PURPOSE

This document is intended to serve as Orange County Fire Authority (OCFA) guidance for the scientific investigation, remediation, and/or mitigation of potentially hazardous concentrations of combustible soil gases associated with the construction and occupancy of a building or structure located within the areas specified herein.

SCOPE

These guidelines shall apply to all of the following locations:

1. Any location within an administrative boundary or a distance less than or equal to 100 feet beyond the administrative boundary of any oil/gas field that has been defined by the Division of Oil, Gas, and Geothermal Resources (D.O.G.G.R.). An administrative boundary can be determined by visiting the website for D.O.G.G.R. or by contacting the City in which your project is proposed or by contacting OCFA.

2. A distance less than or equal to 100 feet from any active or abandoned oil/gas well that is not located within the administrative boundary of an oil field as defined by the D.O.G.G.R. *Exception: This guideline shall not apply to any Hydrocarbon Free Oil/Gas Well as defined in these guidelines when complete surface to total depth data has been provided to D.O.G.G.R. for review and certification and such certification is provided to the OCFA.*

3. A distance of less than or equal to 300 feet from any gas seepage zone.

4. For locations within the city of Yorba Linda, refer to *Yorba Linda Policy 26: Methane Gas Investigation and Mitigation for Existing Homes Undergoing Expansion* or OCFA Informational Bulletin 05-03.

5. A distance less than or equal to 1000 feet from the refuse footprint of any existing or new disposal site or Class II or III Municipal Solid Waste Landfill Unit described in Title 27 CCR, Chapter 2. The landfill or disposal site may be operating or closed, abandoned or inactive.

6. Any other location identified by the OCFA as being subject to gas migration from a potential source of a combustible gas.

The following definitions are provided to facilitate the consistent application of this guideline:

Abandoned Oil/Gas Well - A well that has been plugged and abandoned to D.O.G.G.R. standards.

Active Methane Detection - A system of components designed to detect specified concentrations of combustible gas within a structure and to warn the occupants via

audible/visual alarms when such concentrations are detected.
Administrative Boundary - The boundary delineating the surface area which is underlain or reasonably appears to be underlain by one or more oil and/or gas pools as defined by the State of California, Division of Oil, Gas, and Geothermal Resources (D.O.G.G.R.).

Forced Air Venting System - A mechanically operated ventilation system designed to provide the necessary number of air changes/hour for the purpose of maintaining combustible gas concentrations at a safe level within a building.

Gas Membrane Barrier - A barrier installed beneath a structure's slab foundation for the purpose of minimizing the intrusion of combustible soil gas.

Gas Seepage Zone – Any location where natural gas emerges at the surface from a subsurface source.

Hydrocarbon Free Oil/Gas Well - Any well drilled with the expectation of, but not finding, hydrocarbon accumulations in any quantity.

Mitigation Plan - A site specific plan prepared by a Registered Professional Engineer for the purpose of defining measures necessary for construction to take place within a location presenting a potential hazard due to the presence of combustible soil gases.

Registered Professional - A California Registered Professional Engineer or Registered Professional Geologist or other credentialed professional with demonstrated proficiency in the subject of soil gas investigation and mitigation and found acceptable to OCFA.

Soil Gas Investigation - A scientific investigation reviewed and approved by OCFA, conducted by a Registered Professional for the purpose of determining the locations and concentrations of combustible soil gas.

Sub-Slab Passive Venting - A non-powered system of components located beneath and/or within a structure and designed to vent accumulations of combustible soil gas to the atmosphere.

Well - Any well defined in California Public Resources Code Division 3, Chapter 1, section 3008(a)(b) and Chapter 4, section 3703, as described below:

> *3008 (a): "Well" means any oil or gas well or well for the discovery of oil or gas; any well on lands producing or reasonably presumed to contain oil or gas; any well drilled for the purpose of injecting fluids or gas for stimulating oil or gas recovery, repressuring or pressure maintenance of oil or gas reservoirs, or disposing of waste fluids from an oil or gas field; any well used to inject or withdraw gas from an underground storage facility; or any well drilled within or adjacent to an oil or gas pool for the purpose of obtaining water to be used in production stimulation or repressuring operations. (b): "Prospect well" or "exploratory well" means any well drilled to extend a field or explore a new, potentially productive reservoir. 3703.*

"Well" means any well for the discovery of geothermal resources or any well on lands producing geothermal resources or reasonably presumed to contain geothermal resources, or any special well, converted producing well or reactivated or converted abandoned well employed for reinjecting geothermal resources or the residue thereof.

PLAN SUBMITTAL REQUIREMENTS

1. Building Restriction Zone

   To the ***maximum*** extent feasible, the slab or foundation for a proposed building shall not be constructed over or within 10 feet of an abandoned oil/gas well. If specific site characteristics make such a setback unfeasible, construction of structures ***may*** be allowed within the Building Restriction Zone provided that the following mitigation measures are incorporated. The proposed construction of one- or two-family dwellings within the Building Restriction Zone shall be subject to further evaluation and/or mitigation.

   A. A Methane work plan shall be submitted by a Registered Professional. OCFA has a list of 'approved' methane specialists who are familiar with OCFA policies and plan submittal procedures. This list is not an endorsement of these companies. The companies on the list have submitted their qualifications to OCFA and have the necessary qualifications and experience to provide the service required. This list is available by contacting our OCFA Planning and Development section at (714) 573-6100.
   B. Once the methane work plan is approved, the methane testing can be performed. Once the soil gas investigation is complete, a report, meeting the criteria contained herein, shall be conducted in the immediate vicinity (25 foot radius) of any abandoned oil/gas well that will be located within the Building Restriction Zone. The report shall be submitted to OCFA.
   C. The Mandatory Procedures for Mitigation specified in Section 4 of this guideline shall be applied.
   D. A Registered Professional shall review the soil gas investigation report and building plan and recommend soil gas mitigation measures, if any, that may be required for the site beyond those contained in this guideline. Any additional mitigation measures recommended shall be included in the Mitigation Plan.
   E. The abandonment of oil/gas wells located within the Building Restriction Zone shall have the current approval of the D.O.G.G.R. The current approval shall meet the requirements applied by D.O.G.G.R. at the time the Mitigation Plan is submitted for review to OCFA.

***** THE OCFA ADVISES AGAINST THE CONSTRUCTION OF ANY STRUCTURE OVER ANY WELL *****

2. Soil Gas Investigation
   A proposed building located within the areas specified in this guideline shall be approved only after a soil gas investigation has been completed and a report submitted to OCFA for review and approval.
   A. The investigation and report shall be prepared by and conducted under the direct supervision of a Registered Professional.
   B. The report shall contain a detailed description of the site investigation including the methodology and the data collection techniques utilized.
   C. To the degree possible, the source(s) of any anomalous levels of methane shall be identified.
   D. The soil gas investigation report shall be subject to review and approval by a third party Registered Professional, if deemed necessary by OCFA. The applicant shall pay fees charged for the third party review.
3. Soil Gas Concentrations
   A. If the soil gas investigation report identifies combustible soil gas concentrations of 5,000 ppm or greater at any location(s), the Mandatory Procedures for Mitigation, as contained herein, shall be applied to all buildings within 300 feet of the affected location(s).
   B. If combustible soil gas concentrations in excess of 12,500 ppm are identified at any location(s), all buildings within 300 feet of the affected location(s) shall have a specific soil gas mitigation plan approved by a Registered Professional.
   C. The Mandatory Procedures for Mitigation pertaining to buildings located within the prescribed distances from abandoned oil/gas wells are required to be implemented regardless of the combustible soil gas concentrations identified during the soil gas investigation.
   D. Mitigation plans shall be subject to review and approval by third party Registered Professional, if deemed necessary by OCFA as stated above.
4. Mandatory Procedures for Mitigation
   Design and installation criteria for soil gas mitigation systems have been established and are detailed below. However, these criteria are not intended to limit the engineered design for any specific site (see Attachments 2 through 8 for examples). Prior to the installation of a soil gas mitigation system, plans shall be submitted to the OCFA for review/approval. All proposed designs shall be reviewed/stamped by a California Registered Professional Engineer. Proposed designs that vary significantly from the criteria below may be subject to review by a third party California Registered Professional Engineer.
   A. Source Removal: If all sources of combustible soil gas, such as crude oil impacted soil or oil field sumps, have been removed, isolated, or remediated such that no potential threat to buildings due to methane generation or migration remains, then no further mitigation in that area shall be mandatory unless recommended by a Registered Professional. All remediation shall be under the oversight and approval of Orange County Health Care Agency, Environmental Health.
   B. Passive Venting of Abandoned Oil/Gas Wells: All abandoned oil/gas wells

within 25 feet of any proposed building shall be vented. All wells within 300 feet of a proposed building that are also under or within five feet of a paved road, paved parking lot, or other continuous impermeable surface barrier where the continuous impermeable surface barrier is within 25 feet of the proposed building, shall be vented. In the event sufficient findings are made that well venting is not feasible, the OCFA (with D.O.G.G.R. concurrence) may allow a waiver of the venting requirement provided that additional mitigation measures described in section 4.F be made a part of the mitigation plan. *NOTE: Mitigation systems may not be installed within the public right of way without prior approval from the City/County Engineer or Public Works Department. See Section 5 of this guideline.*

C. Sub-slab Passive Venting: A passive venting system shall be installed beneath the slab or foundation of a proposed building that is within:
   1) 25 feet of an abandoned oil/gas well.
   2) 25 feet of a continuous impermeable surface barrier (e.g., paved road or parking lot) covering an abandoned oil/gas well that is located less than 300 feet from the building.
   3) 300 feet of an active gas seep zone.
   4) 300 feet of other anomalous combustible soil gas areas as identified in the Soil Gas Investigation Report, except as mitigated by source removal or remediation or except as identified in the Soil Gas Investigation Report as not posing a safety threat to occupied buildings due to its characteristics.

D. The design for the sub-slab venting system shall be approved by a California Registered Professional Engineer. The design and installation shall be in accordance with the California Building, Mechanical, and Plumbing Codes and meet the following criteria:
   1) Ventilation trenches shall be placed such that no portion of the foundation is more than 25 feet from a ventilation trench. Trench cross section dimensions shall not be less than 12 inches by 12 inches. Ventilation trenches shall be back filled with pea gravel (approximately 3/8 inch in diameter) or other material of similar size and porosity.
   2) Ventilation trenches shall be provided with perforated pipe of not less than 4 inches in diameter. The total pipe perforation area shall be at least equal to 5% of the total surface area of the pipe. Perforated pipe shall be located a minimum of 4 inches beneath the foundation.
   3) Where piping transitions through building footings, the penetration shall be accomplished in compliance with the California Building Code and with the approval of the Building Official.
   4) Perforated pipe shall be connected to vertical ventilation pipe. Vertical ventilation pipe shall be not less than 3 inches in diameter and shall be constructed of materials specified by the California Plumbing and Mechanical Codes. All joints shall be tightly sealed with approved materials. Ventilation pipe may be located within walls/chases or shall be similarly protected from physical damage. Ventilation pipe shall be constructed in a manner that will allow it to be connected to an active

venting system, if necessary, without modification or damage to the structure (e.g. Capped TEE fitting located near the foundation). Ventilation pipes shall terminate at a height determined acceptable by the designing engineer but not less than 18" above the adjacent level. Ventilation pipes shall be located at least three feet from a parapet wall. Ventilation pipes shall terminate at a distance of at least 10 feet from any building opening or air intake and at least four feet from any property line. Any ventilation pipe located within an open yard shall terminate at a height of not less than 10 feet above adjacent grade.

5) The termination of all ventilation pipes shall be provided with a "T" connection or other approved rain cap to prevent the intrusion of rainwater.
6) Ventilation pipe shall be clearly marked to indicate that the pipe may contain combustible gas. This may be accomplished through stencils, labels or other methods. Pipes shall be marked near their termination point and at five-foot intervals along the remainder of the ventilation pipe. This includes sections encased within walls or other enclosures. An acceptable identifier would be the words "METHANE GAS" printed in two-inch letters.
7) All underground electrical conduit penetrating the slab or foundation of the building shall be provided with a seal-off device as normally found on classified electrical installations. This device is intended to prevent the travel of gas into the occupied portion of the structure through conduit runs. Any device installed shall meet the applicable requirements of the California Electrical Code.

E. Active Methane Detection/Forced Air Venting: A structure that will be built over an abandoned oil/gas well and where the ground floor is not naturally vented may be required to have an active interior methane detection system equipped with an audible alarm and/or additional mitigation measures based on the recommendation of the Registered Professional conducting the site specific soil gas mitigation review, which may include an active interior methane detection/forced air venting system capable of providing a minimum of four air changes per hour in the event methane concentrations within the building exceed 20% of the methane Lower Explosive Limit (LEL).

F. Gas Membrane Barrier: Any building to be constructed in the areas specified by item #1 below shall be provided with a gas membrane barrier. Gas membrane barriers may be required for locations specified in items #2 through #4 unless a review and recommendation by the Registered Professional states that a gas membrane barrier is not necessary. *Exception: The building is of a structural design that provides natural ventilation to prevent the accumulation of combustible gas (e.g. an open parking garage at grade level).*

1) 10 feet of an abandoned oil or gas well.
2) 25 feet of a continuous impermeable surface barrier (e.g. paved road or parking lot) that covers an abandoned oil/gas well that is less than 300 feet from the building.

3) 300 feet of an active gas seepage zone.
4) 300 feet of other anomalous combustible soil gas level areas identified in the Soil Gas Investigation Report except as mitigated by source removal or remediation or except as identified in the Soil Gas Investigation Report as not posing a safety threat to occupied buildings due to its characteristics.

5. Mitigation Plan Approval
   All reports, work plans, and mitigation plans shall be subject to the approval of the OCFA. Any methane mitigation system located within a public right of way shall also be subject to the approval of the City or County Engineer or Public Works Department. Many local agencies will restrict or prohibit the installation of methane mitigation systems within a public right of way. A public right of way includes any street, parkway, sidewalk, open space or similar area that has been or will be dedicated to a city or county.
6. Well Abandonment
   Oil and gas wells to be abandoned or re-abandoned shall be done so in accordance with the current requirements of the D.O.G.G.R. The abandonment requirements will be those applied by D.O.G.G.R. at the time the mitigation plan is submitted for review to the OCFA. Documentation of final abandonment approval from the D.O.G.G.R. shall be provided to the OCFA and the building department before occupancy is approved.
7. Construction Inspection Responsibility
   A Registered Professional Engineer shall perform the inspection of all gas control measures. In order to document the inspection process properly, the following signed and stamped certification shall be submitted to the OCFA prior to use of the building or OCFA's final approval of the project:
   A. I am a Registered Professional Engineer in the State of California and I am knowledgeable in the field of combustible soil gas control and mitigation systems.
   B. The soil gas control and mitigation systems installed within this project have been constructed under my direct supervision and in accordance with the plans reviewed by the OCFA. As-built plans are included with this statement.
   C. The building has been tested and determined to be free from any concentration of gases that the control system was designed to mitigate. A copy of the test results is included with this statement.

   In order to facilitate the construction approval process, periodic correspondence may be required to be provided to the field inspector representing OCFA or to the respective building department of the city in which the project is located. Such correspondence shall be provided at intervals required by the inspector and provide updated information regarding the status of inspection activities completed by the engineer responsible for the gas control system.

8. Gas Control System Maintenance and Testing
   The maintenance of all soil gas control systems shall remain the responsibility of the property owner. All systems shall be maintained as installed and as

recommended by the manufacturer and/or system designer. The owner of the property shall be provided with written instructions stating the required service maintenance and testing for the soil gas mitigation systems installed. For systems requiring specialized testing to ensure proper operation, the property owner shall obtain the services of qualified personnel to accomplish such tests. Written documentation verifying that such tests were accomplished shall be retained by the property owner for a period of not less than five years and made available to the OCFA upon request. The OCFA may require any property owner to accomplish additional tests when there is reason to believe that the concentration of gas within or near the structure is elevated above the levels recorded at the time of the original soils gas investigation.

9. Additional Requirements of the California Fire Code
   This document is not intended to address the requirements of the California Fire Code pertaining to the location of a building in relation to an active oil/gas well. These requirements are found in Chapter 57, Section 57006 of the California Fire Code. The OCFA Planning & Development Services Section may be contacted for additional information.

ATTACHMENT 1
COMBUSTIBLE GAS STUDY CHECKLIST
(to be completed by applicant)

PROJECT INFORMATION

Project Name: _____

Primary Contact:_____ Phone Number: _____

Site Address (if available):_____ City:_____

Tract/Map #:_____ Lots:_____

Parcel Map Number:_____ Assessor's Parcel #:_____

DEVELOPMENT AREA

Development Density:_____ Area (acres):_____

Open Space:_____ Paved Area:_____

GEOLOGY/HYDROLOGY

Oil Field Name: _____

Groundwater Basin/Recharge Area Name:_____

Number of Wells in Development Area:
Producers:_____ Steam Injectors:_____ Water Injectors:_____ Idle:_____

Abandoned:_____ Abandoned to Current Regulations:_____

Depth (ft. BGS) of:
Shallowest producing zone:_____ Shallowest Oil or Gas Zone:_____

Shallowest groundwater:_____ Shallowest drinking water:_____

Number of surface expressions of fault zones:_____ (Show on map)

Number of oil/gas seep zones:____ (Show on map)

1. Has a hazardous gas assessment been completed? YES / NO
2. Is the hazardous gas assessment attached hereto? YES / NO
3. Has the hazardous gas assessment included soil probes? YES / NO
4. If yes, to what depth have the soil probes penetrated? _____ feet
5. Has the hazardous gas assessment included soil borings? YES / NO
6. If yes, to what depths have the soil boring penetrated? _____ feet
7. The highest soil gas methane concentration identified was: _____ ppm (v/v)
8. The background soil gas methane concentration identified was _____ ppm (v/v)
9. Is the applicant requesting any waivers from required mitigation? YES / NO
10. If yes, what waiver(s) is being requested: _____

COMBUSTIBLE GAS STUDY CHECKLIST (Continued)

(to be completed by applicant)

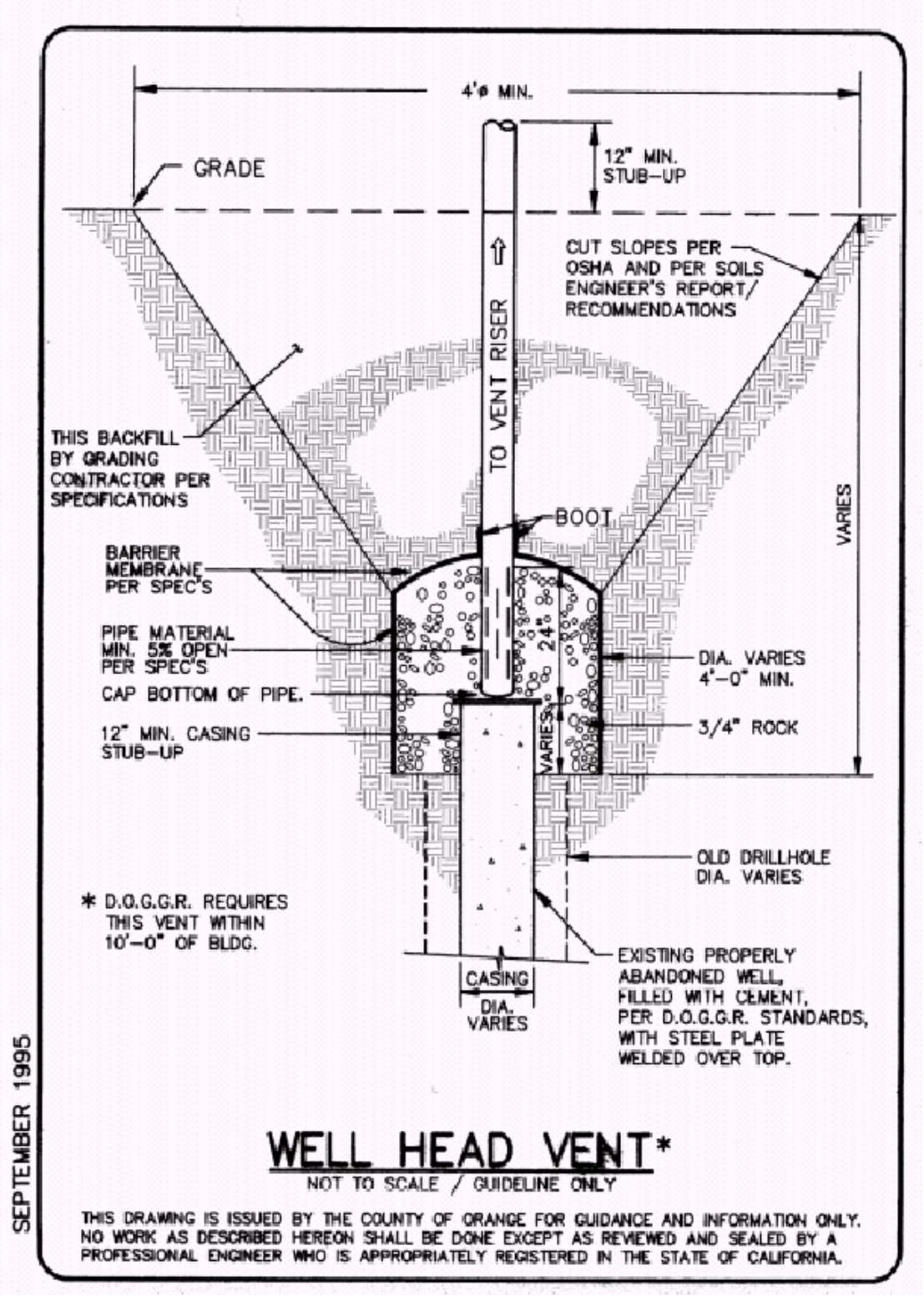
Summary of Gas Assessment Conclusions

Area (Correlate to Map)	**Methane Level** (ppm v/v range)	**Source**	**Potential to Migrate** (Yes/No)	**Migration** (Note required actions)	
				Source	**Structures**

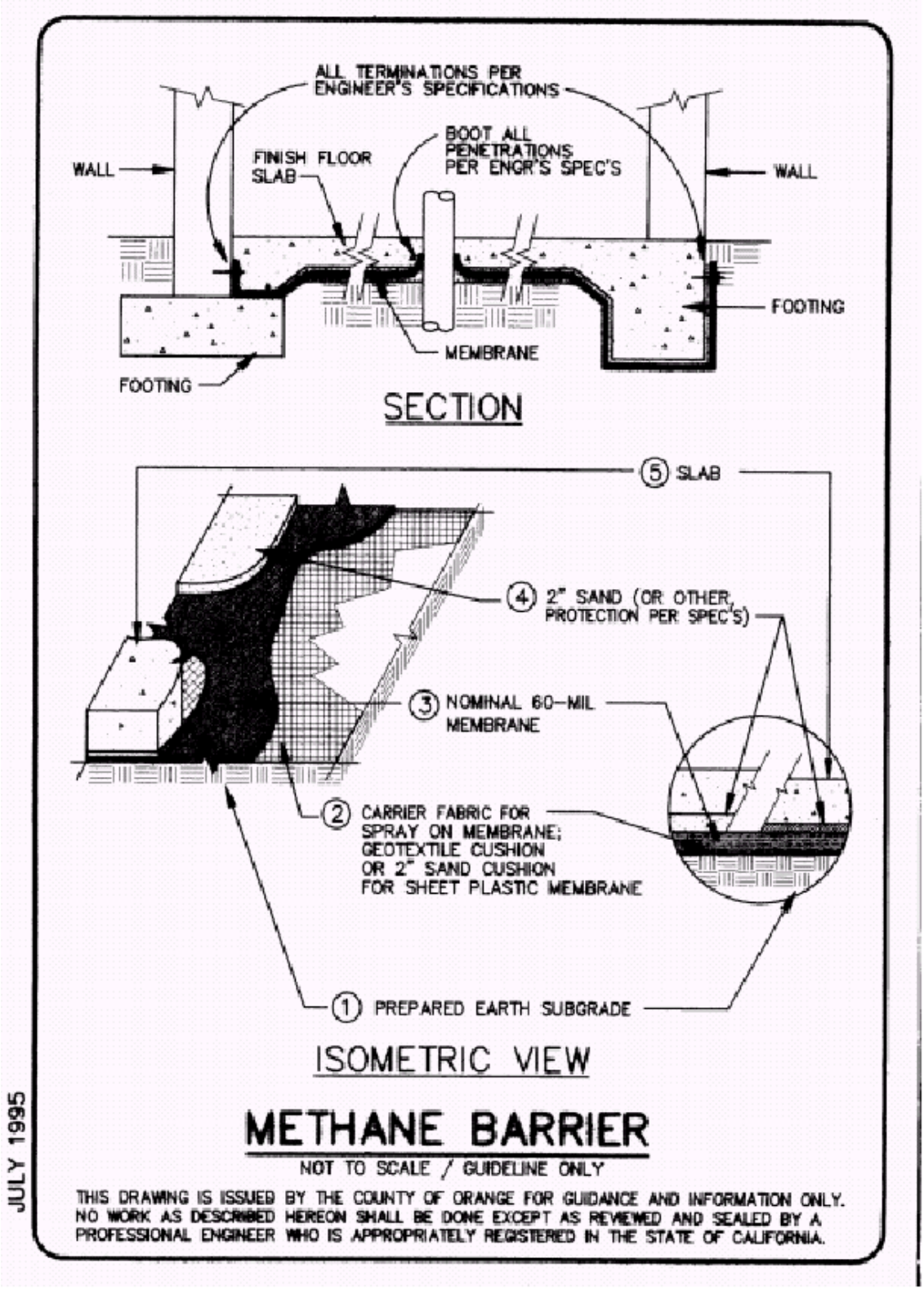
_____ _____

Date Applicant

ATTACHMENT 2



ATTACHMENT 3



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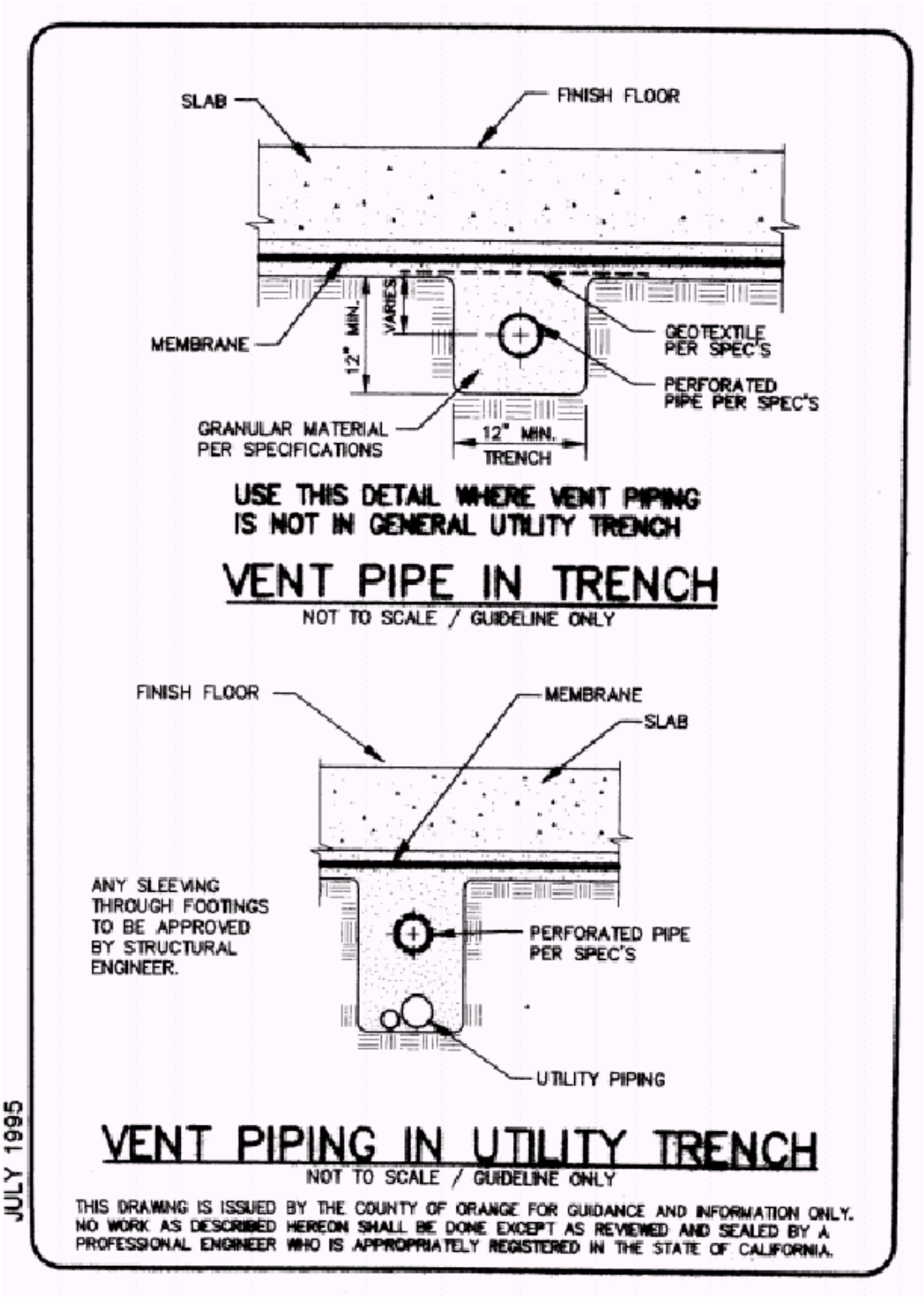
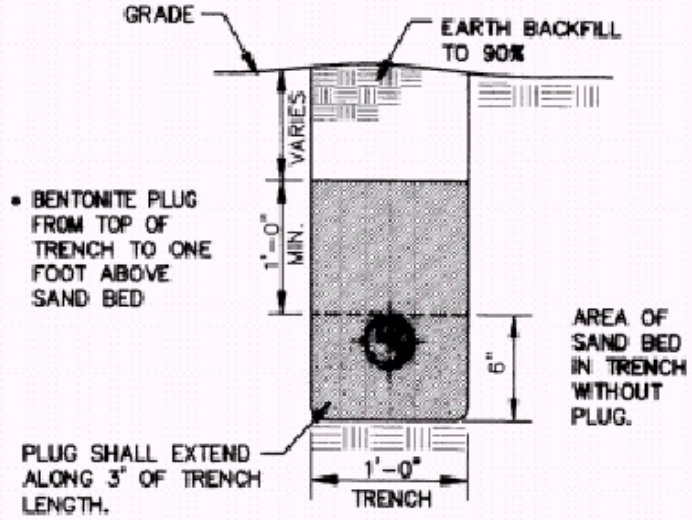


ATTACHMENT 5

* DRY MIX 1 PART BENTONITE WITH 3 PARTS FINE SAND OR FINE MATERIAL WITHOUT ROCKS, CLODS OR COBBLES. THEN ADD WATER TO GET A THICK FLOWING MIXTURE FOR PLACEMENT IN TRENCH AS SHOWN, WHERE CALLED FOR ON PLANS.



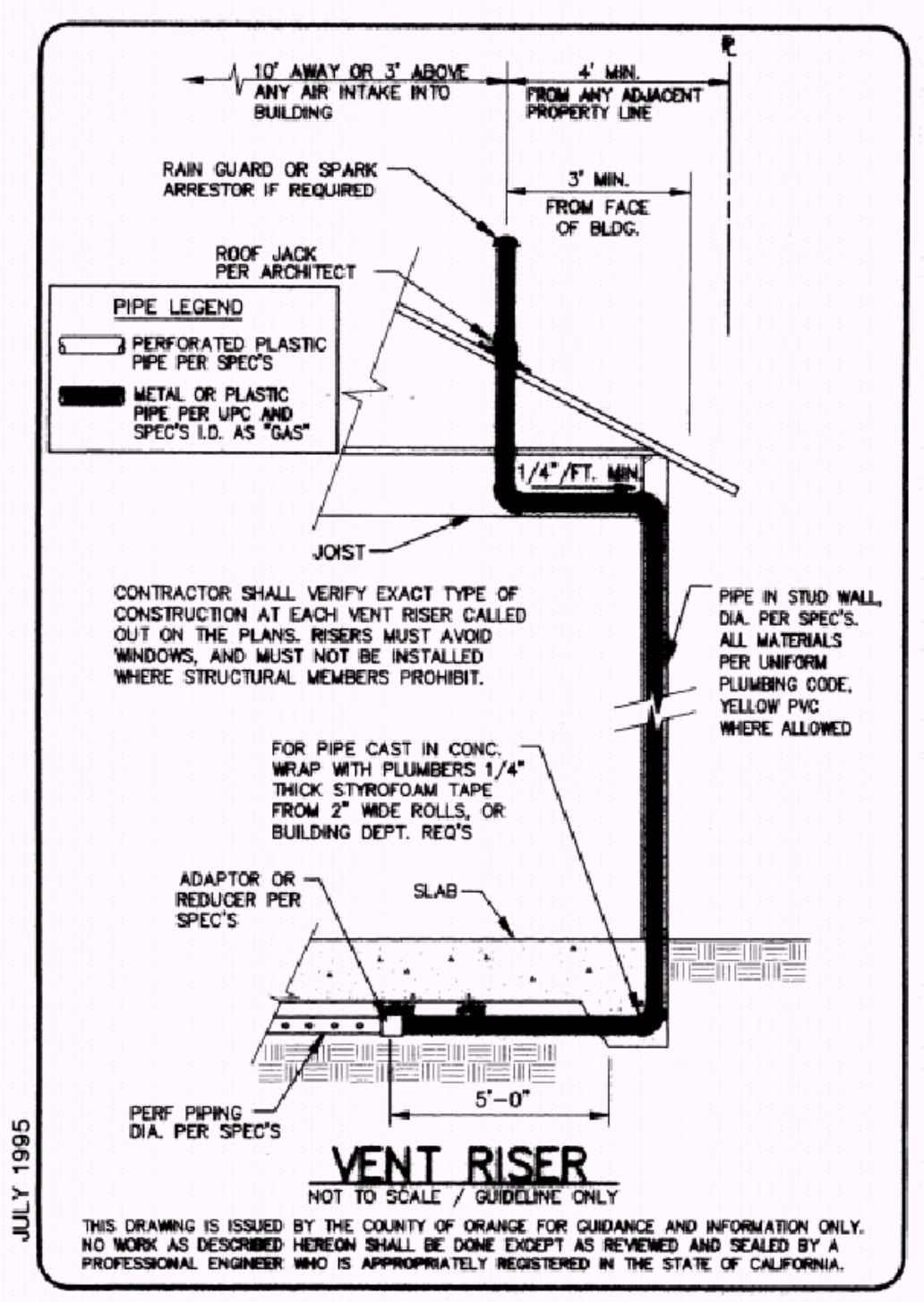
JULY 1995

TRENCH PLUG

NOT TO SCALE / GUIDELINE ONLY

THIS DRAWING IS ISSUED BY THE COUNTY OF ORANGE FOR GUIDANCE AND INFORMATION ONLY. NO WORK AS DESCRIBED HEREON SHALL BE DONE EXCEPT AS REVIEWED AND SEALED BY A PROFESSIONAL ENGINEER WHO IS APPROPRIATELY REGISTERED IN THE STATE OF CALIFORNIA.

ATTACHMENT 6



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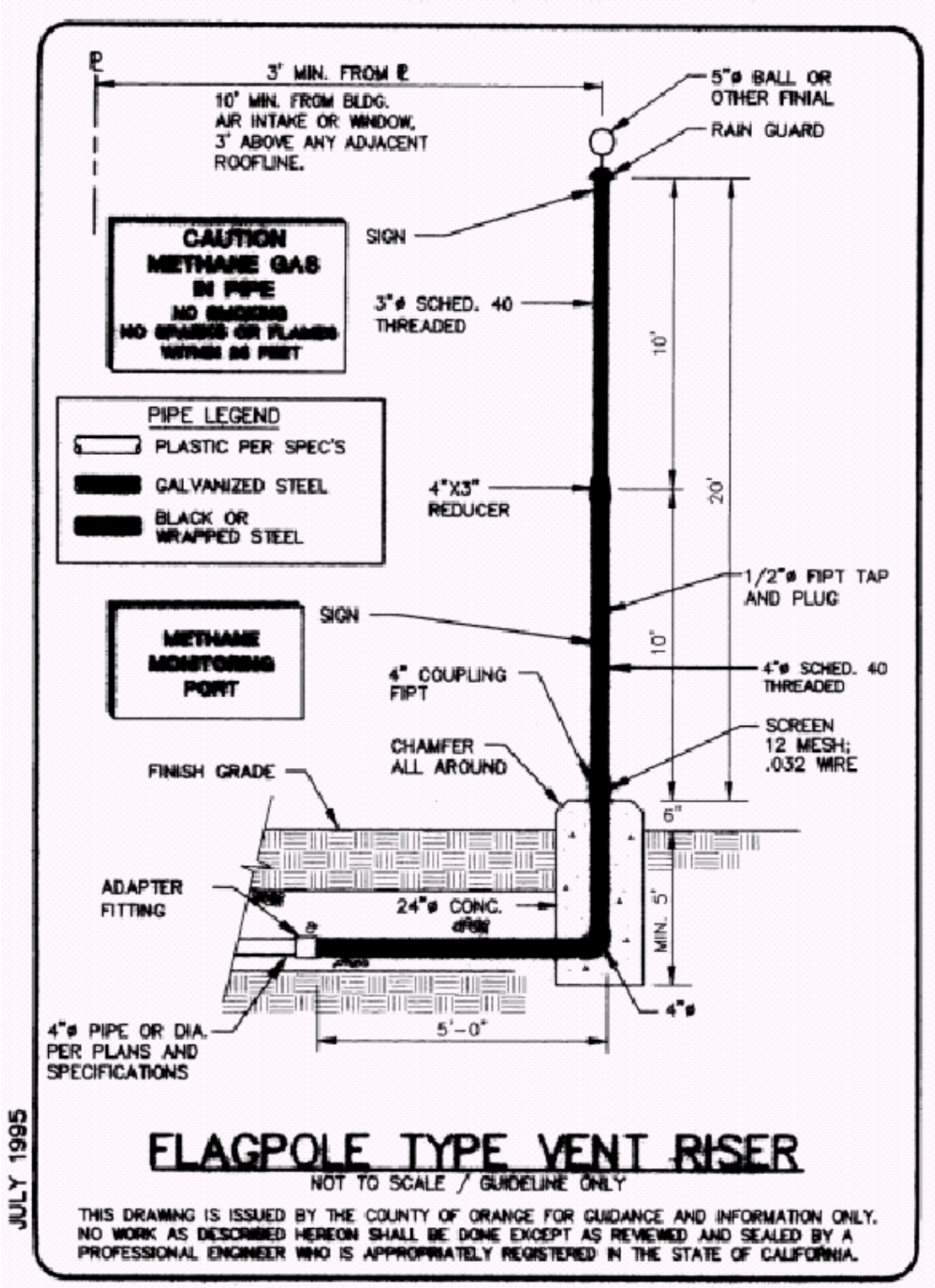
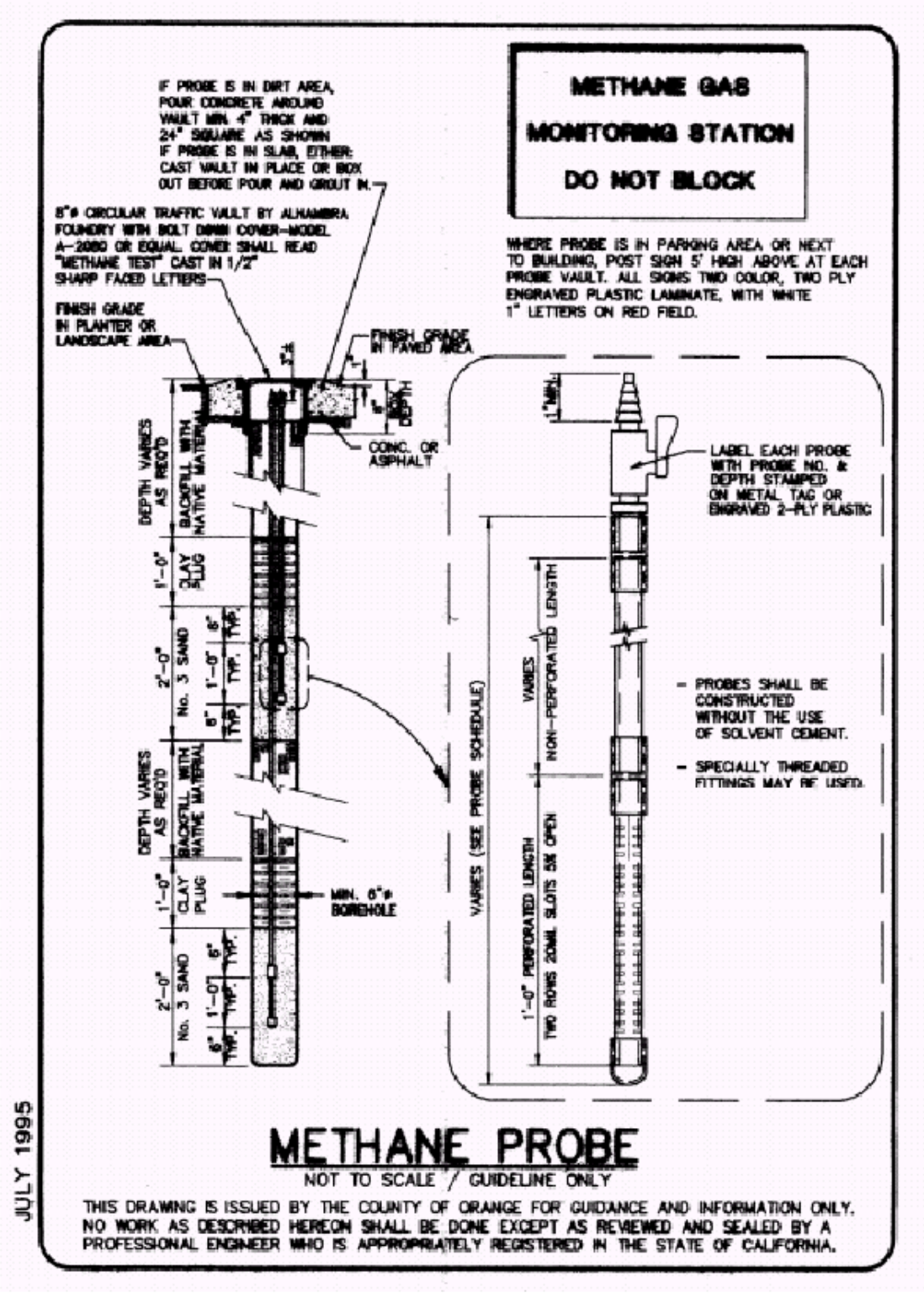


ATTACHMENT 8



APPENDIX B

METHANE WORKPLAN EMAIL, JUNE 14, 2017

Dong, Tom

From: Dong, Tom
Sent: Wednesday, June 14, 2017 2:49 PM
To: lynnepivaroff@ocfa.org
Subject: Methane Assessment Sampling Map/Protocol for SEC of Rose Drive and Alta Vista Street
Attachments: EX_1.pdf

Lynne,

Attached is a map showing locations for vapor probes to be installed at depths of 10 and 20 feet bgs. Our client is on a tight schedule and can the following description of field monitoring, reporting, etc., be sufficient to meet the requirements for the workplan? All work will be completed under the direction of Kevin W. Green, a California Professional Geologist who has been with SCS more than 30 years and has overseen more than 100 methane projects in Los Angeles, Orange, and Ventura Counties..

WORKPLAN ELEMENTS

- Placement of nine multi-nested probes at depths of 10 and 20 feet below ground surface using the locations proposed for collection of geotechnical soil samples by Associated Soils Engineering a shown in the attached map. Choice Drilling is familiar with installation of vapor probes for combustible gas monitoring.

- Per standard protocols, probes will field monitored twice after installation (48-72 hours apart) for methane, oxygen, pressure, etc.

- Preparation of a Soil Gas Investigation Report providing a detailed description of the assessment including the methodology and data collection techniques utilized.

Data collected pursuant to this assessment can be used to determine whether gas monitoring, or methane protection measures are appropriate.

SCOPE OF WORK

Task 1 - Monitoring Probe Installation

SCS will install nine shallow subsurface methane monitoring probes using a conventional drill rig provided by Associated Soils Engineering (ASE). Each probe will be constructed with a distinct sampling implant placed at 10 and 20 feet below ground surface per OCFA January 2017 Guideline C-03. The top of each probe will be completed with a sealed sampling valve.

SCS will interface with work with ASE and driller (Choice Drilling) and buried obstructions/utilities will be cleared in advance of the probe installation. Underground Service Alert (USA) will be contacted as required by California law at least 48 hours prior to initiating field work. SCS assumes that access to the project area is available and unrestricted for the drill rig and operator.

Task 2 - Probe Monitoring

Within three days of installation, each probe at each well will be monitored for pressure, methane, carbon dioxide, and oxygen by SCS using portable field equipment; one subsequent probe monitoring event will occur at least two to three days later. In total, each probe will be monitored for subsurface gases on two occasions within one week by a qualified SCS representative using appropriate field instruments such as an RKI Eagle 401 unit.

Task 3 - Report of Findings

At the conclusion of all monitoring efforts, SCS will prepare a report for your use with a tabulation of the data and a summary of the highest methane design concentration and soil gas pressure detected. The letter report will also include recommendations for generally-accepted methane protocols as outlined in the OCFA Combustible Soil Gas Hazard Mitigation Guideline C-3 dated January 1, 2017. Depending methane monitoring results, additional tasks (e.g., additional monitoring, building protection measures, etc.) may be required.

PROJECT INFORMATION - RETAIL

ZONE	SPECIFIC PLAN AREA
GROSS SITE AREA	86,754 SF (1.99 AC)
GROSS BUILDING AREA	10,000 SF
PARKING PROVIDED	101 STALLS
PARKING REQUIRED	95 STALLS
PARKING RATIO	10 / 1000

CITY REQUIREMENT:

SETBACK:

FRONT YARD:	15'
SIDE YARD:	15' IF FRONTING STREET 3' FOR OTHER CONDITIONS
REAR:	15'

PARKING DIMENSION:

STANDARD	9'-6" X 19', 25' AISLE
COMPACT	8'-6" X 15', 25' AISLE
	MAXIMUM OF 35% OF COMPACT IS ALLOWED
DRIVE THRU	8' X 20' MIN.

PARKING REQUIREMENT:

RETAIL:	4,000 @ 1 / 250 = 16 STALLS
RESTAURANT:	4,500 SF @ 1 / 60 = 75 STALLS
	1,500 sf @ 1 / 400 = 4 STALLS

PROJECT INFORMATION - RESIDENTIAL

SITE AREA INFORMATION:

GROSS SITE AREA:	6.11 ACRES
DWELLING UNITS:	19 (43'x67' LOTS)DU
	35 (43'x72' LOTS)DU
	54 TOTAL
DENSITY:	**±8.84 DU/AC**

PARKING:

STREET	34
DRIVEWAY	108
TOTAL	142

● 30'exploratory boring × 9

△ 5' perc test hole × 3
(+ R-value sampling)

KEY MAP

ktgy
Architecture + Planning
888.456.5849
ktgy.com

SC DEVELOPMENT
14841 Yorba Street, Suite 205
Tustin, CA 92780
T. 714.505.7090
F. 714.505.7099
Contact: Mr. Paul Conzelman

ALTA VISTA
PLACENTIA, CA # 2017-0087

SCHEMATIC DESIGN
April 3, 2017

0 25 50 100

SITE
CONCEPTUAL SITE PLAN

SP02

Exhibit 1 Proposed Boring Location Plan

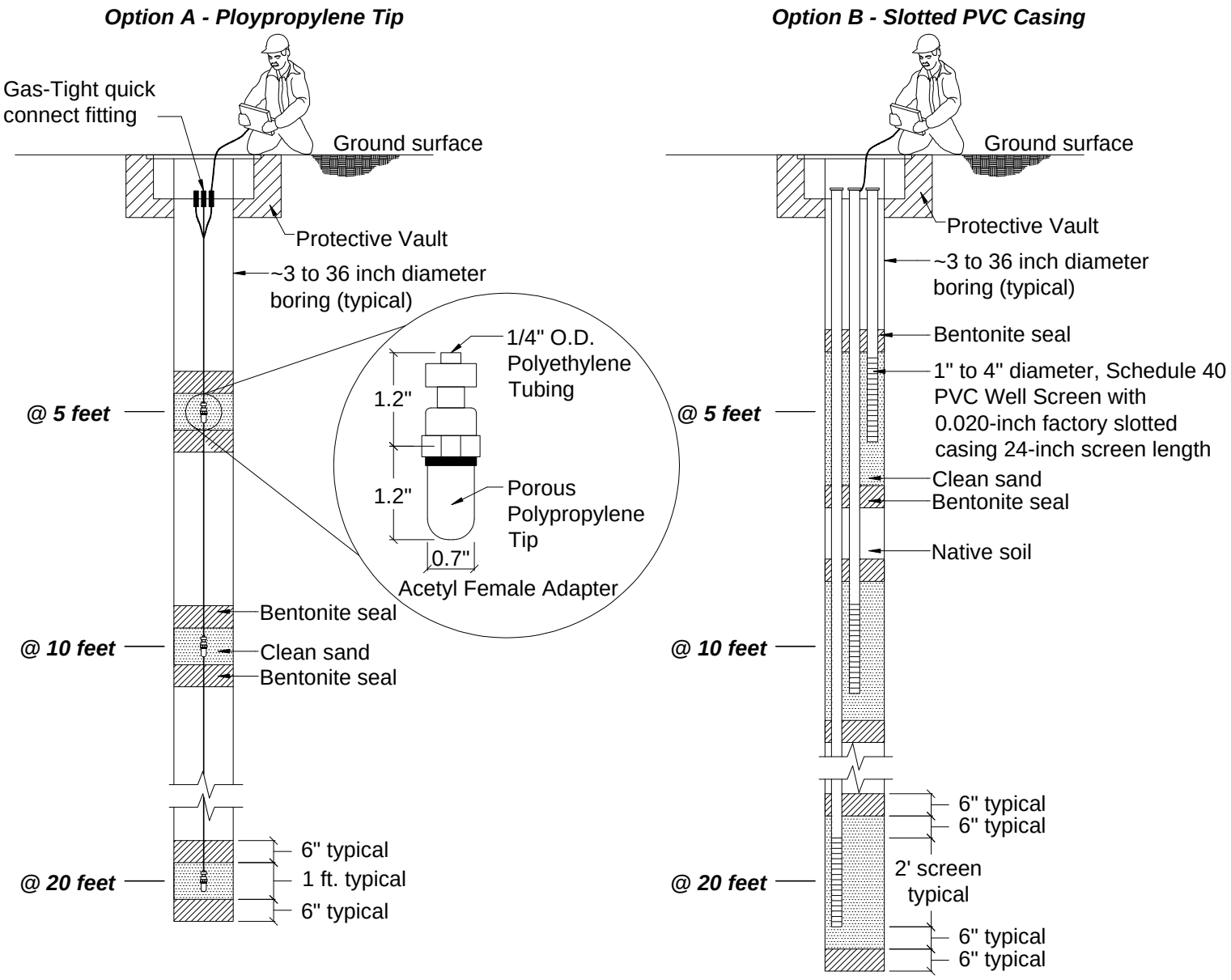
Google Maps

Imagery ©2017 Google, Map data ©2017 Google 100 ft

APPENDIX C

GENERIC PROBE COMPLETION DETAIL

GAS PROBE TEST EQUIPMENT SET-UP



*Note: Gas Probe Test shall not be install below ground water level.

APPENDIX D

OCFA GUIDELINE C-03 ATTACHMENT 1
COMBUSTIBLE GAS STUDY CHECKLIST

ATTACHMENT 1
COMBUSTIBLE GAS STUDY CHECKLIST
(to be completed by applicant)

PROJECT INFORMATION

Project Name: SC Placentia Development LP

Primary Contact: THOMAS DONE Phone Number: 5624269544

Site Address (if available): SEC Rose Dr./Alta Vista St. City: Placentia

Tract/Map #: 15699 Lots:

Parcel Map Number: 258-25, 291-43 Assessor's Parcel #: 341-324-01

DEVELOPMENT AREA

Development Density: ± 8.84 D.U./ACRE Area (acres): 8.45

Open Space: 0 Paved Area:

GEOLOGY/HYDROLOGY

Oil Field Name: RICHFIELD

Groundwater Basin/Recharge Area Name: Forebay Area of O.C. Groundwater Basin

Number of Wells in Development Area:

Producers: 6 Steam Injectors: ϕ Water Injectors: 2 Idle: ϕ

Abandoned: All Abandoned to Current Regulations: ✓

Depth (ft. BGS) of:

Shallowest producing zone: 1200 Shallowest Oil or Gas Zone: 1200

Shallowest groundwater: 160 Shallowest drinking water: 160

Number of surface expressions of fault zones: N/A (Show on map) none

Number of oil/gas seep zones: N/A (Show on map) none

1.	Has a hazardous gas assessment been completed?	(YES) / NO
2.	Is the hazardous gas assessment attached hereto?	(YES) / NO
3.	Has the hazardous gas assessment included soil probes?	(YES) / NO
4.	If yes, to what depth have the soil probes penetrated?	20 feet
5.	Has the hazardous gas assessment included soil borings?	(YES) / NO
6.	If yes, to what depths have the soil boring penetrated?	30 feet
7.	The highest soil gas methane concentration identified was:	500 ppm (v/v)
8.	The background soil gas methane concentration identified was	0 ppm (v/v)
9.	Is the applicant requesting any waivers from required mitigation?	(YES) / NO
10.	If yes, what waiver(s) is being requested:	No bldg. protection or Mitigation

COMBUSTIBLE GAS STUDY CHECKLIST (Continued)

(to be completed by applicant)

Summary of Gas Assessment Conclusions Mitigation

Area (Correlate to Map)	Methane Level (ppm v/v range)	Source	Potential to Migrate (Yes/No)	~~Migration~~ (Note required actions)	
				Source	Structures
B1	0 - 220	OILFIELD	NO	None recommended	None recommended
B2	0 - 250	"	NO	"	"
B3	80 - 420	"	NO	"	"
B4	0 - 260	"	NO	"	"
B5	0 - 230	"	NO	"	"
B6	0 - 350	"	NO	"	"
B7	0 - 310	"	NO	"	"
B8	0 - 320	"	NO	"	"
B9	0 - 500	"	NO	"	"
				"	"
				"	"

July 7, 2017
Date

Thomas R
Applicant